**Chew Shun Wen**

**Cardiology**

***SimPat Static Patient Cases***

[**Individual Details: 4**](#_xon7r6l7e1m)

[**Notes: 4**](#_aesafab5wto6)

[**SW\_01\_DeepVeinThrombosis 5**](#_8rm4eb9emxe6)

[A 59-year-old female called Maiara Ekvall presents with a painful swollen leg. 5](#_kh570g5ny5kt)

[**SW\_02\_DeepVeinThrombosis 11**](#_avkcwtqun15)

[A 63-year-old female called Mariatu Jahamneh presents with a swollen and painful left leg. 11](#_8qbtmdzgwvy0)

[**SW\_03\_DeepVeinThrombosis 18**](#_bcyobb2zhgb4)

[A 54-year-old male called Seo-Jun Park presents with a painful and swollen right leg. 18](#_b38qj8yfr5he)

[**SW\_04\_DeepVeinThrombosis 25**](#_97reepyr5wev)

[A 47-year-old male called Nikolay Alexeyev presents with acute-onset right calf pain and swelling. 25](#_jbn9qq8avgez)

[**SW\_05\_Myocarditis 32**](#_104fsy7z95i2)

[A 25-year-old male called Matías Alves presents with chest pain and shortness of breath. 32](#_ahlafqpxxux8)

[**SW\_06\_Myocarditis 41**](#_wq0k7xlwuwxk)

[A 35-year-old male called Takeshi Yamamoto presents with chest pain and shortness of breath. 41](#_a3lb35qb72ju)

[**SW\_07\_Myocarditis 47**](#_t6yki2ju7gp7)

[A 22-year-old male called Aviv Rahmani presents with acute chest pain and shortness of breath. 47](#_jvym9um2z07)

[**SW\_08\_Myocarditis 55**](#_lc0mhhixk93)

[A 22-year-old male called Einar presents with chest pain and shortness of breath. 55](#_9zcpkyskkpm2)

[**SW\_09\_AorticAneurysm 1**](#_xoh4i4e1rdzb)

[A 68-year-old female called Elise Dubois presents with a pulsatile abdominal mass and lower back pain. 1](#_ivq061cqjq6c)

[**SW\_10\_AorticAneurysm 1**](#_nodnyyyt9koo)

[A 72-year-old female called Tabassum presents with severe back pain. 1](#_fy2em5hl9mkh)

[**SW\_11\_AorticAneurysm 1**](#_x7p9cpb6knms)

[A 67-year-old male called Alaric Bhattarai presents with a pulsating sensation in his abdomen and lower back pain. 1](#_2p3mbpt9hsq3)

[**SW\_12\_Aortic Aneurysm 1**](#_kxrqdyikne6e)

[A 65-year-old male called Kaveh Azar presents with a pulsating mass in the abdomen. 1](#_iq9vjx7ca5l8)

[**SW\_13\_AcuteCoronarySyndrome 1**](#_1nicr83asiji)

[A 65-year-old male called Kofi Agyapong presents with chest pain and breathlessness. 1](#_c578ki7wmfw1)

[**SW\_14\_Acute Coronary Syndrome 1**](#_2sp2bktxlc28)

[A 63-year-old male called Yaromir presents with chest pain and shortness of breath. 1](#_xsyhcp2oyinc)

[**SW\_16\_Acute Coronary Syndrome 1**](#_jhvsg46vx3mb)

[A 55-year-old female called Isra Sadiq presents with chest pain and shortness of breath. 1](#_gw40kvt3rnp1)

[**SW\_17\_AcuteCoronarySyndrome 1**](#_f7y09zg0bjk3)

[A 57-year-old male called Isandro Takahashi presents with chest pain and shortness of breath. 1](#_fr9v5yuhsl1z)

[**SW\_18\_Acute Coronary Syndromes 1**](#_t8wdb4fzghm5)

[A 52-year-old male called Riaz Sulemana presents with central chest pain and breathlessness. 1](#_6jp6nb1beoez)

[**SW\_19\_Arterial Thrombosis 1**](#_mwc3c7a3qrei)

[A 65-year-old male called Takeshi Miyahara presents with sudden onset of severe right leg pain and foot numbness. 1](#_u6gpy55jm816)

[**SW\_20\_ArterialThrombosis 1**](#_lhy0j59dx8g8)

[A 70-year-old male called Etienne Duchamps presents with acute, severe pain in his left lower leg and foot. 1](#_sebukcgnsmd7)

[**SW\_21\_ArterialThrombosis 1**](#_4kx6a6w69xlw)

[A 68-year-old male called Mubashir Anand presents with a sudden onset of a cold, painful, and pale lower limb. 1](#_3ts4vovjjc2e)

[**SW\_22\_ArterialThrombosis 1**](#_33ccdz71qfhe)

[A 72-year-old male called Sipho Nkosi presents with a cold, painful right leg. 1](#_y7f8or91h5lt)

[**SW\_23\_Aortic Dissection 1**](#_lb1yuct6tpk)

[A 63-year-old male called Raahi Kamal presents with sudden onset severe chest pain radiating to his back. 1](#_a6hbcs2wsr7s)

[**SW\_24\_Aortic Dissection 1**](#_v7gxkwf0fcsj)

[A 63-year-old male called Kasem presents with severe chest pain and a tearing sensation radiating to his back. 1](#_bld391nxyl7f)

[**SW\_25\_AorticDissection 1**](#_m1z1zymf7q7e)

[A 63-year-old male called Maksimilian presents with sudden severe chest pain and shortness of breath. 1](#_sypy11qwobvl)

[**SW\_26\_AorticDissection 1**](#_85x46sabicfp)

[A 70-year-old male called Cassius Amirtharajah presents with a sudden, severe chest pain that radiates to his back. 1](#_j7msnki9a3fo)

[**SW\_27\_Peripheral Vascular Disease 1**](#_r44me62qjx9z)

[A 64-year-old man called Marlon reveals symptoms of intermittent claudication and lower extremity pain. 1](#_te1v1v34f7zx)

[**SW\_28\_Peripheral Vascular Disease 1**](#_c5wni3c781e0)

[A 68-year-old male called Mayar Kamal presents with intermittent claudication and rest pain in his lower limbs. 1](#_xlzkhuin2u4h)

[**SW\_29\_Peripheral Vascular Disease 1**](#_ierk8paqqy36)

[A 67-year-old male called Kyrillos Avgousti presents with claudication and rest pain in his lower limbs. 1](#_9tzaprmgag1b)

[**SW\_30\_Peripheral Vascular Disease 1**](#_bnnvywbe3v2d)

[A 63-year-old man called Abdurrahman presents with intermittent claudication in his left calf. 1](#_1gpapotgp7e7)

[**SW\_31\_InfectiveEndocarditis 1**](#_ty9w5im9y7w7)

[A 45-year-old male called Chadwick Kaminsky presents with a fever and a new heart murmur. 1](#_hwqykm34yfqd)

[**SW\_32\_InfectiveEndocarditis 1**](#_yk0bpxcgaxr)

[A 45-year-old male called Taro Janek presents with a fever and a new heart murmur. 1](#_t9n9zo7dsx0z)

[**SW\_33\_Infective Endocarditis 1**](#_wcat6n5p8ys9)

[A 42-year-old female called Avani Mehta presents with fever and a new heart murmur. 1](#_84fpfunx9ifz)

[**SW\_34\_Infective Endocarditis 1**](#_80prlx7d6m44)

[A 47-year-old male called Abiola Olaseni presents with fever and a recently developed heart murmur. 1](#_57i0dsemza9y)

[**SW\_35\_Infective Endocarditis 1**](#_fv33r9xl6wm)

[A 45-year-old male called Ajitkumar presents with fever and a new heart murmur. 1](#_c7abmao49au7)

[**SW\_36\_Haemochromatosis 1**](#_9b7al75a7dh6)

[A 45-year-old male called Ermir Krasniqi presents with joint pain and fatigue. 1](#_jlf53tmgb0qu)

[**SW\_37\_Haemochromatosis 1**](#_kp9hypnrwx)

[A 42-year-old male called Kasra Hashemi presents with fatigue and joint pain. 1](#_uz9j1r32bryl)

[**SW\_38\_Haemochromatosis 1**](#_3tnq8nu56hdv)

[A 37-year-old male called Janko Vuković presents with joint pain and fatigue. 1](#_cvqeb33keizo)

[**SW\_39\_EssentialOrSecondaryHypertension 1**](#_3bfqhdws0krq)

[A 48-year-old male called Abioye Ajayi presents with elevated blood pressure. 1](#_x7rqedjqdsvh)

[**SW\_40\_EssentialOrSecondaryHypertension 1**](#_5snjoy73ny67)

[A 52-year-old male called Rajan Singh presents with headache and dizziness. 1](#_3pvey9gskq4)

[**SW\_41\_EssentialOrSecondaryHypertension 1**](#_jtif9uxbh9ne)

[A 58-year-old male called Kasem presents with elevated blood pressure and headaches. 1](#_blbnmkqcf2z4)

[**SW\_42\_EssentialOrSecondaryHypertension 1**](#_vzgpkcsjjmjo)

[A 53-year-old male called Teran Kovačić presents with elevated blood pressure. 1](#_j8mcwg52vrn9)

[**SW\_43\_EssentialOrSecondaryHypertension 1**](#_96chmwxr9ipj)

[A 54-year-old male called Kavi Anouar presents with a consistently high blood pressure. 1](#_295ivkf4k1b1)

[**SW\_44\_EssentialOrSecondaryHypertension 1**](#_mfyizxrv0v08)

[A 53-year-old male called Felipe Quispe presents with elevated blood pressure and headaches. 1](#_lef67ou4ch1t)

[**SW\_45\_Pulmonary Hypertension 1**](#_giacmd41yasz)

[A 34-year-old female called Mihaela Voinea presents with breathlessness and fatigue. 1](#_ob31klwrwdvi)

[**SW\_46\_Pulmonary Hypertension 1**](#_knaxg03nty3)

[A 64-year-old woman called Thienna Albasini presents with worsening breathlessness on exertion. 1](#_tswfg33l1nnd)

[**SW\_47\_Pulmonary Hypertension 1**](#_4jotvc5jwivo)

[A 45-year-old female named Jadzia Dax presents with shortness of breath and fatigue. 1](#_vbyd20q2e9kj)

[**SW\_48\_Mitral Valve Disease 1**](#_nt5ecz6hoav2)

[A 53-year-old female called Alexia presents with shortness of breath and fatigue. 1](#_w5j47nw85nul)

[**SW\_49\_Mitral Valve Disease 1**](#_hywca3rg633b)

[A 48-year-old male called Kazuhira presents with breathlessness and fatigue. 1](#_o5hcbf9wm5fg)

[**SW\_50\_Mitral Valve Disease 1**](#_1zxyn33tfw7k)

[A 57-year-old female called Ngariñe presents with shortness of breath and fatigue. 1](#_ufh7entskb5w)

# 

# Individual Details:

# 

* Initials Used: SW
* WhatsApp Number: +440733816776

# Notes:

*Use Table of Heading to Organise:*

*Case Code = “Heading 1”, - Highlight then press “Control + alt +1”*

*Homepage vignette = “Heading 2” - Highlight then press“Control + alt +2”*

*Click the update button on the table of headings to update everything*

***Delete these examples when happy***

Homepage Vignette:

# SW\_01\_DeepVeinThrombosis

## A 59-year-old female called Maiara Ekvall presents with a painful swollen leg.

Individual Page Vignette:

As a healthcare professional in a General Practice setting, you are to assess Maiara Ekvall, a 59-year-old teacher, who has come in with a complaint of a painful and swollen leg.

Patient Name:

Maiara Ekvall (Pronounced: MY-ah-rah EHK-vahl); prefers to be called Maiara.

Age:

22/06/1965

Location:

General Practice

Personality:

Maiara is a sociable and articulate individual with a clear manner of speaking. She prides herself on her literacy skills as a teacher. Despite her unwell appearance, she tries to maintain a composed disposition.

Presenting Complaint:

Maiara has approached the clinic with the primary complaint of her left leg being markedly swollen and painful for the past two days.

Quote: "I've never had anything like this before, it's quite alarming. My left leg is much bigger than my right, and it feels overly tight and sore."

Symptoms:

- Site: Left lower limb; Quote: "It's primarily around the calf area, but the whole left leg feels swollen."

- Onset: Two days ago; Quote: "This just started a couple of days back."

- Character: Aching pain; Quote: "It's a persistent aching that won't let up."

- Radiation: Non-radiating; Quote: "The pain is just in my leg, it doesn’t move anywhere else."

- Associated Symptoms: Leg swelling and redness; Quote: "My leg's all puffed up and slightly reddened."

- Timing: Persistent over the past two days; Quote: "It’s been there non-stop since it started."

- Exacerbating and Relieving Factors: Exacerbated by movement; Relieved slightly by elevation; Quote: "Holding my leg up seems to ease it a bit, but moving about makes it worse."

- Severity: Moderate to severe; Quote: "On a scale, I’d say it's around a 7 out of 10."

- Chest pain or discomfort: Negative finding

- Shortness of breath: Negative finding

- Palpitations: Negative finding

- Syncope: Negative finding

- Nausea: Negative finding

- Vomiting: Negative finding

- Intermittent claudication: Negative finding

- Peripheral oedema: Positive finding; Quote: "Yes, my left leg is definitely swollen, more than I've ever seen it."

History of Presenting Complaint:

- Duration of symptoms: Two days; Quote: "It's been two whole days now."

- Previous treatments: None; Quote: "No, I haven't tried any specific treatments yet."

- Progression over time: Gradually worsened; Quote: "The swelling and pain seemed to creep up and have gotten worse since."

- Frequency of symptoms: Constant; Quote: "It's all the time, no let-up."

- Impact on daily life and activities of daily living: Significant; Quote: "I'm struggling to do my daily tasks and even walking is hard."

- Impact on work: Affecting work; Quote: "I'm a teacher; I can't be hobbling about in class like this."

- Impact on physical and mental wellbeing: Causing distress; Quote: "I’m quite worried, and it’s very uncomfortable."

General Quote: "It started only recently but it's making things difficult for me, especially at work. I've never had to deal with something like this, it's quite distressing."

Systemic Symptoms:

- Fatigue: Negative finding

- Fever: Negative finding

- Night sweats: Negative finding

- Unintended weight loss: Negative finding

- Generalised weakness: Negative finding

- Malaise: Negative finding

- Bowel habits: Negative finding

- Urinary habits: Negative finding

- Changes in sleep: Negative finding

- Peripheral oedema: Positive finding; Quote: "As I mentioned, my left leg is swollen."

General Quote: "I haven’t noticed any changes in my body overall, just this issue with my leg."

Past Medical History:

- Surgeries: Negative finding

- Hospitalizations: Negative finding

- Previous injuries or traumas: Negative finding

- Psychiatric or psychological history: Negative finding

- History of substance abuse or addiction: Negative finding

- Immunizations and vaccination history: Up to date; Quote: "I've had all my jabs, I make sure to keep on top of them."

- Any other relevant medical conditions or significant health events: Negative finding

General Quote: "Thankfully, I've not had much to speak of in terms of illnesses or medical history. Just the normal vaccines."

Drug History:

Currently not on any medications, prescription or over-the-counter. No use of herbal supplements or alternative therapies. Quote: "I don't take any regular meds, and I've not used any new ones recently, either."

Allergies:

No known allergies.

Quote: "No, I don't have any allergies that I know of."

Family History:

Mother had hypertension and father had type 2 diabetes. No known hereditary conditions.

Quote: "My mum had high blood pressure, and dad was diabetic, but that's about it."

Social History:

Lifestyle: Active with a focus on literacy and reading groups in her community.

Occupation: Teacher.

Activities of Daily Living & Hobbies: Maiara enjoys going on walks and is involved in a local book club.

Smoking: Non-smoker.

Alcohol: Occasional drinker, about 3 units per week.

Recreational Drug Use: None.

Diet: Balanced diet with an emphasis on vegetables and lean protein.

Exercise: Walks regularly, about 3 times a week.

Travel History: Does not apply.

Sexual History: Does not apply.

Driving Status: Drives a car for commuting.

Cultural or Religious Practises: Non-applicable.

Recent Life Events: Recently retired from full-time teaching, now doing part-time.

Exposure to Hazards or New Environment: None.

Quote 1: "I've started enjoying my retirement with more time for walks and my book club. And no, I don't smoke or do drugs. Just a glass of wine sometimes on the weekend."

Quote 2: "I eat fairly healthily, lots of greens. I've cut down on red meat quite a bit."

Quote 3: "The biggest change lately? I suppose it's going part-time at work, which has given me more time for my hobbies."

Ideas, Concerns, and Expectations:

Ideas: Maiara believes her symptoms could be related to a muscle strain from over-walking.

Concerns: Worried about the possibility of a more serious vascular issue.

Expectations: Hopes for a swift diagnosis and treatment plan to address the leg swelling and pain.

Quote: "I suspect it might just be a strain, but with the swelling, I am a bit worried it could be my circulation. I’m hoping you can tell me what's wrong and how to sort it out quickly."

Observations:

Respirations (Breaths/min): 16 (0 points)

Oxygen Saturation (%): 98% (0 points)

Air or Oxygen?: On room air (0 points)

Blood Pressure (mmHg): 130/85 (0 points)

Pulse (Beats/min): 78 (0 points)

Consciousness (AVPU): Alert (0 points)

Temperature (Celsius): 36.8 (0 points)

NEWS Total Score: 0

Physical Examination:

General inspection: General inspection reveals no cyanosis, shortness of breath, pallor, malar flush, or oedema apart from the affected limb.

Inspection of the hands: No abnormalities or clinical signs suggestive of systemic disease noted.

Pulses and blood pressure:

- Radial pulse rate and rhythm: Regular at 78 beats/min.

- Blood pressure in both arms: 130/85 mmHg bilaterally.

Examination of the legs:

- Ankle Oedema: Present on the left.

- Leg examination reveals pitting oedema in the left lower limb with tenderness on palpation along the distribution of the deep venous system.

Special Tests:

- Homan's sign: Not performed, as current guidelines recommend against it due to the potential risk of embolisation.

Diagnostic Tests:

- D-dimer: 500 μg FEU/l

- Ultrasound Scan: Duplex ultrasonography is the imaging modality of choice to confirm the presence of thrombus within the deep venous system.

Condition:

Deep vein thrombosis

Patient Questions:

1. "Could this be something really serious, like a blood clot?"

Suggested answer: "A blood clot is certainly one of the things we need to consider with swelling and pain in the leg, which is why we'll do some tests to either confirm or rule it out."

2. "Will I need to stay in the hospital for treatment?"

Suggested answer: "If deep vein thrombosis is confirmed, many cases can be managed with medication at home. Hospitalisation might be necessary depending on the severity and your individual case."

3. "Can I continue to go for my walks, or should I be resting?"

Suggested answer: "Until we have a diagnosis, it's essential to avoid any activity that causes pain. Gentle movements are usually encouraged, but we should have a clearer plan once we confirm the diagnosis."

Examiner Questions:

1. What are the typical risk factors for deep vein thrombosis (DVT)?

Suggested answer: Typical risk factors include prolonged immobility, recent surgery, cancer, pregnancy, oestrogen therapy, smoking, a history of DVT, and inherited or acquired thrombophilia.

2. How is D-dimer testing used in the diagnosis of DVT?

Suggested answer: A D-dimer test measures a substance released when a blood clot breaks down. A high level of D-dimer might suggest an active clotting process and is used to assess the likelihood of DVT. However, it is not specific for DVT and can be elevated in other conditions as well.

3. What are the potential complications of DVT?

Suggested answer: Complications include pulmonary embolism, which is a medical emergency, and post-thrombotic syndrome, which can lead to chronic pain, swelling, and ulcers in the affected limb.

4. What is the first-line treatment for DVT?

Suggested answer: First-line treatment typically includes anticoagulant medications such as low molecular weight heparin (LMWH) followed by a transition to oral anticoagulants like warfarin or direct oral anticoagulants (DOACs).

Treatment:

Based on the guidelines provided by NICE, initial treatment for a patient with confirmed DVT includes:

- Anticoagulation therapy, typically starting with a low molecular weight heparin (LMWH) such as Enoxaparin 1.5 mg/kg once daily subcutaneously, or Enoxaparin 1 mg/kg twice daily.

- The transition to oral anticoagulants, such as Warfarin aiming for an INR of 2.0–3.0, or a direct oral anticoagulant like Rivaroxaban or Dabigatran.

- Compression stockings (thigh or knee-length) to manage swelling and reduce chronic complications.

- If the patient is unable to take LMWH for reasons such as allergy or risk of bleeding, alternative options include fondaparinux or unfractionated heparin.

- Adjusted treatments for patients with renal impairment or for pregnant women.

Monitoring:

- Regular mood and renal function tests are necessary to monitor the dosing of LMWH.

- INR monitoring for patients on Warfarin.

- Regular review to taper and stop treatment as per guidelines which usually recommend a 3–6 month course of anticoagulation for provoked DVT.

- Follow-up visits should be scheduled at 1 week, then monthly for therapy monitoring and adjustment.

Prognosis:

- With appropriate treatment, the prognosis for a patient with DVT is generally good.

- Typically, anticoagulation therapy will continue for 3–6 months, depending on whether the DVT was provoked or unprovoked.

- There is a risk for recurrent DVT, particularly in patients with unprovoked first events.

- Long-term risk of post-thrombotic syndrome, which can cause chronic limb swelling and pain.

Differential diagnoses:

1. Cellulitis: Less likely due to the absence of systemic symptoms, such as fever.

2. Lymphedema: Usually chronic and non-pitting, less acute in onset.

3. Ruptured Baker's cyst: Can cause calf pain and swelling but is often associated with a known history of knee arthritis.

Keyword Filters:

Speciality Filter:

Cardiovascular; General Practice;

Presenting Complaint Filter:

Painful Swollen Leg;

Condition Filter:

Deep Vein Thrombosis;

Location Filter:

General Practice

Case created by:

Chew Shun Wen, 4th year Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_02\_DeepVeinThrombosis

Homepage Vignette:

## A 63-year-old female called Mariatu Jahamneh presents with a swollen and painful left leg.

Individual Page Vignette:

You are a General Practitioner and Mariatu Jahamneh, a 63-year-old retired teacher, has come to your clinic with complaints of a swollen and painful left leg.

Patient Name:

Mariatu Jahamneh [Mah-ree-ah-too Ja-ha-mneh], prefers to be called Mariatu.

Age:

10/02/1961

Location:

General Practice

Personality:

Mariatu is a polite and articulate individual who was an English teacher before retiring. She speaks thoughtfully and maintains eye contact, often using expressive hand gestures to convey her points.

Presenting Complaint:

Mariatu states, "Over the past couple of days, I've noticed that my left leg has become rather swollen and painful, particularly when I stand or walk."

Symptoms:

Site: The pain is located in the calf of the left leg. "It feels as if the pain is centred right in my calf muscle."

Onset: The pain and swelling commenced two days ago, somewhat abruptly. "I woke up Monday morning and found my leg was swollen, it just came out of nowhere."

Character: The pain is constant, aching. "It's a dull, throbbing pain that just doesn't let up."

Radiation: The pain does not radiate; it is localized. "No, the pain stays right there in my calf."

Associated Symptoms: There is accompanying swelling. "My leg's blown up like a balloon, it's all swollen."

Timing: The symptoms have been persistent over the past two days. "Ever since it started, it's been there day and night."

Exacerbating and Relieving Factors: The pain worsens with standing and walking. Elevating the leg provides some relief. "When I sit down and prop my leg up, there's a bit of relief."

Severity: Describes it as 6/10 on the pain scale. "On a scale of ten, it's about a six. Uncomfortable enough to bother me."

- Chest pain or discomfort: Negative

- Shortness of breath: Negative

- Palpitations: Negative

- Syncope: Negative

- Nausea: Negative

- Vomiting: Negative

- Intermittent claudication: Negative

- Peripheral oedema: Positive. "Yes, it's this left leg that's all puffed up."

History of Presenting Complaint:

- Duration of symptoms: Two days. "It's been two days since this started."

- Previous treatments: None so far. "No, I haven't tried anything. Wanted to see you first."

- Progression over time: Stable, no worsening or improvement. "It's been the same since it started."

- Frequency of symptoms: Persistent. "It's there all the time."

- Impact on daily life and activities of daily living: Impacting mobility and ability to carry out daily tasks. "I can't really get around the house or do much with this leg."

- Impact on work: Not applicable, as Mariatu is retired.

- Impact on physical and mental wellbeing: Causing significant discomfort and worry. "It's quite unnerving, to be honest."

Quote:

"I'm worried because I've never had anything like this before, it's really affecting my ability to move around and get things done."

Systemic Symptoms:

- Fatigue: Negative

- Fever: Negative

- Night sweats: Negative

- Unintended weight loss: Negative

- Generalised weakness: Negative

- Malaise: Negative

- Bowel habits: Normal

- Urinary habits: Normal

- Changes in sleep: Negative

- Peripheral oedema: Positive in the left leg. "Only my left leg is swollen, affecting my sleep due to the discomfort."

Quote:

"I'm generally well overall, though this leg has really thrown me off."

Past Medical History:

- Surgeries: Negative

- Hospitalizations: Negative

- Previous injuries or traumas: Negative

- Psychiatric or psychological history: Negative

- History of substance abuse or addiction: Negative

- Immunizations and vaccination history: Up-to-date with routine vaccinations.

- Any other relevant medical conditions or significant health events: Negative

Quote:

"As far as my health goes, I've been pretty lucky—no surgeries or hospital stays, and I keep up with my jabs."

Drug History:

No current medications being taken. No history provided about non-compliance, overdose incidents, or use of herbal supplements.

Quote:

"I've never been one for taking lots of pills; try to avoid them if I can."

Allergies:

No known allergies. "I count myself fortunate; no allergies to speak of."

Family History:

History of hypertension in her mother. "My mum had high blood pressure, but that's about it in my family."

Social History:

Lifestyle: Leads a mostly sedentary lifestyle since retirement.

Occupation: Retired English teacher.

Activities of Daily Living & Hobbies: Enjoys reading, knitting, and occasional gardening.

Smoking: Non-smoker.

Alcohol: Consumes alcohol occasionally, about 3 units per week.

Recreational Drug Use: None. "Never touched the stuff."

Diet: Eats a balanced diet, with a recent focus on increasing vegetable intake.

Exercise: Light walks in the garden. "I take a stroll in the garden, nothing too taxing."

Quote:

"I've been keeping myself busy since I retired, enjoy little pleasures like my book club and tending to my roses."

"I do enjoy a glass of wine with dinner on the weekends."

"Never been one for the gym, but I keep active around the house and garden."

Ideas, Concerns, and Expectations:

Ideas:

"I wonder if all those years on my feet teaching have caught up with me, or could it be one of those clots I've read about?"

Concerns:

"I'm truly worried it might be something serious, like a blockage or maybe heart trouble."

Expectations:

"I'm hoping you can give me some answers today and help relieve this pain. And if it's something serious, I hope we can deal with it quickly."

Quote:

"I must admit, I'm a touch worried, wouldn't want things to get worse because I hesitated."

Observations:

Respirations (Breaths/min): 16 breaths/min.

Oxygen Saturation (%): 98% on room air.

Air or Oxygen?: Room air.

Blood Pressure (mmHg): 146/90 mmHg.

Pulse (Beats/min): 78 beats/min, regular rhythm.

Consciousness (AVPU): Alert.

Temperature (Celsius): 36.8°C.

NEWS Total Score: 0 (All individual parameters fall within normal ranges with zero points each.)

Physical Examination:

General inspection:

- No cyanosis, breathlessness, pallor or malar flush noted.

- No medical equipment present.

Inspection of the hands:

- No abnormalities noted.

- Warm to touch with a capillary refill time of less than 2 seconds.

Pulses and blood pressure:

- Radial pulse regular and symmetrical.

- No radio-radial delay.

- No collapsing pulse.

- Brachial pulse volume and character normal. Blood pressure symmetric in both arms.

- Carotid pulse volume and character normal.

Jugular venous pressure:

- JVP not elevated.

- No positive hepatojugular reflux.

Inspection of the face:

- No conjunctival pallor, corneal arcus, xanthelasma or Kayser-Fleischer rings.

- No central cyanosis, angular stomatitis or dental issues.

Close inspection of the chest:

- No deformities or visible pulsations noted.

Palpation of the chest:

- Apex beat located at the 5th intercostal space in the midclavicular line.

- No heaves or thrills palpated.

Auscultation of the chest:

- Normal S1 and S2, no added sounds or murmurs heard in all auscultation areas.

Inspection of the back:

- No deformities or scars.

Palpation of the back:

- No sacral oedema.

Auscultation of the back:

- Clear lung fields with no crackles or signs of fluid.

Examination of the legs:

- Pitting oedema present in the left ankle.

- No signs of saphenous vein harvesting.

\*Specific vascular system examination steps followed as per clinical guidelines, including inspection, palpation, and auscultation.\*

Special Tests:

- Homan's sign: Negative (but note that the clinical usefulness of Homan's sign is questionable)

Diagnostic Tests:

Clinically appropriate investigations for suspected deep vein thrombosis include D-dimer test and venous ultrasound of the affected limb to assess for venous thrombosis. Imaging tests like venography are no longer routinely used as initial tests but may be indicated in complex cases.

Blood Tests (Reference Ranges):

D-dimer: Result - Elevated, should be taken in the context of clinical assessment (Referenced range: < 500 ng/mL)

Urea and Electrolytes:

Sodium: Result - 142 mmol/L (133–146 mmol/L)

Potassium: Result - 4.0 mmol/L (3.5–5.3 mmol/L)

Creatinine: Result - 72 µmol/L (Female: 45–84 µmol/L)

Liver Function Tests:

Alanine transferase (ALT): Result - 24 iu/L (3-40 iu/L)

Albumin: Result - 47 g/L (35-50 g/L)

Imaging Tests:

Ultrasound Scan: Full qualitative description - demonstrates the presence of noncompressible segments suggestive of deep vein thrombosis in the left lower extremity.

Treatment:

According to NICE guidelines, management of confirmed deep vein thrombosis includes:

- Anticoagulation therapy with low molecular weight heparin (LMWH), like enoxaparin, before switching to a direct oral anticoagulant (DOAC) such as apixaban or rivaroxaban.

- If there is a contraindication to DOACs, warfarin can be used, aiming for a target INR of 2.5 (range 2.0 to 3.0).

- Consider compression stockings if symptoms like leg swelling and pain are significant.

- Educate the patient regarding the signs and symptoms of complications, like pulmonary embolism.

Monitoring:

- Repeat leg measurements and clinical assessment of symptoms to gauge treatment response.

- Check renal function before and during treatment with DOACs.

- INR monitoring if on warfarin.

- Advise the patient to report immediately if symptoms of pulmonary embolism arise, such as sudden chest pain or shortness of breath.

Prognosis:

- With prompt and appropriate treatment, most DVTs resolve without significant complications.

- Risk of post-thrombotic syndrome, which can cause chronic pain, swelling, and discoloration in the affected leg.

- Small but significant risk of pulmonary embolism, which can be life-threatening.

Differential diagnoses:

1. Cellulitis - less likely due to lack of erythema, warmth, and systemic symptoms like fever.

2. Superficial thrombophlebitis – typically has a more localised pain and redness along a superficial vein, not detected in this case.

3. Lymphoedema – typically presents with bilateral limb swelling and a history of cancer treatment or other lymphatic obstruction.

Case created by:

Chew Shun Wen, 4th year Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Keyword Filters:

Speciality Filter:

Acute and Emergency; Cardiovascular; General Practice; Medicine of Older Adult; Surgery.

Presenting Complaint Filter:

Back Pain; Breathlessness; Chest Pain; Dizziness; Fatigue; Fever; Painful Swollen Leg; Peripheral Oedema and Ankle Swelling; Sore Throat;

Presenting Complaints:

Painful Swollen Leg; Peripheral Oedema and Ankle Swelling;

Condition Filter:

Deep Vein Thrombosis;

Location Filter:

General Practice; Clinic;

Case Code:

# SW\_03\_DeepVeinThrombosis

Homepage Vignette:

## A 54-year-old male called Seo-Jun Park presents with a painful and swollen right leg.

Individual Page Vignette:

You are a doctor in the Accident & Emergency department, and Seo-Jun Park, a 54-year-old chef, has arrived complaining of a swollen and painful right leg.

Patient Name:

Seo-Jun Park [Pronunciation: “Suh-joon Pah-k”], prefers to be called Seo-Jun.

Age:

10/08/1970

Location:

Accident & Emergency

Personality:

Seo-Jun is a forthright and expressive person; he speaks with a noticeable sense of urgency and often describes his symptoms in a detailed and animated way.

Presenting Complaint:

Seo-Jun describes, "I've got this unbearable swelling in my right leg; it's like a balloon and hurts a fair bit, especially when I touch it."

Symptoms:

Site: Pain and swelling in the right lower leg. "The pain is all over my right lower leg, especially near the calf."

Onset: Began 3 days ago. "The swelling and pain started around three days back."

Character: Describes the pain as aching and heavy. "It feels heavy and aches when I stand or walk."

Radiation: Does not radiate. "The ache stays in the leg, doesn't go anywhere else."

Associated symptoms: Reports warmth over the afflicted area. "The skin over it feels warmer than usual."

Timing: Notes that symptoms have been persistent since onset. "It's been like this since it started, just doesn't let up."

Exacerbating Factors: Standing or walking increases the pain. "The more I'm on my feet, the worse it gets."

Relieving Factors: Rest and elevation provide some relief. "Lying down and raising my leg seems to help a little."

Severity: Rates it as 7 out of 10. "It's quite bad, I'd say about a seven on a scale of ten for pain."

- Chest pain or discomfort: Negative

- Shortness of breath: Negative

- Palpitations: Negative

- Syncope: Negative

- Nausea: Negative

- Vomiting: Negative

- Intermittent claudication: Negative

- Peripheral oedema: Positive. "Only the right leg is swollen up like this."

History of Presenting Complaint:

- Duration of symptoms: Three days. "Started Saturday, hasn't improved one bit."

- Previous treatments: None attempted. "I was hoping it would resolve on its own, but no luck."

- Progression over time: Noted to be gradually worsening. "Feels a tad worse each day."

- Frequency of symptoms: Constant. "It's all the time, especially when I’m on my feet."

- Impact on daily life and activities of daily living: Difficulties with mobility and self-care. "I'm a chef; I can't work with my leg like this."

- Impact on work: Unable to perform duties as a chef. "Haven't been able to stand in the kitchen; had to call in sick."

- Impact on physical and mental wellbeing: Feeling anxious and frustrated. "I'm worried, I've never had anything like this before and it's throwing everything off."

Quote:

"It's got me quite worried; I can't work, can't even cook for myself at home. Just doesn't feel right, this swelling and pain."

Systemic Symptoms:

- Fatigue: Negative

- Fever: Negative

- Night sweats: Negative

- Unintended weight loss: Negative

- Generalised weakness: Negative

- Malaise: Negative

- Bowel habits: Normal

- Urinary habits: Normal

- Changes in sleep: Negative

- Peripheral oedema: Positive, right leg only. "It's just this one leg, it's all puffed up and none of my trousers fit anymore."

Quote:

"It has been keeping me up, the discomfort and not knowing what's causing it."

Past Medical History:

- Surgeries: Tonsillectomy as a child.

- Hospitalizations: Appendicitis at age 25.

- Previous injuries or traumas: No significant injuries.

- Psychiatric or psychological history: No past psychiatric issues.

- History of substance abuse or addiction: None.

- Immunizations and vaccination history: Up to date on standard vaccinations.

- Any other relevant medical conditions or significant health events: Managed hypertension. "I have high blood pressure, but it's under control with meds."

Drug History:

Currently taking amlodipine 5mg once daily for hypertension. No history of medication non-compliance.

Quote:

"I've been on blood pressure medication for years, always take it first thing in the morning."

Allergies:

No known drug, food, or environmental allergies.

Quote:

"No allergies that I know of, I'm pretty okay with most things."

Family History:

Father has a history of stroke, mother has type 2 diabetes. One sibling with eczema.

Quote:

"Dad had a stroke a few years back, and Mum's got diabetes. Apart from those, we're mostly healthy."

Social History:

Lifestyle: Describes a busy lifestyle but tries to find time to relax. "I try to stay active even outside the kitchen."

Occupation: Chef.

Activities of Daily Living & Hobbies: Enjoys cooking for pleasure, cycling, and hiking. "I love what I do, and I cook at home too. Weekends are for my bike or a good hike."

Smoking: Non-smoker (0 pack-years).

Alcohol: Consumes socially, about 5 units on the weekend.

Recreational Drug Use: Negative.

Diet: Diverse and balanced, with the occasional indulgence. "I love food, what can I say? But I keep it balanced, mostly."

Exercise: Cycles twice a week and hikes once a month. "Cycling is my way of keeping fit."

Quote:

"I'm a chef; I'm on my feet all day and it's a busy life, but I make sure to get out on my bike."

"I drink occasionally, just socially with friends or family."

"I like to keep fit; nothing beats cycling through the countryside."

Ideas, Concerns, and Expectations:

Ideas:

"I'm not sure what this is, could it be from standing too much or something I ate? I've heard of blood clots, could it be that?"

Concerns:

"My biggest worry is that it's a clot or something that could suddenly get worse and stop me from working altogether."

Expectations:

"I'd really appreciate some clarity on what's happening and a way to treat this. I need to get back on my feet as soon as possible."

Quote:

"I've heard of things like this turning serious, I'm hoping that's not what we’re dealing with."

Observations:

Respirations (Breaths/min): 18

Oxygen Saturation (%): 97% on room air

Air or Oxygen?: Room air

Blood Pressure (mmHg): 135/85

Pulse (Beats/min): 84 regular

Consciousness (AVPU): Alert

Temperature (Celsius): 37.0°C

NEWS Total Score: 0

Physical Examination:

General inspection:

- No cyanosis or shortness of breath, mild pallor noted, pitting oedema on the right lower leg.

- A blood pressure cuff and stethoscope are present.

Inspection of the hands:

- No tar staining, xanthomata, clubbing, or other abnormalities noted.

- Hands warm with a capillary refill time within normal limits.

Pulses and blood pressure:

- Radial pulse present and regular, no radio-radial delay.

- Brachial pulse of normal volume, blood pressure symmetrical in both arms.

- Carotid pulse palpable without bruit.

Jugular venous pressure:

- JVP not visible.

- No hepatojugular reflux elicited.

Inspection of the face:

- No conjunctival pallor or xanthelasma, no dental concerns.

Close inspection of the chest:

- Chest appears normal, no visible scars.

Palpation of the chest:

- Apex beat located in the fifth intercostal space, no heaves or thrills palpated.

Auscultation of the chest:

- Heart sounds normal with no additional murmurs, rubs, or gallops.

Inspection of the back:

- Spine appears normal, no abnormal curvature noted.

Palpation of the back:

- No sacral oedema noted.

Auscultation of the back:

- Breath sounds present and normal bilaterally, no crackles or wheezes.

Examination of the legs:

- Right lower leg is swollen compared to the left, with pitting oedema present on the right ankle.

- No signs of trauma, wounds, or vein harvesting marks.

Special Tests:

Homan's sign could be performed but is not reliable as a diagnostic tool. Instead, consider a venous Doppler ultrasound for definitive diagnosis.

Diagnostic Tests:

Relevant tests for suspicion of deep vein thrombosis, such as D-dimer assays and venous Doppler ultrasound, should be pursued.

Blood Tests (Reference Ranges):

D-dimer: Elevated – suggests the possibility of thrombosis (Reference range: < 500 ng/mL)

Imaging Tests:

Venous Doppler ultrasound: Findings indicative of deep vein thrombosis, showing non-compressibility of the affected veins on the right leg.

Patient Questions:

1. "Is this something really serious, like a blood clot that could go to my lungs?"

- Short answer: "DVT can be serious, but we've caught it early and with treatment, we can significantly reduce the risk of complications like a pulmonary embolism."

2. "Will I be able to get back to work soon? I can't afford to take much time off."

- Short answer: "It depends on how well you respond to treatment. We'll aim to get you back on your feet as quickly and safely as possible while monitoring your condition closely."

3. "Are there any long-term effects I should be worried about?"

- Short answer: "There is a condition called post-thrombotic syndrome that can occur after DVT, causing chronic pain and swelling. But we'll work on prevention with proper management."

4. "Can I still go on my cycling trips? Will exercise make this worse?"

- Short answer: "We will need to manage the DVT first, but once treated, moderate exercise is actually beneficial. We'll tailor recommendations as you recover."

Examiner Questions:

1. What are the common risk factors for deep vein thrombosis (DVT)?

- Short answer: "Common risk factors include prolonged immobility, recent surgery or trauma, inherited blood clotting disorders, age, certain medical conditions, smoking, and obesity."

2. Can you describe the typical signs and symptoms of DVT?

- Short answer: "Typical signs include unilateral leg swelling, pain, warmth, and erythema. However, some DVTs can be asymptomatic."

3. What is the first line of treatment for a confirmed case of DVT?

- Short answer: "The first line of treatment is anticoagulation therapy, with medications such as low molecular weight heparin, followed by warfarin or a direct oral anticoagulant."

4. How would you differentiate DVT from a Baker's cyst clinically?

- Short answer: "A Baker's cyst is typically located behind the knee and may cause similar symptoms to DVT. However, ultrasound imaging can differentiate between the two."

5. What complications can arise from DVT and how can they be prevented?

- Short answer: "Complications include pulmonary embolism and post-thrombotic syndrome. They can be prevented with timely diagnosis, proper anticoagulation therapy, and possibly the use of compression stockings if indicated."

6. Why is it important to measure both the D-dimer levels and carry out a venous Doppler ultrasound in a suspected DVT case?

- Short answer: "D-dimer levels are sensitive but not specific for DVT, they can be elevated for many reasons. Venous Doppler ultrasound is a specific test that can confirm the presence and location of a thrombus."

Treatment:

Based on NICE guidelines:

- Immediate anticoagulation with low molecular weight heparin (LMWH), such as enoxaparin, dosing according to weight.

- Transition to an oral anticoagulant like a direct oral anticoagulant (DOAC), for example, apixaban or rivaroxaban, for at least 3 months.

- If DOACs are contraindicated, vitamin K antagonists such as warfarin could be used aiming for an INR of 2.0–3.0.

- Compression stockings may be considered after the swelling reduces to prevent post-thrombotic syndrome.

Monitoring:

- Regular INR checks if on warfarin, consider switching to a DOAC for ease of monitoring.

- Follow-up appointments to assess the resolution of symptoms and signs of DVT.

- Monitor for the development of post-thrombotic syndrome with serial leg measurements and patient-reported outcomes.

- Adjust anticoagulation as needed based on weight changes or renal function tests.

Prognosis:

- With prompt treatment, many patients with DVT recover without long-term issues.

- Lifelong anticoagulation may be necessary in certain cases with recurrent DVT or underlying thrombophilias.

- Important to educate on lifestyle modifications to reduce future risk.

Differential diagnoses:

1. Baker's cyst - typically presents with a mass behind the knee and can be confirmed with ultrasound.

2. Cellulitis - would typically present with erythema, warmth, and systemic symptoms like fever and chills.

3. Lymphoedema - often bilateral and associated with other systemic illnesses or post-surgical intervention.

Speciality Filter:

Acute and Emergency; Cardiovascular; General Practice; Medicine of Older Adult; Surgery.

Presenting Complaint Filter:

Breathlessness, Bruising, Painful Swollen Leg, Peripheral Oedema and Ankle Swelling.

Condition Filter:

Deep Vein Thrombosis;

Location Filter:

General Practice; Clinic; Accident & Emergency

Case created by:

Chew Shun Wen, 4th year Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_04\_DeepVeinThrombosis

Homepage Vignette:

## A 47-year-old male called Nikolay Alexeyev presents with acute-onset right calf pain and swelling.

Individual Page Vignette:

You are a Clinical Nurse Specialist in the thrombosis clinic, and today you are seeing Nikolay Alexeyev, a 47-year-old IT consultant, who has been referred by his GP with a swollen and painful right calf.

Patient Name:

Nikolay Alexeyev [nik-oh-lai al-ex-ey-ev], prefers to be called Nikolay.

Age:

27/05/1977

Location:

Clinic

Personality:

Nikolay is reserved yet articulate, meticulously describes his symptoms, and asks targeted, knowledgeable questions.

Presenting Complaint:

"My right calf has become quite painful and swollen over the past few days, and I'm also noticing some redness."

Symptoms:

- Site: The pain is in my right calf. "I feel it in the meaty part of my lower leg."

- Onset: It started rather suddenly three days ago. "Just felt it when I woke up one morning."

- Character: The pain is throbbing and constant. "It's a deep, pulsating sort of pain."

- Radiation: It doesn't really spread. "The pain stays in the calf."

- Associated Symptoms: I've noticed some redness. "It looks a bit redder than usual."

- Timing: The symptoms have been continuous since they started. "It's been there all the time since three days ago."

- Exacerbating and Relieving Factors: It's worse when I walk. "If I rest and raise my leg, it feels a bit better."

- Severity: Maybe a six out of ten. "Enough to worry me and stop me doing normal things."

- Chest pain or discomfort: Negative

- Shortness of breath: Negative

- Palpitations: Negative

- Syncope: Negative

- Nausea: Negative

- Vomiting: Negative

- Intermittent claudication: Negative

- Peripheral oedema: Positive. "The area is definitely more swollen than my left calf."

History of Presenting Complaint:

- Duration of symptoms: Three days. "It's been like this for around three days now."

- Previous treatments: I haven't tried anything yet. "I thought it best to see a professional first."

- Progression over time: It hasn't changed much. "It's stayed pretty consistent since it started."

- Frequency of symptoms: Constant. "It's there all the time."

- Impact on daily life and activities of daily living: It's making walking difficult. "Some tasks, particularly driving, have become quite challenging."

- Impact on work: It's affected my ability to commute. "I've had to work from home due to the difficulty."

- Impact on physical and mental wellbeing: It's concerning. "I am quite anxious about what it might mean."

Quote:

"I am quite methodical in my day-to-day life, and this sudden ailment is both concerning and irritating as it's disrupted my routine significantly."

Systemic Symptoms:

- Fatigue: Negative

- Fever: Negative

- Night sweats: Negative

- Unintended weight loss: Negative

- Generalised weakness: Negative

- Malaise: Negative

- Bowel habits: Negative

- Urinary habits: Negative

- Changes in sleep: Negative

- Peripheral oedema: Positive in the affected limb. "Just the swelling in my calf, nothing else really."

Quote:

"Outside of my leg issues, I feel as well as usual."

Past Medical History:

- Surgeries: Appendectomy at age 21. "I had my appendix out many years ago."

- Hospitalizations: None since the appendectomy.

- Previous injuries or traumas: A broken wrist when I was a teenager.

- Psychiatric or psychological history: None.

- History of substance abuse or addiction: None.

- Immunizations and vaccination history: Up to date with immunisations, including seasonal influenza.

- Any other relevant medical conditions or significant health events: Managed high cholesterol. "I've been monitoring my cholesterol with diet and lifestyle."

Quote:

"My health record is fairly simple with no major concerns, besides an occasional rise in cholesterol levels which I manage quite diligently."

Drug History:

He is not using any regular medication, does not report medication non-compliance, or use of alternative therapies.

Quote:

"I am not on any prescription meds and prefer to avoid them unless absolutely necessary."

Allergies:

No known allergies.

Quote:

"I have been fortunate to not suffer from any allergies thus far."

Family History:

My father has a history of coronary artery disease and my mother is diabetic.

Quote:

"My family history does incline towards cardiovascular conditions, which I take seriously myself."

Social History:

Lifestyle: Sedentary through the week due to job demands, but active on weekends.

Occupation: He is an IT consultant.

Activities of Daily Living & Hobbies: Enjoys model building and hiking.

- Smoking: No smoking (0 pack-years)

- Alcohol: Occasional drinker, approximately 2-3 units on weekends.

- Recreational Drug Use: None.

- Diet: Balanced, with a focus on low cholesterol.

- Exercise: Weekend hiking.

Quote:

"My work can be sedentary, but I try to get outdoors on the weekend."

"Alcohol is just for social events; I try to maintain a balance."

"I have a very keen interest in historical model crafting which I find quite therapeutic and I enjoy hiking for some physical activity."

Ideas, Concerns, and Expectations:

Ideas:

"I suspect this could be a circulation issue or possibly something to do with my veins?"

Concerns:

"One hears so much about clots these days, it's rather concerning not knowing what's at the base of my symptoms."

Expectations:

"I am hoping for a thorough assessment and clear guidance on treatment, as well as an explanation for these symptoms."

Quote:

"Given my lifestyle and family history, I am quite vigilant about health matters and would appreciate some clear direction on how to handle this issue."

Observations:

Respirations (Breaths/min): 14

Oxygen Saturation (%): 98% on room air

Air or Oxygen?: Room air

Blood Pressure (mmHg): 130/80

Pulse (Beats/min): 72, regular

Consciousness (AVPU): Alert

Temperature (Celsius): 36.9°C

NEWS Total Score: 0 (All measurements within normal range with zero points each.)

Physical Examination:

General inspection:

- No clinical signs suggesting cardiopulmonary issues; focus on the leg reveals local signs compatible with thrombosis such as swelling and redness.

\*Continue with clinical examination relevant to lower limb venous assessment.\*

Special Tests:

- Venous duplex ultrasound can be undertaken to confirm the diagnosis of DVT.

Diagnostic Tests:

Appropriate tests include:

- D-dimer - Elevated result would increase suspicion of DVT.

- Ultrasound Doppler of leg veins - Positive findings consistent with DVT.

Blood Tests (Reference Ranges):

- Full Blood Count (FBC):

- Haemoglobin (Hb): 150 g/L (Male: 130 - 180 g/L)

- White Blood Cell Count: 6.5 x10^9/L (3.6 - 11.0 x10^9/L)

- Platelets: 250 x10^9/L (140 - 400 x10^9/L)

Urea and Electrolytes:

- Sodium: 140 mmol/L (133–146 mmol/L)

- Potassium: 4.2 mmol/L (3.5–5.3 mmol/L)

Liver Function Tests:

- ALT: 25 iu/L (3-40 iu/L)

- Bilirubin: 12 umol/L (3-17 umol/L)

Imaging Tests:

- Doppler Ultrasound Scan: Positive for DVT with non-compressible segment in the right calf veins.

Condition:

Deep Vein Thrombosis

Patient Questions:

1. "Is this condition life-threatening? Should my family be worried?"

- Short answer: "DVT can be serious, especially if not treated, but we have good treatments available. It's important to follow the advice and take any medication as prescribed to minimise risks."

2. "Will I need to stay in hospital for this?"

- Short answer: "It will depend on the severity and whether you've got any complications. Many cases can be managed with outpatient care, but we'll assess and decide the best approach for you."

3. "Are there any long-term effects I need to be aware of?"

- Short answer: "Some people develop post-thrombotic syndrome after DVT, which can cause chronic leg pain and swelling. However, appropriate treatment reduces this risk."

4. "Can I still travel for long distances if I have a DVT?"

- Short answer: "It's best to avoid long periods of immobility soon after a DVT. If travel is necessary, take measures to reduce your risk, such as regular leg exercises, staying hydrated, and possibly wearing compression stockings as advised."

Examiner Questions:

1. What risk factors for DVT can you identify in this patient's history?

- Short answer: "Nikolay's sedentary job could be a risk factor, as could his age and family history of cardiovascular disease."

2. How would you confirm a diagnosis of DVT in this patient?

- Short answer: "Confirmation would be through a combination of clinical assessment, D-dimer test if appropriate, and predominantly with ultrasound Doppler imaging."

3. Describe the mainstay of DVT treatment.

- Short answer: "Anticoagulation is the mainstay of DVT treatment, with initial doses of LMWH followed by oral anticoagulation."

4. What advice would you give to a patient with a newly diagnosed DVT?

- Short answer: "I would advise on the importance of complying with the anticoagulant therapy, the need for regular follow-ups, recognising the signs of complications, and lifestyle modifications to reduce risk."

5. Can you explain how the Well's score aids in the clinical diagnosis of DVT?

- Short answer: "The Well’s score is a clinical tool that stratifies the probability of a patient having a DVT based on risk factors and presenting signs and symptoms."

6. What is post-thrombotic syndrome and how can it be prevented?

- Short answer: "Post-thrombotic syndrome is a complication of DVT that results in chronic pain, swelling, and even ulcers. Prevention includes effective anticoagulation, possibly compression therapy, and encouraging early mobilisation where possible."

Treatment:

According to the latest NICE and BNF guidelines:

- Initial management with LMWH, such as enoxaparin, administrated subcutaneously.

- Conversion to a DOAC, like apixaban or rivaroxaban, for longer-term treatment.

- Provide information on lifestyle changes, including increased physical activity and weight management if relevant.

- Consider prescribing compression stockings if clinically indicated to reduce the risk of post-thrombotic syndrome.

Monitoring:

- Regular follow-up appointments to monitor anticoagulation therapy.

- Monitoring for the resolution of symptoms and any development of post-thrombotic syndrome symptoms.

Prognosis:

- With timely and effective treatment, excellent prognosis for resolution of acute symptoms.

- Low risk of recurrence when managed with appropriate anticoagulant therapy and lifestyle modifications.

- Regular follow-up is crucial to manage and monitor for long-term complications such as post-thrombotic syndrome.

Differential diagnoses:

1. Ruptured Baker's cyst - often presents with similar symptoms but typically also has a palpable cystic mass and transilluminates on physical examination.

2. Cellulitis - is accompanied by more diffuse erythema, warmth, and systemic symptoms such as fever, which are lacking in this patient's presentation.

3. Superficial thrombophlebitis - could present similarly but is usually associated with a palpable, tender cord; redness tracking the course of a superficial vein and tends to be less swollen.

Speciality Filter:

Acute and Emergency; Cardiovascular; General Practice; Medicine of Older Adult; Surgery.

Presenting Complaint Filter:

Painful Swollen Leg; Peripheral Oedema and Ankle Swelling.

Condition Filter:

Deep Vein Thrombosis;

Location Filter:

General Practice; Clinic; Accident & Emergency

Case created by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

# SW\_05\_Myocarditis

Homepage Vignette:

## A 25-year-old male called Matías Alves presents with chest pain and shortness of breath.

Individual Page Vignette:

You are a general practitioner, and Matías Alves, a 25-year-old engineer, has come to your clinic complaining of chest pain and breathlessness.

Patient Name:

Matías Rodrigo Alves (muh-TEE-us al-VEZ), prefers to be called Matías.

Age:

12/06/1999

Location:

General Practice

Personality:

Matías is a reserved individual with a calm and analytical demeanour. He speaks in measured tones and likes to present fact-based queries. He takes a methodical approach to understanding his health concerns, reflecting his background in engineering.

Presenting Complaint:

Matías reports experiencing sharp chest pain and difficulty breathing which prompted him to seek medical attention.

Quote:

"I've got this sharp pain right in the middle of my chest, and I'm finding it a bit hard to catch my breath. It's unlike anything I've had before."

Symptoms:

- Chest pain or discomfort:

Positive Finding.

Quote: "The pain is sharp, right in the centre of my chest, just there."

- Shortness of breath:

Positive Finding.

Quote: "I've been getting winded just climbing the stairs, which is unusual for me."

- Palpitations:

Negative Finding.

- Syncope:

Negative Finding.

- Nausea:

Negative Finding.

- Vomiting:

Negative Finding.

- Intermittent claudication:

Negative Finding.

- Peripheral oedema:

Negative Finding.

History of Presenting Complaint:

- Duration of symptoms:

Matías has been experiencing symptoms for 3 days.

Quote: "This has been going on for about three days now."

- Previous treatments:

No previous treatments have been attempted.

Quote: "I haven’t taken anything for it; this is the first time I'm seeking help."

- Progression over time:

The intensity of the symptoms has not significantly changed since onset.

Quote: "It feels more or less the same as when it started."

- Frequency of symptoms:

The symptoms are intermittent but occur several times a day.

Quote: "The trouble breathing comes and goes, maybe a few times a day."

- Impact on daily life and activities of daily living:

Matías finds it challenging to engage in activities that require physical exertion.

Quote: "It's become a hassle trying to do anything that requires some effort."

- Impact on work:

The symptoms have not significantly impacted his ability to work yet, given the sedentary nature of his job.

Quote: "Luckily, I can still work since my job's mostly at the desk."

- Impact on physical and mental wellbeing:

He is concerned about his symptoms, which is causing him mild anxiety.

Quote: "I won’t lie; it's got me worried—you read about these things and hope it never happens to you."

Systemic Symptoms:

- Fatigue: Negative Finding.

- Fever:

Negative Finding.

- Night sweats:

Negative Finding.

- Unintended weight loss:

Negative Finding.

- Generalised weakness:

Negative Finding.

- Malaise:

Negative Finding.

- Bowel habits:

Negative Finding.

- Urinary habits:

Negative Finding.

- Changes in sleep:

Negative Finding.

- Peripheral oedema:

Negative Finding.

Past Medical History:

No previous medical conditions, surgeries, hospitalisations, injuries, traumas, psychiatric history, history of substance abuse or significant health events reported.

Drug History:

Matías does not take any prescription medication, over-the-counter pills, or use alternative therapies. He reports no history of medication non-compliance or overdose incidents.

Quote: "I don't really take any medication, not even for a headache. I try to avoid it if I can."

Allergies:

Matías reports no known allergies to medications, foods, or environmental factors.

Quote: "I've never had any allergic reactions to anything, as far as I know."

Family History:

No family history of cardiac or autoimmune diseases. His parents are living and in good health, with only mild hypertension noted in his father.

Quote: "My parents are pretty healthy for their age—no heart issues or anything like that."

Social History:

Lifestyle: Matías leads a sedentary lifestyle with minimal physical activity.

Occupation: He is an engineer, primarily working at a desk.

Activities of Daily Living & Hobbies: Enjoys reading and video games during his leisure.

Smoking: Non-smoker.

Alcohol: Drinks socially, approximately 4 units per week.

Recreational Drug Use: None.

Diet: Predominantly plant-based with occasional fish.

Exercise: Minimal physical activity, walks on weekends.

Travel History: No recent travel.

Sexual History: Prefers not to discuss.

Driving Status: Drives to work regularly.

Cultural or Religious Practices: Agnostic, no particular practices.

Recent Life Events: Recently started a new job position.

Exposure to Hazards or New Environment: No known exposures.

Quote (1): “I’m not really the sporty type, I'd rather curl up with a good book or play some games.”

Quote (2): “I only drink on special occasions, nothing excessive.”

Quote (3): “I’ve been trying to eat healthily, mostly veggies and fish when I can.”

Ideas, Concerns, and Expectations:

Ideas: Matías believes his symptoms could be related to his sedentary lifestyle or possible stress from his new job.

Quote: “Maybe I’m just not getting enough exercise, or it might be stress from all the changes at work.”

Concerns: He is worried that his symptoms could indicate a serious underlying heart condition.

Quote: “I'm concerned this might be something like a heart condition or something bad I haven't caught onto yet.”

Expectations: Matías expects a thorough assessment, including diagnostic tests, to determine the cause of his symptoms.

Quote: “I would like to know exactly what's going on, maybe run some tests to get to the bottom of this.”

Observations:

Respirations (Breaths/min): 18

Oxygen Saturation (%): 97%

Air or Oxygen?: On room air

Blood Pressure (mmHg): 135/85

Pulse (Beats/min): 72

Consciousness (AVPU): Alert

Temperature (Celsius): 36.5°C

NEWS Total Score: 0

Physical Examination:

General inspection:

- No signs of cyanosis, shortness of breath, pallor, malar flush, or oedema noted.

- No objects or equipment indicate current clinical status except the presence of a smartwatch, indicating a possible interest in tracking health metrics.

Inspection of the hands:

- No abnormalities detected in colour, tar staining, xanthomata, arachnodactyly, clubbing, splinter haemorrhages, Janeway's lesions, Osler's nodes, or koilonychia.

- Normal temperature and capillary refill time, approximately 2 seconds.

Pulses and blood pressure:

- Regular radial pulse with no radio-radial delay.

- No collapsing pulse detected.

- Normal volume and character of the brachial pulse.

- Blood pressure measured as 135/85 mmHg in both arms, consistent with clinical observations.

- Normal volume and character of the carotid pulse.

Jugular venous pressure:

- No elevated jugular venous pressure observed.

- Negative hepatojugular reflux.

Inspection of the face:

- No conjunctiva pallor, corneal arcus, xanthelasma, or Kayser-Fleischer rings noted.

- No central cyanosis, angular stomatitis, or high arched palate detected; good dental hygiene.

Close inspection of the chest:

- No pectus excavatum, pectus carinatum, visible pulsations, abnormalities in shape, or signs of previous thoracic surgery.

Palpation of the chest:

- Apex beat located in the 5th intercostal space, midclavicular line, no displacement noted.

- No heaves or thrills palpated.

Auscultation of the chest:

- Normal heart sounds, no added sounds, murmurs, or friction rubs detected in any auscultation area.

- No radiation of murmurs noted in the carotid arteries.

- No evidence of an early diastolic murmur, pansystolic murmur or mid-diastolic murmur.

Inspection of the back:

- No deformities or scars visible on the back.

Palpation of the back:

- No sacral oedema palpated.

Auscultation of the back:

- Clear lung fields with no coarse crackles or absent air entry.

Examination of the legs:

- No pitting oedema at the ankles.

- No evidence of saphenous vein harvesting detected.

Special Tests:

No special tests are relevant at this stage.

Diagnostic Tests:

Blood Tests (Reference Ranges):

Full Blood Count (FBC):

Haemoglobin (Hb): 150 g/​L (Female: 115 - 165 g/​L, Male: 130 - 180 g/L)

Mean Corpuscular Volume (MCV): 89 fL (80 – 100 fL)

White Blood Cell Count: 7.2 x10^9/L (3.6 - 11.0 x10^9/L)

Platelets: 250 x10^9/L (140 - 400 x10^9/L)

Urea and Electrolytes:

Sodium: 140 mmol/L (133–146 mmol/L)

Potassium: 4.8 mmol/L (3.5–5.3 mmol/L)

Calcium (adjusted): 2.4 mmol/L (2.2-2.6 mmol/L)

Magnesium: 0.9 mmol/L (0.7–1.0 mmol/L)

Urea: 5.0 mmol/L (2.5 – 7.8 mmol/L)

Creatinine: 90 μmol/L (Male: 59–104 μmol/L, Female: 45–84 μmol/L)

Estimated Glomerular Filtration Rate (eGFR): >90ml/min/1.73m3

Liver Function Tests:

Alanine transferase (ALT): 35 iu/L (3-40 iu/L)

Aspartate transaminase (AST): 30 iu/L (3-30 iu/L)

Alkaline phosphatase (ALP): 80 umol/L (30-100 umol/L)

Gamma glutamyl transferase (yGT): 25 u/L (8-60 u/L)

Bilirubin: 15 umol/L (3-17 umol/L)

Albumin: 45 g/L (35-50 g/L)

Thyroid Function Tests:

Thyroid Stimulating Hormone (TSH): 2.5 mu/L (0.4-4.5 mu/L)

Free T3: 5.5 pmol/L (3.5-7.8 pmol/L)

Free T4: 15 pmol/l (9-25 pmol/l)

Other Tests:

CRP: 20 mg/L (< 10 mg/L)

NT-proBNP: 150 pg/mL (< 75 years: < 125 pg/mL, > 75 years: < 450 pg/mL)

Imaging Tests:

Echocardiography: Mild left ventricular dilation with preserved ejection fraction and no valvular lesions.

Other Tests:

ECG (Electrocardiogram): Sinus rhythm with no ST elevation, diffuse T wave inversions noted across anterior leads.

Treatment:

According to the UK's NICE guidelines and the BMJ Best Practice, the management of myocarditis primarily involves supportive care and treatment of any complications.

- Initiate supportive care, which may include managing pain and ensuring adequate oxygenation.

- For cases of myocarditis complicated by heart failure or arrhythmias, tailor treatment towards managing these specific conditions, including the use of diuretics, ACE inhibitors, and potentially antiarrhythmic drugs, following established guidelines for heart failure and cardiac arrhythmias.

- Advise Matías to avoid competitive sports and strenuous exercise until further evaluation, which may include a 3 to 6-month period depending on the recovery.

- Monitor cardiac function through serial echocardiography and ECG, especially given the detected T wave inversions and elevated NT-proBNP levels.

- Counsel Matías on the avoidance of non-steroidal anti-inflammatory drugs (NSAIDs) due to potential cardiac risks in myocarditis.

- Refer to a cardiologist for further evaluation, especially given the abnormal echocardiogram and ECG findings. This could involve a cardiac MRI, and potentially, an endomyocardial biopsy if indicated, though this is not routinely performed.

Monitoring:

- Regular monitoring of cardiac enzymes and ECG to track progression or resolution of myocarditis.

- Serial echocardiography every 3-6 months or as indicated by the cardiologist.

- Monitoring for signs of heart failure, such as worsening dyspnoea, orthopnoea, and peripheral oedema.

- Advise Matías to monitor for and report any new symptoms especially palpitations, syncope, or worsening shortness of breath.

- Follow-up visits should be scheduled within 1-2 weeks to re-evaluate clinical status and the effectiveness of supportive measures.

Prognosis:

- The prognosis varies with the aetiology and severity of myocarditis, but it can improve with adequate supportive care.

- Many patients have a self-limited course and recover completely, although some may develop dilated cardiomyopathy.

- The overall mortality rate is low.

- Factors influencing prognosis include the severity of initial presentation, development of heart failure or arrhythmias, and response to supportive care.

- It is crucial to monitor Matías's cardiac function over time as myocarditis can predispose to chronic cardiomyopathy or recurrent inflammation with subsequent viral illnesses.

Differential diagnoses:

1. Acute coronary syndrome: Myocarditis can mimic the symptoms of ACS, but Matías's age and ECG without ST elevation make it less likely.

2. Pericarditis: May present similarly, but echocardiography did not show the classic pericardial effusion or thickening.

3. Pulmonary embolism: Can cause chest pain and shortness of breath, but the absence of risk factors and normal oxygen saturation make it less likely.

4. Costochondritis: Typically associated with chest wall tenderness, which is not present in Matías's case.

5. Asthma or COPD exacerbation: Shortness of breath is a common finding, but without wheezing or a history of reactive airway disease, these are less likely causes.

Patient Questions:

Q1: "Could this be something I caught from someone else, like an infection?"

A1: "Myocarditis is often caused by a viral infection, but it is not typically contagious in the way a common cold might be."

Q2: "Are there any permanent damages to my heart because of this?"

A2: "Every case is different, but many people with myocarditis recover completely. We'll monitor your heart function closely to watch for any lasting effects."

Q3: "Is it safe for me to go back to work and exercise?"

A3: "It’s best to avoid strenuous activity and competitive sports for now. As for work, if it's sedentary, you should be able to continue, but listen to your body and rest if needed."

Q4: "Will I need to be hospitalized for this?"

A4: "At the moment, hospitalization is not necessary as we can manage your symptoms with supportive care. However, we will need to regularly monitor your condition."

Examiner Questions:

Q1: "What is the typical aetiology of myocarditis?"

A1: "Myocarditis is most commonly caused by viral infections, but it can also be caused by autoimmune diseases, medication reactions, or environmental toxins."

Q2: "Which diagnostic tests are indicative of myocarditis?"

A2: "ECG showing diffused T wave inversion, an elevation of cardiac enzymes such as NT-proBNP, and abnormalities on echocardiography can suggest myocarditis."

Q3: "How would one distinguish between acute pericarditis and myocarditis?"

A3: "Both conditions can present with chest pain, but pericarditis typically has a pericardial friction rub, pericardial effusion on echocardiography, and different ECG findings such as global ST elevation."

Q4: "What is the role of endomyocardial biopsy in myocarditis?"

A4: "Endomyocardial biopsy can confirm the diagnosis of myocarditis but is not routinely performed due to its invasive nature and potential complications. It's reserved for cases where the diagnosis is unclear and the result would change management."

Q5: "Describe the management of a patient diagnosed with myocarditis."

A5: "Management includes supportive care, such as pain management and potentially treating heart failure or arrhythmias if present. Patients should avoid strenuous activities, and cases are often referred to cardiology for further assessment and monitoring."

Q6: "What prognostic factors affect the outcome of patients with myocarditis?"

A6: "Prognosis can be affected by the severity and cause of myocarditis, the presence of cardiac dysfunction, and the individual’s response to treatment."

Keyword Filters:

Speciality Filter:

Cardiovascular; General Practice; Medicine of Older Adult

Presenting Complaint Filter:

Chest Pain; Breathlessness; Palpitations

Condition Filter:

Myocarditis

Location Filter:

General Practice

Case created by:

Chew Shun Wen, 4th year Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_06\_Myocarditis

Homepage Vignette:

## A 35-year-old male called Takeshi Yamamoto presents with chest pain and shortness of breath.

Individual Page Vignette:

You are an Emergency Medicine Registrar, and Takeshi Yamamoto, a 35-year-old graphic designer, has come to the Emergency Department complaining of chest pain and difficulty breathing.

Patient Name:

Takeshi Yamamoto [Tah-keh-shee Yah-mah-moh-toh], prefers to be called Takeshi.

Age:

13/04/1989

Location:

Emergency Department

Personality:

Takeshi is a calm, reflective person who expresses himself with careful consideration, often pausing thoughtfully before answering questions.

Presenting Complaint:

"There's this stabbing pain in my chest...sort of comes and goes, and I've been feeling really out of breath lately."

Symptoms:

- Site: The pain is mostly in the centre of my chest. "It's right here, in the middle."

- Onset: This has been going on for a couple of days. "I first noticed it earlier this week."

- Character: The pain is sharp and stabbing. "It feels like I'm being poked with something."

- Radiation: The pain stays in my chest. "It doesn't move anywhere; it just stays put."

- Associated Symptoms: I've been feeling unusually tired. "Along with the pain, there's this overwhelming tiredness."

- Timing: It's intermittent but gets worse with activity. "When I try to do anything active, the pain gets sharper."

- Exacerbating and Relieving Factors: Physical exertion makes it worse. Rest seems to help. "If I sit down and rest, it gradually eases off."

- Severity: When it hits, it can be quite severe. "At its worst it's perhaps an eight out of ten."

- Chest pain or discomfort: Positive. "The pain is quite worrisome; I haven't felt anything like it before."

- Shortness of breath: Positive. "I can't seem to catch my breath even with light activity."

- Palpitations: Positive. "My heart feels like it's racing sometimes."

- Syncope: Negative

- Nausea: Negative

- Vomiting: Negative

- Intermittent claudication: Negative

- Peripheral oedema: Negative

History of Presenting Complaint:

- Duration of symptoms: Approximately two days. "It's been a problem for the last couple of days."

- Previous treatments: None. "I haven’t taken anything for it—wanted to see what you thought first."

- Progression over time: The symptoms seem to be getting worse. "It started out mild but seems to be ramping up a bit."

- Frequency of symptoms: It comes and goes throughout the day. "There's no set pattern really."

- Impact on daily life and activities of daily living: It’s interfering with my daily routine. "It's hard to concentrate on my work when I'm in pain and gasping for air."

- Impact on work: It’s reducing my productivity. "I had to leave work early yesterday because I didn't feel well."

- Impact on physical and mental wellbeing: It's causing significant concern. "I can't stop thinking about what might be causing this."

Quote:

"I'm not one to worry usually, but this has got me feeling rather anxious. I've been in good health all my life, and this sudden onset is puzzling."

Systemic Symptoms:

- Fatigue: Positive. "I've been needing to take more breaks just to get through the day."

- Fever: Negative

- Night sweats: Negative

- Unintended weight loss: Negative

- Generalised weakness: Negative

- Malaise: Negative

- Bowel habits: Normal

- Urinary habits: Normal

- Changes in sleep: Negative

- Peripheral oedema: Negative

Quote:

"I'm weary, more than normal, but no other systemic symptoms that I can tell."

Past Medical History:

- Surgeries: Negative

- Hospitalizations: None

- Previous injuries or traumas: Broke an arm in high school playing basketball. "Had a cast for six weeks after a bad fall."

- Psychiatric or psychological history: Negative

- History of substance abuse or addiction: Negative

- Immunizations and vaccination history: All childhood vaccinations are up to date.

- Any other relevant medical conditions or significant health events: Negative

Quote:

"Other than that basketball injury years ago, my medical history's pretty clean."

Drug History:

No daily medications or known issues with past drug use.

Quote:

"I stay clear of drugs unless absolutely needed."

Allergies:

No known allergies.

Quote:

"Luckily, I don't have allergies to complicate things."

Family History:

Mother diagnosed with rheumatoid arthritis. There is no known family history of heart disease.

Quote:

"My mum struggles with arthritis, but that’s the extent of our family health woes."

Social History:

Lifestyle:

Takeshi leads a relatively active lifestyle; enjoys jogging outside of work hours.

Occupation:

Graphic designer, which involves lengthy periods at a computer.

Activities of Daily Living & Hobbies:

Enjoys outdoor activities, drawing, and playing the guitar.

- Smoking: Never smoked (0 pack-years)

- Alcohol: Drinks occasionally, about 4 units on the weekend.

- Recreational Drug Use: None

- Diet: Primarily pescatarian with occasional indulgences in sweets.

- Exercise: Jogs three times a week.

Quote:

"I make sure to get out for a run regularly—it clears my head."

"I do enjoy a beer or two with friends when we go out."

"Keeping fit is important to me, not just for health, but it's also a great stress reliever."

Ideas, Concerns, and Expectations:

Ideas:

"I read somewhere that chest pain could be related to the heart, but I'm not sure what to make of it with all the other things going on."

Concerns:

"I'm not getting any younger, and I just hope this isn't something chronic or life-changing."

Expectations:

"I would like to understand what's happening and get started on whatever treatment is needed. I just want to get back to my normal self."

Quote:

"The intermittent nature of these symptoms is quite concerning. I trust that the professionals will guide me correctly."

Observations:

Respirations (Breaths/min): 20

Oxygen Saturation (%): 94% on room air

Air or Oxygen?: Room air

Blood Pressure (mmHg): 135/85

Pulse (Beats/min): 88 regular

Consciousness (AVPU): Alert

Temperature (Celsius): 37.1°C

NEWS Total Score:

0 (All observations within normal limits, with 0 points each.)

Physical Examination:

General inspection:

- Alert and cooperative, exhibiting signs of discomfort when breathing deeply.

Inspection of the hands:

- Warm with no peripheral cyanosis; brisk capillary refill under 2 seconds.

Pulses and blood pressure:

- Radial and brachial pulses are regular with no delay or discrepancy between sides; blood pressure is within normal limits.

Jugular venous pressure:

- Not elevated and no observable hepatojugular reflex.

Inspection of the face:

- No pallor or xanthelasma; oral examination is unremarkable.

Palpation of the chest:

- Apex beat palpable in the 5th intercostal space; no parasternal heave or palpable thrills.

Auscultation of the chest:

- Heart sounds S1 and S2 audible with no additional murmurs, rubs, or gallops; the lung field is clear without adventitious sounds.

Inspection of the back:

- No apparent kyphosis or scoliosis; skin is intact without lesions.

Palpation of the back:

- No tenderness or signs of sacral oedema.

Examination of the legs:

- Symmetrical with no pitting oedema; good peripheral pulses, and no signs of deep vein thrombosis.

Special Tests:

- Special cardiac tests including troponin measurements and echocardiography may be considered to further evaluate myocardial inflammation or dysfunction.

Diagnostic Tests:

Following NICE guidelines, initial testing should include cardiac biomarkers such as troponin levels, an ECG, and a chest X-ray if respiratory involvement is suspected.

Treatment:

Guidelines from NICE, CKS and BNF for myocarditis suggest:

- Hospital admission for cardiac monitoring and supportive treatment, including bed rest and symptom management.

- Use of NSAIDs for pain relief is controversial and should be used cautiously.

- For severe myocarditis, treatment could include intravenous heart failure medications, diuretics, and possibly immunosuppressive therapy.

Monitoring:

- Regular clinical reviews to monitor symptoms, vital signs, and response to treatment.

- Follow-up with an ECG and possibly an echocardiogram to monitor the heart function.

Prognosis:

- The prognosis depends on severity, but many cases of viral myocarditis resolve with rest and supportive care.

- Severe or fulminant myocarditis may result in cardiac dysfunction and requires intensive treatment.

Differential diagnoses:

1. Pericarditis - which typically presents with pleuritic chest pain relieved by sitting up and leaning forward.

2. Acute coronary syndrome - more likely in older patients with risk factors for coronary artery disease.

3. Pulmonary embolism - could present with chest pain and shortness of breath but would likely also have signs of deep vein thrombosis.

Speciality Filter:

Cardiovascular; Acute and Emergency; Medicine of Older Adult; General Practice; Respiratory.

Presenting Complaint Filter:

Chest Pain; Shortness of Breath; Palpitations; Fatigue; Fever.

Condition Filter:

Myocarditis;

Location Filter:

General Practice; Clinic; Accident & Emergency

Case created by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_07\_Myocarditis

Homepage Vignette:

## A 22-year-old male called Aviv Rahmani presents with acute chest pain and shortness of breath.

Individual Page Vignette:

You are a General Practitioner and Aviv Rahmani, a 22-year-old software developer, has come to your clinic complaining of acute chest pain and difficulty breathing.

Patient Name:

Aviv Rahmani (Ah-VEEV rah-HMAH-nee) prefers to be called Aviv.

Age:

13/06/2002

Location:

Clinic

Personality:

Aviv is a perceptive and articulate individual who speaks with clarity. He approaches conversations with a balance of curiosity and cautiousness, typically seeking comprehensive explanations for his concerns.

Presenting Complaint:

Aviv reports intense discomfort in his chest and has experienced episodes of breathlessness over the past few days, prompting him to seek medical consultation.

Quote:

"I've been feeling this unbearable squeezing in my chest, and it's been hard to catch my breath, especially after walking up the stairs."

Symptoms:

Site: The pain is centralised in the chest and Aviv says, "It feels like there's a vice wrapped around my chest."

Onset:Case Code:

XXX\_XX\_Myocarditis

Homepage Vignette:

A 22-year-old male called Aviv Rahmani presents with acute chest pain and shortness of breath.

Individual Page Vignette:

You are a General Practitioner and Aviv Rahmani, a 22-year-old software developer, has come to your clinic complaining of acute chest pain and difficulty breathing.

Patient Name:

Aviv Rahmani (Ah-VEEV rah-HMAH-nee) prefers to be called Aviv.

Age:

13/06/2002

Location:

Clinic

Personality:

Aviv is a perceptive and articulate individual who speaks with clarity. He approaches conversations with a balance of curiosity and cautiousness, typically seeking comprehensive explanations for his concerns.

Presenting Complaint:

Aviv reports intense discomfort in his chest and has experienced episodes of breathlessness over the past few days, prompting him to seek medical consultation.

Quote:

"I've been feeling this unbearable squeezing in my chest, and it's been hard to catch my breath, especially after walking up the stairs."

Symptoms:

Site: The pain is centralised in the chest and Aviv says, "It feels like there's a vice wrapped around my chest."

Onset:The pain began two days ago, and Aviv remarks, "It all started a couple of days back when I was at home just watching telly."

Character: Aviv describes the pain as sharp and oppressive and says, "The pain is sharp, almost like someone's pressing down hard on my breastbone."

Radiation: The pain does not radiate, and he confirms, "No, the pain doesn't go anywhere else; it just sits there in the centre of my chest."

Associated Symptoms: Aviv has experienced episodes of breathlessness and says, "Along with the pain, I've had a few bouts where I just couldn't breathe properly."

Timing: The symptoms have been intermittent and Aviv shares, "The pain and the breathlessness come and go; there's no telling when they'll hit."

Exacerbating and Relieving Factors: Aviv notes that resting seems to help, explaining, "When I sit down and rest a bit, I do notice the pain easing off."

Severity: He rates the pain as 7 out of 10 and admits, "On a scale, I'd say the pain gets up to a seven; it's bad enough to stop me in my tracks."

Chest pain or discomfort: Positive - "My chest hurts right in the middle, it's quite troubling."

Shortness of breath: Positive - "I find myself gasping for air at times, even when I'm not doing much."

Palpitations: Negative

Syncope: Negative

Nausea: Negative

Vomiting: Negative

Intermittent claudication: Negative

Peripheral oedema: Negative

History of Presenting Complaint:

Duration of symptoms: Two days - "It's been two days since this all began."

Previous treatments: None attempted - "I haven't tried anything for it, just some paracetamol for the pain, but no luck."

Progression over time: Symptoms remain consistent - "It's been about the same since it started, hasn't gotten worse, thankfully."

Frequency of symptoms: Symptoms occur sporadically - "It's hard to predict when the pain or the shortness of breath will come."

Impact on daily life and activities of daily living: Noticeable impact - "It's definitely thrown me off, I find myself hesitating before doing routine things."

Impact on work: Work is affected - "Yesterday, I had to log off and just lie down because of the discomfort."

Impact on physical and mental wellbeing: Significant distress - "This whole situation is causing me quite a bit of stress."

General quote: "This pain started a couple of days ago, and it's really making it hard to get on with my day. I've not tried much in terms of treatment, because I wasn't sure what was happening. It's worrying, especially when it messes with my breath."

Systemic Symptoms:

Fatigue: Negative

Fever: Negative

Night sweats: Negative

Unintended weight loss: Negative

Generalised weakness: Negative

Malaise: Negative

Bowel habits: Normal

Urinary habits: Normal

Changes in sleep: Negative

Peripheral oedema: Negative

Past Medical History:

Surgeries: None - "I've never had any surgery."

Hospitalizations: None - "No, I've not been hospitalized before."

Previous injuries or traumas: Negative

Psychiatric or psychological history: Negative

History of substance abuse or addiction: Negative

Immunizations and vaccination history: Up-to-date - "Yes, I'm pretty sure I'm up to date with all my jabs."

Any other relevant medical conditions or significant health events: None reported - "Nothing major in terms of health events or conditions."

Quote: "I've been quite healthy, generally. No surgeries or hospital stays, and I've kept up with my immunizations."

Drug History:

Aviv takes no regular medications and states, "I'm not on any medication regularly, just some paracetamol these past two days for the chest pain."

Allergies:

No known allergies - "Nope, no allergies that I'm aware of."

Family History:

There are no significant known medical conditions in Aviv's family. He mentions, "No, there's nothing in the family that I know of. Everyone is pretty healthy on the whole."

Social History:

Lifestyle: Aviv is an avid reader and enjoys keeping up with technology trends.

Occupation: Aviv works as a software developer, which involves sedentary work.

Activities of Daily Living & Hobbies: He enjoys cycling on weekends and cooking for relaxation.

Smoking: Non-smoker

Alcohol: Consumes 5-6 units of alcohol on weekends only - "I only drink socially, on weekends. A couple of pints or so."

Recreational Drug Use: Negative

Diet: He maintains a balanced diet - "I try to eat healthily; lots of veggies, fruits, and lean protein."

Exercise: Cycles on weekends - "I go for a bike ride every Saturday morning."

Travel History: No recent travel

Sexual History: Aviv prefers not to discuss this aspect openly.

Driving Status: Full driving license, no recent issues - "Yeah, I drive to work sometimes, no problems there."

Cultural or Religious Practices: Aviv is culturally Jewish but not practising - "I'm Jewish by heritage, but I don't actively practise or anything."

Recent Life Events: No recent significant events - "It's been pretty status quo for me."

Exposure to Hazards or New Environment: No exposure - "No, nothing out of the ordinary."

Ideas, Concerns, and Expectations:

Ideas: Aviv suspects his symptoms could be stress-related but isn't certain - "I did wonder if it's all just stress, but then, the pain is quite something, you know?"

Concerns: Aviv is worried about the possibility of a serious heart condition - "The thought did cross my mind, could this be something like a heart problem?"

Expectations: Aviv expects to understand his condition and receive appropriate treatment - "I'm hoping to get to the bottom of this and find out what's going on, and how to fix it."

Observations:

Respirations (Breaths/min): 18

Oxygen Saturation (%): 96%

Air or Oxygen?: Room Air

Blood Pressure (mmHg): 125/80

Pulse (Beats/min): 88

Consciousness (AVPU): Alert

Temperature (Celsius): 36.8

NEWS Total Score: 0

Physical Examination:

General inspection. No cyanosis, apparent shortness of breath, pallor, malar flush, or oedema; no medical equipment present.

Inspection of the hands: Normal appearance; hands are warm with normal capillary refill time.

Pulses and blood pressure: Radial pulse is regular; no radio-radial delay; no collapsing pulse; normal brachial pulse volume and character; blood pressure is symmetrical in both arms; carotid pulse volume and character within normal limits.

Jugular venous pressure: Not elevated with no sign of hepatojugular reflux.

Inspection of the face: Inspect the eyes for normal conjunctiva, no corneal arcus, no xanthelasma, and no Kayser-Fleischer rings; inspect the mouth for no central cyanosis and good dental hygiene.

Close inspection of the chest: No visible pulsations and no surgical scars.

Palpation of the chest: Apex beat located within the normal area, no heaves or thrills palpable.

Auscultation of the chest: No added sounds or murmurs heard in all valve areas with both diaphragm and bell.

Inspection of the back: No deformities or scars noted.

Palpation of the back: No sacral oedema present.

Auscultation of the back: Lung fields clear without any coarse crackles or absent air entry.

Examination of the legs: No evidence of pitting oedema or saphenous vein harvesting.

Diagnostic Tests:

Full Blood Count (FBC):

Haemoglobin (Hb): 155 g/L (Male: 130 - 180 g/L)

Mean Corpuscular Volume (MCV): 92 fL (80 – 100 fL)

White Blood Cell Count: 7.5 x10^9/L (3.6 - 11.0 x10^9/L)

Platelets: 250 x10^9/L (140 - 400 x10^9/L)

Urea and Electrolytes:

Sodium: 140 mmol/L (133–146 mmol/L)

Potassium: 4.1 mmol/L (3.5–5.3 mmol/L)

Calcium (adjusted): 2.4 mmol/L (2.2-2.6 mmol/L)

Magnesium: 0.9 mmol/L (0.7–1.0 mmol/L)

Urea: 4.5 mmol/L (2.5 – 7.8 mmol/L)

Creatinine: 82 μmol/L (Male: 59–104 μmol/L)

Estimated Glomerular Filtration Rate (eGFR): 95ml/min/1.73m3 (>90ml/min/1.73m3)

Liver Function Tests:

Alanine transferase (ALT): 30 iu/L (3-40 iu/L)

Aspartate transaminase (AST): 28 iu/L (3-30 iu/L)

Alkaline phosphatase (ALP): 70 umol/L (30-100 umol/L)

Gamma glutamyl transferase (yGT): 40 u/L (8-60 u/L)

Bilirubin: 10 umol/L (3-17 umol/L)

Albumin: 45 g/L (35-50 g/L)

Serum osmolality: 290 mOsmol/kg (275 – 295 mOsmol/kg)

High-sensitivity cardiac troponin T (hs-cTnT): Slightly elevated

ECG: Sinus rhythm with no acute changes

Echocardiography: Mild global hypokinesia, no significant valvular abnormalities

Condition:

Myocarditis

Patient Questions:

1. "So, what does an elevated troponin level mean? Is it serious?"

- An elevated troponin level indicates some injury to the heart muscle. It needs further investigation to ascertain the cause, and we'll be looking for any signs of myocarditis or other heart conditions which can be serious, but they are often manageable with the right treatment.

2. "Can I go back to work while we figure this out?"

- Given your symptoms, I'd advise a few days rest, at least until we have a better understanding of your condition. Physical stress on the heart should be avoided for now.

3. "These tests and the word 'myocarditis' sound quite serious. Will this affect me long-term?"

- Myocarditis can be serious, but the prognosis varies widely. Some patients recover completely with no lasting effects, while others might have long-term heart issues. We'll do our best to treat you and monitor your condition closely.

4. "Could this have been caused by an infection I didn't know about?"

- Yes, myocarditis can sometimes be caused by viral infections. We'll review your history and possibly run a few more tests to see if that might have been the trigger for you.

Examiner Questions:

1. What are the clinical signs of myocarditis that might be found on examination?

- Possible clinical signs include tachycardia, murmurs, peripheral oedema, and signs of heart failure, but these are not always present in myocarditis.

2. What are common aetiologies of myocarditis?

- Common causes include viral infections, such as enteroviruses, adenovirus, and parvovirus B19, among others. It can also be caused by autoimmune diseases, medication reactions, and exposure to toxins.

3. How would you manage a patient with suspected myocarditis?

- Management includes supportive care, monitoring, possibly anti-inflammatories or immunosuppression in cases with autoimmune involvement, and addressing any complications such as arrhythmias or heart failure.

4. What are the indications for endomyocardial biopsy in myocarditis?

- Endomyocardial biopsy is considered when there's a high suspicion of myocarditis with hemodynamic compromise, when the diagnosis of myocarditis will change management, or if there is a suspicion of specific types of myocarditis such as giant cell or eosinophilic myocarditis.

5. What are the complications of myocarditis that one should monitor for?

- Complications include arrhythmias, heart failure, cardiogenic shock, thromboembolism, and in severe cases, cardiac arrest.

Treatment:

- Admit to hospital for cardiology review and close monitoring.

- Provide supportive care including bed rest and analgesia such as acetaminophen or nonsteroidal anti-inflammatory drugs (NSAIDs) for symptom relief.

- Consider using intravenous immunoglobulin (IVIG) and/or corticosteroids if myocarditis is thought to be due to an autoimmune reaction or if there is severe heart failure.

- Monitor for complications such as arrhythmias and assess using echocardiography, cardiac MRI, or endomyocardial biopsy if appropriate.

- Cardioprotective strategies such as angiotensin-converting enzyme (ACE) inhibitors or beta-blockers may be initiated if there's left ventricular dysfunction.

- Avoid non-dihydropyridine calcium channel blockers and NSAIDs if heart failure is present.

- Address any potential infectious aetiology with appropriate antimicrobials if an infectious cause is identified.

Monitoring:

- Regular cardiac function monitoring through echocardiography.

- Monitor cardiac enzymes and inflammatory markers like CRP, ESR.

- Assess symptomatic relief from pain and breathlessness.

- Check for signs of heart failure, arrhythmias, or cardiogenic shock.

- Provide follow-up appointments at regular intervals post-discharge.

- If patient condition deteriorates, consider referral to a cardiology specialist.

Prognosis:

- Varies with the severity and cause of myocarditis.

- Many patients with uncomplicated myocarditis recover fully.

- Some may develop dilated cardiomyopathy or chronic heart failure.

- Those with severe myocarditis may experience life-threatening arrhythmias or cardiogenic shock.

- Early intervention tends to improve outcomes.

Differential diagnoses:

1. Acute Coronary Syndrome - Less likely given his age and lack of risk factors, but cannot be completely ruled out without cardiac enzyme results and ECG.

2. Pericarditis - Overlapping symptoms with myocarditis, but ECG findings may distinguish the two conditions.

3. Pulmonary Embolism - Can cause chest pain and shortness of breath, but there are no risk factors or clinical signs to suggest this diagnosis in this case.

Keyword Filters:

Speciality Filter:

Cardiovascular

Presenting Complaint Filter:

Chest Pain; Shortness of Breath

Condition Filter:

Myocarditis

Location Filter:

Clinic

Case created by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_08\_Myocarditis

Homepage Vignette:

## A 22-year-old male called Einar presents with chest pain and shortness of breath.

Individual Page Vignette:

As a healthcare provider, you are meeting a patient named Einar, a 22-year-old software developer, in the Emergency Department. Einar is presenting with acute chest pain and difficulty breathing.

Patient Name:

Kazuo Yamazaki /ˈkɑːzoʊ jɑːmɑːˈzɑːki/; he prefers being called Kazuo.

Age:

14/05/2002

Location:

Emergency Department

Personality:

Kazuo is an analytical thinker, often speaking in a methodical and deliberate manner. His questions are direct, and he values clear, evidence-based explanations. Despite the seriousness of his presentation, he remains calm and composed.

Presenting Complaint:

Kazuo has come to the Emergency Department with a complaint of sudden onset, sharp chest pain that has been persisting for several hours, accompanied by difficulty breathing.

Quote:

"I've been feeling this sharp pain right in my chest here, like someone's squeezing inside. And it's tough to catch my breath properly."

Symptoms:

Site: The pain is central in the chest. Quote: "The pain is rather central, right here in the middle of the chest."

Onset: The pain began suddenly a few hours ago. Quote: "It just came out of nowhere while I was working this morning."

Character: Described as sharp and squeezing. Quote: "It's a sharp pain, like a vice grip around my chest."

Radiation: The pain does not radiate. Quote: "No, the pain stays right here; it doesn't go anywhere else."

Associated Symptoms: Difficulty breathing. Quote: "Along with the pain, I find it hard to breathe, like I can't get enough air."

Timing: Constant pain since onset. Quote: "Once it started, the pain hasn't stopped or changed rhythm."

Exacerbating and Relieving Factors: Neither exacerbation nor relief with change of position or activity. Quote: "Nothing I do makes it any better or worse, it's just there."

Severity: Pain is moderate to severe. Quote: "On a scale of one to ten, it's around a seven or eight, quite bothersome."

Chest pain or discomfort: Positive

Quote: "I have this constant, squeezing pain in my chest."

Shortness of breath: Positive

Quote: "I feel like I'm struggling to get air in, which is quite distressing."

Palpitations: Negative

Syncope: Negative

Nausea: Negative

Vomiting: Negative

Intermittent claudication: Negative

Peripheral oedema: Negative

History of Presenting Complaint:

Duration of symptoms: Symptoms have been present for several hours. Quote: "I've had this pain and breathing issue since the morning."

Previous treatments: None. Quote: "No, I've not taken anything for it; I came straight here."

Progression over time: Symptoms have been persistent without progression. Quote: "It's been steady like this all day, no better, no worse."

Frequency of symptoms: This is the first occurrence. Quote: "I've never felt anything like this before."

Impact on daily life and activities of daily living: Significant impact with an inability to perform regular activities. Quote: "I've had to stop what I was doing today because of this."

Impact on work: Unable to work due to symptoms. Quote: "I had to leave work; I just couldn't focus or carry on."

Impact on physical and mental wellbeing: Causing anxiety due to sudden onset. Quote: "It's quite unsettling, not knowing what's going on with my body."

General quote for this section:

Quote:

"I've never had to deal with health issues really, so having this sudden chest pain and trouble breathing has thrown my entire day off. Had to leave from work, and here I am, wondering what's happening."

Systemic Symptoms:

Fatigue: Negative

Fever: Negative

Night sweats: Negative

Unintended weight loss: Negative

Generalised weakness: Negative

Malaise: Negative

Bowel habits: Normal

Urinary habits: Normal

Changes in sleep: Negative

Peripheral oedema: Negative

Quote:

"No, none of those other problems. Just this pain and the breathing issue are my concerns."

Past Medical History:

Surgeries: Negative

Hospitalizations: Negative

Previous injuries or traumas: Negative

Psychiatric or psychological history: Negative

History of substance abuse or addiction: Negative

Immunizations and vaccination history: Complete and up to date. Quote: "I've had all my jabs as scheduled, do keep up with those."

Any other relevant medical conditions or significant health events: Negative

Quote:

"Fortunate to say I've been pretty healthy overall—no hospital visits, no surgeries, and mentally, I'm generally in a good space."

Drug History:

Kazuo does not take any prescription or over-the-counter medications regularly. No herbal supplements or alternative therapies noted.

Quote:

"Medicines? No, not really. I take a paracetamol occasionally for a headache, but that's about it."

Allergies:

No known allergies.

Quote:

"Allergies? None that I'm aware of, nothing's ever caused me any trouble."

Family History:

Kazuo is unaware of any hereditary conditions in his family.

Quote:

"Nobody in the family has any chronic illnesses that I know of. We seem to be a resilient bunch."

Social History:

Lifestyle: Enjoys gaming and coding, often leading to prolonged periods of sitting.

Occupation: Software developer.

Activities of Daily Living & Hobbies: Independent in all activities of daily living; enjoys cycling on weekends.

Smoking: Non-smoker.

Alcohol: Consumes alcohol socially, approximately 4 units a week.

Recreational Drug Use: Negative.

Diet: Mostly balanced diet with a tendency to skip meals due to work demands.

Exercise: Casual cyclist, approximately an hour during weekends.

Quotes:

"As a coder, I get caught in the flow and often forget meals or that I've been sitting for hours."

"On the weekends, I like to detox from the digital life with a bit of cycling. Nothing too intense, just around the park a few times."

"I'm not one for smokes or drugs. A pint with mates on Friday? That, I'll take."

Ideas, Concerns, and Expectations:

Ideas:

Kazuo thinks the pain might be related to his sedentary job and stress.

Quote:

"With the long hours I put in at the desk, initially I thought maybe it's just stress or bad posture. But this feels a lot more serious than that."

Concerns:

He is worried that the chest pain is an indication of something severe like a heart condition.

Quote:

"I can't shake off the concern that this might be something heart-related, and that's frankly quite scary."

Expectations:

Kazuo expects to receive a thorough examination and clear explanations for his symptoms, with prompt treatment.

Quote:

"I'm hoping you can figure out what's wrong and set it right. I need to be functioning for my job, and this isn't sustainable."

Observations:

Respirations (Breaths/min): 18

Oxygen Saturation (%): 97

Air or Oxygen?: Room Air

Blood Pressure (mmHg): 125/80

Pulse (Beats/min): 78

Consciousness (AVPU): Alert

Temperature (Celsius): 37.2

NEWS Total Score: 0

Physical Examination:

General inspection:

- No cyanosis, shortness of breath, pallor, malar flush, or oedema.

Inspection of the hands:

- Hands are normal in appearance, good colouration, no abnormalities.

Pulses and blood pressure:

- Radial pulse is regular, no delay. Blood pressure is within normal range in both arms.

Examination structure (look, feel, move or inspect, palpate, percuss, auscultate) included as necessary.

Special Tests:

Cardiac enzymes (Troponins) will be indicated due to the presenting complaints of chest pain.

Diagnostic Tests:

Blood Tests (Reference Ranges):

Full Blood Count (FBC):

Haemoglobin (Hb): 150 g/L (Female: 115 - 165 g/L, Male: 130 - 180 g/L)

Mean Corpuscular Volume (MCV): 90 fL (80 – 100 fL)

White Blood Cell Count: 6.0 x10^9/L (3.6 - 11.0 x10^9/L)

Platelets: 250 x10^9/L (140 - 400 x10^9/L)

Liver Function Tests:

Alanine transaminase (ALT): 25 iu/L (3-40 iu/L)

Bilirubin: 10 umol/L (3-17 umol/L)

Coagulation:

Prothrombin Time (PT): 12 seconds (10 – 14 seconds)

Activated Partial Thromboplastin Time (APTT): 30 seconds (25– 35 seconds)

Troponins:

High-sensitivity Troponin T: Elevated

Other Tests:

ECG: ST elevations in multiple leads, consistent with myopericarditis.

Echocardiography: Reduced ejection fraction, global hypokinesia without evidence of ventricular dilation.

Condition:

Myocarditis

Patient Questions:

"Why are my chest and breathing just getting worse instead of better?" - Possible Answer: "Chest pain and difficulty breathing can be symptoms of many conditions. We are conducting tests to identify the cause and will provide the appropriate treatment based on the results."

"What sort of tests will you be running to find out what's wrong with me?" - Possible Answer: "We'll do a blood test to check for markers of heart muscle damage, an ECG to look at the heart's electrical activity, and possibly an echocardiogram to see the heart structure and function."

"Are there any long-term effects that I should be worried about?" - Possible Answer: "This depends on the cause of your symptoms. Myocarditis can sometimes have long-term effects on heart function, but many people recover fully. We will discuss more once we have a clear diagnosis."

"So, will I need to be admitted, or can I go home today?" - Possible Answer: "That will depend on the results of your tests and how well you respond to initial treatment. We may need to monitor you in the hospital if the tests suggest myocarditis or any other serious condition."

Examiner Questions:

"What investigations would you conduct for a young adult presenting with chest pain and shortness of breath?" - Possible Answer: "I would order an ECG, chest X-ray, full blood count, high-sensitivity troponin, and possibly an echocardiogram to assess for myocarditis or other cardiac conditions."

"Can you describe the typical ECG changes in myocarditis?" - Possible Answer: "In myocarditis, the ECG may show ST segment elevations or depressions, T wave inversion, and arrhythmias."

"What is the general treatment approach for myocarditis?" - Possible Answer: "Treatment usually consists of supportive care, managing symptoms, monitoring cardiac function, and it may involve medications like ACE inhibitors, beta-blockers, or corticosteroids if the myocarditis is associated with an autoimmune response."

"How would you explain to the patient the need for hospitalisation and monitoring?" - Possible Answer: "I would tell the patient that we need to closely monitor their heart function and response to treatment, as myocarditis can sometimes worsen rapidly, and that it's safest to be in the hospital for this."

"What follow-up care would you recommend for a patient diagnosed with myocarditis?" - Possible Answer: "The patient would require follow-up with cardiology for repeat echocardiograms to monitor ejection fraction and cardiac function, along with lifestyle modifications and adherence to medications if prescribed."

Treatment:

Based on NICE, CKS, BNF, and BMJ Best Practice guidelines for myocarditis:

- Provide supportive care, including bed rest during the acute phase.

- Administer analgesics such as paracetamol for pain.

- Consider non-steroidal anti-inflammatory drugs (NSAIDs) for the management of pain and inflammation, if not contraindicated.

- Monitor cardiac function with regular ECGs and echocardiograms.

- If myocarditis is confirmed, consider the use of ACE inhibitors, beta-blockers, and diuretics to manage symptoms of heart failure if present.

- Corticosteroids and immunosuppressive therapy may be indicated in cases of myocarditis with a suspected autoimmune aetiology.

- Review and potentially withdraw any potentially cardiotoxic drugs.

- In severe cases, and especially in the presence of refractory arrhythmias or cardiogenic shock, referral to a specialist with the possibility of more advanced treatments such as mechanical support or immunoglobulin therapy.

- If allergic to NSAIDs or if initial treatment is ineffective, consider alternative pain management strategies in conjunction with a pain specialist.

Monitoring:

- Monitor cardiovascular vital signs closely, particularly ECG and blood pressure.

- Check cardiac enzymes such as troponins and natriuretic peptides regularly to assess cardiac injury or strain.

- Follow-up echocardiography to assess cardiac function and presence of complications like ventricular dysfunction or dilation.

- Monitor for signs of heart failure and treat according to guidelines if symptoms develop.

- Frequent clinical reviews to assess response to treatment and adjust the treatment plan accordingly.

- Advise on continued follow-up with a cardiologist post-discharge, with visits initially at one month, then every 3-6 months depending on recovery.

Prognosis:

- The prognosis of myocarditis varies depending on the severity at presentation and the patient's overall health.

- Many patients with myocarditis recover completely, but some may develop dilated cardiomyopathy and chronic heart failure.

- The timeline for improvement can range from weeks to months.

- Factors such as age, overall health status, the severity of cardiac involvement, and adherence to treatment can influence treatment response.

- Close monitoring and follow-up are essential to detect and manage potential complications.

Differential diagnoses:

1. Pericarditis - less likely due to the presence of elevated cardiac enzymes which are more consistent with myocarditis.

2. Acute coronary syndrome - less likely in a young adult without risk factors and with a different ECG presentation.

3. Pulmonary embolism - less likely due to normal oxygen saturation and absence of risk factors for thromboembolism.

4. Costochondritis - would not typically cause significant changes in ECG or elevated cardiac enzymes.

Speciality Filter:

Cardiovascular; Emergency

Presenting Complaint Filter:

Chest Pain; Shortness of Breath; Palpitations

Condition Filter:

Myocarditis

Location Filter:

Accident & Emergency

Case created by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_09\_AorticAneurysm

Homepage Vignette:

## A 68-year-old female called Elise Dubois presents with a pulsatile abdominal mass and lower back pain.

Individual Page Vignette:

You are a consultant in the Emergency Department, and Elise Dubois, a 68-year-old retired librarian, has come in with a noticeable pulsatile mass in her abdomen accompanied by back pain.

Patient Name:

Elise Marie Dubois (Eh-LEES Doo-BWAH), prefers to be called Elise.

Age:

07/02/1956

Location:

Emergency Department

Personality:

Elise is a well-spoken and articulate woman, displaying a keen attention to detail and a strong sense of curiosity. Despite the discomfort, she engages in clear and concise communication, reflecting the disciplined nature of a retired librarian.

Presenting Complaint:

Elise reports a concerning pulsatile mass in her abdomen that she accidentally discovered, as well as persistent lower back pain.

Quote:

"I happened to notice this rhythmic throbbing in my tummy while resting, and there's been this persistent ache in my lower back that won't ease off."

Symptoms:

Site: Abdominal mass midline near the navel and lower back pain.

Quote: "Right here around my navel, I feel this odd pulsing, and my lower back has been achy for weeks."

Onset: Noticed the abdominal mass two weeks ago; back pain started around the same time.

Quote: "I first felt this strange sensation a couple of weeks back, and that's also when the back pain kicked in."

Character: Describes the abdominal mass sensation as a "heartbeat," and the back pain as a "dull constant ache."

Quote: "It's like there's a heartbeat in my tummy you can actually see, and my back just has this dull, nagging pain."

Radiation: The back pain radiates to the flanks.

Quote: "The ache in my back sort of spreads around to my sides at times."

Associated Symptoms: No other symptoms associated with the abdominal mass; however, bouts of nausea accompany the back pain.

Quote: "Apart from this weird throbbing, I've had no other issues there, though the back pain seems to make me feel a bit queasy at times."

Timing: The pulsation is continuous and coincides with her heartbeat; back pain is present throughout the day and seems worse at night.

Quote: "The throbbing in my abdomen never stops, and the back pain lingers all day, getting worse at night."

Exacerbating and Relieving Factors: Back pain intensifies with prolonged standing or sitting; has not found any relieving factors.

Quote: "If I stand or sit for too long, my back hurts more, and nothing I've tried seems to help."

Severity: Describes the abdominal mass pulsation as concerning but not painful; rates back pain as 6/10.

Quote: "The pulsing isn't painful, just worries me, but I'd say the back pain is often around a six out of ten."

- Chest pain or discomfort:

Negative Finding.

- Shortness of breath:

Negative Finding.

- Palpitations:

Negative Finding.

- Syncope:

Negative Finding.

- Nausea:

Positive Finding.

Quote: "When my back really starts to play up, I can feel quite sick to my stomach."

- Vomiting:

Negative Finding.

- Intermittent claudication:

Negative Finding.

- Peripheral oedema:

Negative Finding.

History of Presenting Complaint:

- Duration of symptoms:

Symptoms noticed two weeks ago.

Quote: "This has been going on for about two weeks now."

- Previous treatments:

Elise reports no previous treatments or interventions.

Quote: "I haven't really done much about it until now."

- Progression over time:

She observes the pulsatile mass has remained constant, but the back pain has progressively worsened.

Quote: "The throbbing hasn't changed, but my back's gotten more painful over time."

- Frequency of symptoms:

Symptoms constant since discovery.

Quote: "I've been feeling this non-stop since I noticed it."

- Impact on daily life and activities of daily living:

Difficulty performing household tasks and disrupted sleep due to pain.

Quote: "It's harder to get around the house and do things, and the pain often keeps me from sleeping well."

- Impact on work:

Not applicable; Elise is retired.

Quote: "Thankfully, I don't have work to worry about with this."

- Impact on physical and mental wellbeing:

Expresses concern about the unknown nature of her symptoms, causing anxiety.

Quote: "It's unnerving not knowing what's causing this; it's all I think about."

Systemic Symptoms:

- Fatigue:

Negative Finding.

- Fever:

Negative Finding.

- Night sweats:

Negative Finding.

- Unintended weight loss:

Negative Finding.

- Generalised weakness:

Negative Finding.

- Malaise:

Negative Finding.

- Bowel habits:

Negative Finding.

- Urinary habits:

Negative Finding.

- Changes in sleep:

Positive Finding.

Quote: "The discomfort from my back has been interrupting my sleep quite a bit."

- Peripheral oedema:

Negative Finding.

Past Medical History:

No previous significant medical illnesses, surgeries, hospitalizations, injuries or traumas, psychiatric history, or substance abuse. Up-to-date with routine immunizations. Histories of osteoarthritis and hypertension are present.

Quote:

"Well, I've had some issues with arthritis in my hands, and I take medication for high blood pressure, but that's about it."

Drug History:

Takes amlodipine 5mg daily for hypertension. Occasionally uses paracetamol for osteoarthritis pain but denies any herbal or homoeopathic remedies.

Quote:

"For my pressure, I'm on a small dose of amlodipine, and if my hands act up from arthritis, I'll have some paracetamol. Oh, nothing fancy like herbs or anything of the sort."

Allergies:

No known drug, food, or environmental allergies.

Quote:

"I'm lucky I suppose; I've never reacted badly to anything really."

Family History:

Mother and father had hypertension; an aunt had a 'heart issue', though Elise is not sure of the details.

Quote:

"My parents both dealt with high blood pressure, much like myself. And then there's my aunt, who had some kind of heart trouble, though I never got the full story."

Social History:

Lifestyle: Lives alone and manages her daily activities independently.

Occupation: Retired librarian.

Activities of Daily Living & Hobbies: Reading, gardening, and partaking in book club meetings.

Smoking: Non-smoker.

Alcohol: Drinks rarely, approximately 1 unit per month.

Recreational Drug Use: None.

Diet: Balanced diet with a focus on low sodium due to hypertension.

Exercise: Light exercise, mainly walks in the local park.

Travel History: Not pertinent; no recent travels.

Driving Status: Has a valid driving license but drives infrequently.

Cultural or Religious Practices: Non-practising Catholic; no significant impact on medical care.

Recent Life Events: Nothing significant; enjoys a steady routine since retiring.

Exposure to Hazards or New Environment: No recent changes or exposures noted.

Quote (1): “Reading's been my lifelong passion, so naturally, that's what I spend most of my time doing these days, along with tending to the garden.”

Quote (2): “I've never smoked, and a glass of wine is a rare indulgence for me.”

Quote (3): “I try to keep to a low-salt diet, what with my blood pressure and all. And nothing beats a gentle stroll in the park for a spot of exercise.”

Ideas, Concerns, and Expectations:

Ideas: Elise believes the mass could be due to her hypertension or related to her cardiovascular health.

Quote: “I’m wondering if my high blood pressure has something to do with this... or could it be linked to my heart?”

Concerns: She is worried about the possibility of a serious underlying condition such as cancer or an aneurysm, given the pulsatile nature of the mass.

Quote: “The thought has crossed my mind it could be cancer… or one of those aneurysms one hears about.”

Expectations: Elise hopes to receive a clear diagnosis and a treatment plan to address her symptoms and relieve her pain.

Quote: “I’d like to find out exactly what’s causing this and hopefully get treated so I can move on from this worry.”

Observations:

Respirations (Breaths/min): 16

Oxygen Saturation (%): 98%

Air or Oxygen?: On room air

Blood Pressure (mmHg): 160/90

Pulse (Beats/min): 78

Consciousness (AVPU): Alert

Temperature (Celsius): 37.0°C

NEWS Total Score: 1

(The score of 0 is for the Blood Pressure reading of 160/90 mmHg; systolic blood pressure in the range of 111-219 mmHg scores 0 points, thus only the diastolic value of 90 mmHg would contribute to the NEWS scoring, placing it outside the defined range for 0 points, and scoring 1 point instead.)

Physical Examination:

General inspection:

- No clinical signs suggestive of cyanosis or shortness of breath; faint pulsatile mass observed in the abdominal region, no pallor or malar flush, mild chronic skin changes suggestive of age-related lichenification.

- The patient presented was found with a file folder containing previous health records and a personal blood pressure monitoring device, indicating an interest in personal health management.

Inspection of the hands:

- General observation shows signs of chronic changes related to osteoarthritis; no tar staining, xanthomata, arachnodactyly, clubbing, splinter haemorrhages, Janeway’s lesions, Osler's nodes, or koilonychia noted.

- Palpation indicates warm hands with a normal capillary refill time under 2 seconds.

Pulses and blood pressure:

- Radial pulse regular in rate and rhythm.

- No radio-radial delay.

- No collapsing pulse observed.

- Brachial pulse palpable, regular, and of good volume.

- Blood pressure measured at 160/90 mmHg, elevated in comparison with the known history of controlled hypertension.

- Carotid pulse palpable without bruit or volume abnormalities.

Jugular venous pressure:

- Not elevated upon inspection.

Inspection of the face:

- No conjunctiva pallor, corneal arcus, xanthelasma, or Kayser-Fleischer rings.

- Oral inspection reveals no central cyanosis or significant dental pathology; mild angular stomatitis noted.

Close inspection of the chest:

- Chest wall inspection unremarkable, with no signs of pectus excavatum, pectus carinatum, visible pulsations, or thoracic surgical scars.

Palpation of the chest:

- Apex beat discernible within the normal anatomical limits.

- No abnormal cardiac heaves or thrills.

Auscultation of the chest:

- Heart sounds S1 and S2 auscultated with no additional heart sounds, murmurs, or rubs across all four valvular areas with both the diaphragm and bell of the stethoscope.

Inspection of the back:

- No obvious deformities; faint surgical scar noted on the right lower back from previous unrelated minor surgery.

Palpation of the back:

- Sacrum non-tender on palpation without evidence of oedema.

Auscultation of the back:

- Lung fields clear on auscultation with no abnormal breath sounds or evidence of fluid overload.

Examination of the legs:

- Inspection of the lower extremities shows no evidence of pitting oedema, normal peripheral pulses noted; heterogeneously pigmented patches over the shins consistent with benign age-related changes.

- No signs of recent venous surgeries.

Special Tests:

Abdominal examination with an emphasis on inspection, auscultation, and palpation reveals a palpable and non-tender pulsatile mass at the level of the umbilicus, approximately 3cm in diameter, consistent with an aortic aneurysm.

Diagnostic Tests:

Blood Tests (Reference Ranges):

Full Blood Count (FBC):

Haemoglobin (Hb): 132 g/L (Female: 115 - 165 g/L)

Mean Corpuscular Volume (MCV): 91 fL (80 – 100 fL)

White Blood Cell Count: 6.0 x10^9/L (3.6 - 11.0 x10^9/L)

Platelets: 220 x10^9/L (140 - 400 x10^9/L)

Urea and Electrolytes:

Sodium: 141 mmol/L (133–146 mmol/L)

Potassium: 4.3 mmol/L (3.5–5.3 mmol/L)

Urea: 6.1 mmol/L (2.5 – 7.8 mmol/L)

Creatinine: 79 μmol/L (Female: 45–84 μmol/L)

Estimated Glomerular Filtration Rate (eGFR): 90ml/min/1.73m^3

Liver Function Tests:

Alanine transferase (ALT): 25 iu/L (3-40 iu/L)

Bilirubin: 14 umol/L (3-17 umol/L)

Albumin: 40 g/L (35-50 g/L)

Arterial Blood Gases:

pH: 7.41 (7.35 - 7.45)

pO2: 12 kPa (11 - 13 kPa)

pCO2: 5.0 kPa (4.7 - 6.0 kPa)

Bicarbonate: 24 mmol/l (22-28 mmol/l)

Base Excess: 0 mmol/L (-2 to +2 mmol/L)

Other Biochemistry Tests:

CRP: 8 mg/L (< 10 mg/L)

Serum osmolality: 290 mOsmol/kg (275 – 295 mOsmol/kg)

Imaging Tests:

CT Scan: Contrast-enhanced abdominal CT scan shows a 3.2 cm infrarenal abdominal aortic aneurysm with no evidence of leakage or rupture.

Treatment:

Management of an infrarenal aortic aneurysm depends on its size and the rate of growth, following NICE guidelines and the BMJ Best Practice outline:

- As the detected aneurysm is above 3cm but below the threshold of 5.5 cm, regular ultrasound surveillance is recommended rather than immediate surgical repair, with scans repeated at intervals based on the aneurysm size.

- Blood pressure control is essential; consider optimizing antihypertensive medication if the current regimen is insufficient due to the elevated blood pressure readings.

- Review amlodipine dosage and consider the addition of another antihypertensive agent if the blood pressure remains uncontrolled.

- Referral to a vascular surgeon for consideration of elective repair may be made if the aneurysm grows to 5.5 cm or more, displays a growth rate of more than 1 cm per year, or becomes symptomatic.

- Pain management should be addressed, possibly with paracetamol and considering a mild opioid if the pain persists or worsens.

- Provide information and education regarding symptoms of aneurysm expansion or rupture, such as sudden severe abdominal or back pain, and instruct Elise to seek immediate medical attention if these occur.

- Lifestyle modifications should be advised, including smoking cessation, though not applicable in Elise’s case, and regular low-impact cardiovascular exercise.

Monitoring:

- Regular monitoring of the aneurysm size via ultrasound scans scheduled every 6 – 12 months or as recommended by the vascular surgeon.

- Blood pressure monitoring at home with follow-up appointments to ensure adequate control.

- Pain assessment at each follow-up visit to tailor analgesic therapy, if necessary.

- Monitoring for signs of aneurysm expansion or complications such as rupture, which requires immediate medical attention.

- Follow-up visits for ultrasound monitoring should be scheduled within the next 6 months or sooner if Elise experiences new or worsening symptoms.

Prognosis:

- The prognosis of an abdominal aortic aneurysm is generally favorable with regular surveillance and appropriate management of cardiovascular risk factors.

- The risk of rupture is low for aneurysms smaller than 5.5 cm, but the risk increases with larger aneurysms or rapid growth.

- Blood pressure control and abstaining from smoking if applicable are critical in reducing the risk of aneurysm growth and potential complications.

- In case of eventual surgical repair, the outcomes for elective procedures are typically positive when no complications or rupture is involved.

Differential diagnoses:

1. Renal colic: Less likely due to the absence of urinary symptoms and presence of a pulsatile mass.

2. Pancreatic mass: Could account for back pain but would not exhibit pulsatility and usually presents with other gastrointestinal symptoms.

3. Spinal pathology: Could explain back pain but not the presence of a pulsatile abdominal mass.

4. Gastrointestinal issues like diverticulitis: May cause similar pain but would also show gastrointestinal symptoms and lack the pulsatile mass.

5. Malignancy: Could present with a mass and pain; however, the presence of a pulsatile mass in line with the heartbeat is more indicative of a vascular issue.

Patient Questions:

Q1: "How serious is an aneurysm of this size, doctor?"

A1: "An aneurysm of this size requires monitoring and good blood pressure control, but it's not imminently dangerous. We need to keep an eye on its size, and I will inform you of any steps we need to take."

Q2: "Is surgery something I should be thinking about now?"

A2: "Not at this moment. Surgery is typically reserved for aneurysms that are larger or are causing symptoms. We will discuss this if your aneurysm reaches that stage."

Q3: "Could my back pain be related to the aneurysm?"

A3: "It's possible, particularly if the aneurysm is large. But given the size of your aneurysm, the pain is more likely due to another cause, perhaps your osteoarthritis or muscle strain."

Q4: "What can I do at home to prevent this from getting worse?"

A4: "The best thing you can do is maintain good blood pressure control, which may include taking your medication as prescribed and following a healthy diet. Avoiding heavy lifting and high-impact activities is also prudent."

Examiner Questions:

Q1: "What is the usual cause of an abdominal aortic aneurysm?"

A1: "Atherosclerosis is the most common cause of an abdominal aortic aneurysm due to the build-up of plaque in the arterial wall, weakening it over time."

Q2: "At what size does an abdominal aortic aneurysm generally warrant surgical intervention?"

A2: "Surgical intervention is usually indicated for a symptomatic aneurysm or an asymptomatic aneurysm that is 5.5 cm or larger in diameter."

Q3: "How often should a patient with an abdominal aortic aneurysm of Elise's size be monitored?"

A3: "Aneurysms between 3.0 cm to 4.5 cm should be monitored by ultrasound every 6 to 12 months, and more frequently if larger or if the patient is symptomatic."

Q4: "What lifestyle advice would you give to a patient with an abdominal aortic aneurysm?"

A4: "Patients should be advised to quit smoking if they do, eat a heart-healthy diet, engage in regular physical activity, maintain a healthy weight, and control hypertension and hyperlipidemia."

Q5: "Which surgical options are available for the management of an abdominal aortic aneurysm?"

A5: "The two primary surgical options are open surgical repair, which involves replacing the affected section of the aorta with a graft, and endovascular aneurysm repair (EVAR), a less invasive method that places a graft within the aneurysm via the blood vessels."

Q6: "What are the indications for emergency surgery in abdominal aortic aneurysm?"

A6: "Emergency surgery is indicated in the event of an aneurysm rupture, indicated by sudden severe abdominal or back pain, hypotension, and signs of shock."

Keyword Filters:

Speciality Filter:

Cardiovascular; General Practice; Surgery

Presenting Complaint Filter:

Abdominal Distension; Back Pain

Condition Filter:

Aortic Aneurysm

Location Filter:

Accident & Emergency

Case created by:

Chew Shun Wen, 4th year Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_10\_AorticAneurysm

Homepage Vignette:

## A 72-year-old female called Tabassum presents with severe back pain.

Individual Page Vignette:

As Tabassum's general practitioner, she is a 72-year-old retired teacher visiting your clinic due to a sudden onset of severe pain in her back.

Patient Name:

Tabassum Patel (pronounced "Tah-bah-summ Pah-tehl"); she prefers to be addressed as Mrs. Patel.

Age:

09/07/1952

Location:

Clinic

Personality:

Mrs. Patel is a forthright and spirited individual with a wealth of life experiences, sharing stories with poise and occasional witticisms.

Presenting Complaint:

Severe back pain that started abruptly while she was gardening earlier in the day.

Quote:

"It's as if something snapped in my back when I was bending over my roses, and now the pain is unbearable."

Symptoms:

Site: Central lower back. Quote: "The pain is right here in the middle of my lower back."

Onset: Sudden onset while bending. Quote: "I was fine all morning, but it hit me out of the blue when I was tending to my garden."

Character: Described as a tearing sensation. Quote: "It's like something is tearing inside; it's quite unlike anything I've felt before."

Radiation: Radiates to the abdomen. Quote: "The pain seems to go round to my abdomen as well."

Associated Symptoms: No associated symptoms noted. Quote: "Just the pain, nothing else that I can tell."

Timing: Pain has been constant since it started. Quote: "Once the pain came on, it’s just not eased off at all."

Exacerbating and Relieving Factors: Movement makes it worse; lying down offers slight relief. Quote: "If I try to move, the pain gets worse, but lying down seems to help a tiny bit."

Severity: Severe pain. Quote: "On a scale, I'd say the pain is a nine at least – it's dreadful."

Chest pain or discomfort: Negative

Shortness of breath: Negative

Palpitations: Negative

Syncope: Negative

Nausea: Negative

Vomiting: Negative

Intermittent claudication: Negative

Peripheral oedema: Negative

History of Presenting Complaint:

Duration of symptoms: Started earlier the same day. Quote: "This awful pain started just today when I was in the garden."

Previous treatments: None taken for this incident. Quote: "No, dear, nothing. I didn't want to muddle things before seeing you."

Progression over time: Pain has been consistent since onset. Quote: "It's been relentless, hasn't eased off since it started."

Frequency of symptoms: This is the first occurrence. Quote: "I've never experienced anything like this; it's the very first time."

Impact on daily life and activities of daily living: Significantly impacted, unable to perform routine tasks. Quote: "I can’t do anything with this pain; it's totally put a stop to my day."

Impact on work: Retired, so no impact on work. Quote: "Luckily, I don't have work to worry about, but I had plans which are ruined now."

Impact on physical and mental wellbeing: The pain is causing distress and anxiety. Quote: "It's not just the pain; it's worrying about what's causing it that's distressing."

General quote for this section:

Quote:

"It struck me so suddenly, and I haven't been able to catch a break from the pain since. It's affecting everything I do and causing me quite a bit of stress."

Systemic Symptoms:

Fatigue: Negative

Fever: Negative

Night sweats: Negative

Unintended weight loss: Negative

Generalised weakness: Negative

Malaise: Negative

Bowel habits: Normal

Urinary habits: Normal

Changes in sleep: Negative

Peripheral oedema: Negative

Quote:

"No, none of those things. Just the sudden back pain, nothing else."

Past Medical History:

Surgeries: Negative

Hospitalizations: Negative

Previous injuries or traumas: Negative

Psychiatric or psychological history: Negative

History of substance abuse or addiction: Negative

Immunizations and vaccination history: Fully vaccinated according to the schedule. Quote: "I've had all my vaccinations, always keen to keep those up to date."

Any other relevant medical conditions or significant health events: Hypertension, managed with medication. Quote: "I have hypertension, but it's well-controlled with tablets."

Quote:

"I've been in generally good health except for high blood pressure, which I look after with medication."

Drug History:

Antihypertensive medication, dose and frequency as per prescription.

Quote:

"I'm on blood pressure pills; I take them every morning without fail."

Allergies:

No known allergies.

Quote:

"I don't have any allergies that I'm aware of."

Family History:

A cousin diagnosed with an abdominal aortic aneurysm. Quote: "A distant cousin of mine had surgery for something similar in his abdomen, an aneurysm, I believe."

Social History:

Lifestyle: Active retiree involved in local community gardening projects.

Occupation: Retired school teacher.

Activities of Daily Living & Hobbies: Lives independently, enjoys gardening and volunteer work.

Smoking: Non-smoker.

Alcohol: Drinks occasionally, approximately 2 units per week.

Recreational Drug Use: Negative.

Diet: Predominantly vegetarian with good variety.

Exercise: Walks daily, yoga twice a week.

Quotes:

"I'm retired now, so I fill my time with gardening and doing a bit of volunteer work at the community centre."

"I've never smoked, and I only have a glass of wine occasionally on special events."

"I try to eat healthily, lots of vegetables, and I stay active with my daily walks and yoga sessions."

Ideas, Concerns, and Expectations:

Ideas:

Mrs. Patel suspects her pain could be serious due to its sudden onset and severity.

Quote:

"I'm worried this pain might be something grave. It could be my spine; the way it hit me out of the blue is so unusual."

Concerns:

She fears the pain could indicate a life-threatening condition, and is anxious about the need for surgery or other invasive procedures.

Quote:

"I wonder if I'm in for something serious like surgery. The last thing I want is to end up in hospital for a long period."

Expectations:

Mrs. Patel hopes for a clear diagnosis and treatment plan that can help her manage the pain and address the underlying cause.

Quote:

"I hope you can tell me exactly what's wrong and how we can fix it. I’d like to avoid surgery if at all possible."

Observations:

Respirations (Breaths/min): 18

Oxygen Saturation (%): 98%

Air or Oxygen?: Room Air

Blood Pressure (mmHg): 140/85

Pulse (Beats/min): 80

Consciousness (AVPU): Alert

Temperature (Celsius): 36.8

NEWS Total Score: 0

Physical Examination:

General inspection:

- No cyanosis, shortness of breath, pallor, malar flush, or oedema.

Inspection of the hands:

- Hands appear normal, no noted abnormalities.

Pulses and blood pressure:

- Radial pulse and brachial pulse normal, no radio-radial delay or brachial blood pressure difference.

Special Tests:

- Abdominal palpation may reveal a pulsatile mass if the aneurysm is large enough.

- Assessment for pulsatile mass with abdominal ultrasound.

Diagnostic Tests:

Blood Tests (Reference Ranges):

Full Blood Count (FBC):

Haemoglobin (Hb): as per the result given above.

Mean Corpuscular Volume (MCV): as per the result given above.

White Blood Cell Count: as per the result given above.

Platelets: as per the result given above.

Urea and Electrolytes:

Sodium: as per the result given above.

Potassium: as per the result given above.

Other Tests:

CT Scan: Full qualitative description of the aortic aneurysm including size, location, and any evidence of rupture or impending rupture.

Ultrasound Scan: If indicated, describe the aneurysm size and characteristics.

Condition:

Aortic Aneurysm

Patient Questions:

"Why is this pain so different from my usual back pain?" - Possible Answer: "The character of pain you’re describing seems to indicate that it's not musculoskeletal. The sudden, tearing sensation could suggest a problem with a blood vessel in the abdomen or back."

"Could this pain be something I should have noticed earlier?" - Possible Answer: "Aortic aneurysms often don't cause symptoms until they are large or rupture. It's quite likely that you wouldn't have noticed it until it started causing pain like this."

"Will I need to be operated on immediately?" - Possible Answer: "We will determine the need for surgery based on the size and growth rate of the aneurysm. If there’s a risk of rupture, we may consider surgical intervention."

"What can I do to reduce my risks of this happening again?" - Possible Answer: "The best approach is regular monitoring and managing risk factors like hypertension. Quitting smoking and ensuring a healthy diet are also essential."

Examiner Questions:

"How would you distinguish between an aortic aneurysm and other causes of acute back pain in a clinical examination?" - Possible Answer: "I would look for signs of hemodynamic instability, check for a pulsatile abdominal mass on examination, and consider the character and sudden onset of the pain described by the patient."

"What are the risk factors for aortic aneurysm formation?" - Possible Answer: "Risk factors include advanced age, smoking, hypertension, atherosclerosis, family history, and male sex."

"Which imaging modality is preferred for diagnosing an aortic aneurysm and why?" - Possible Answer: "An ultrasound scan is preferred for initial assessment due to its accessibility and non-invasive nature, while a CT scan provides detailed information on size, location, and involvement of adjacent structures."

"What are the indications for surgery in a patient with an aortic aneurysm?" - Possible Answer: "Surgery is indicated if the aneurysm is larger than 5.5 cm, grows more than 1 cm per year, or if there are symptoms suggestive of impending rupture."

"What complications can arise from an aortic aneurysm?" - Possible Answer: "The most serious complication is rupture, which can lead to life-threatening internal bleeding, shock, and death if not treated promptly."

Treatment:

Based on NICE guidelines and the BNF:

- Emergency referral to vascular surgery if rupture is suspected.

- Elective surgery consideration for asymptomatic aneurysms that are larger than 5.5 cm or growing more than 1 cm per year.

- Secure intravenous access and monitor vital signs.

- Prepare for possible blood transfusion if indicated.

- Pain relief management with analgesia.

- Review current medications, especially antihypertensives and any agents affecting coagulation.

- If allergic to any proposed medications, alternative analgesics or antihypertensive agents will be considered.

Monitoring:

- Close monitoring of vital signs to detect signs of shock or haemodynamic instability.

- Regular imaging with ultrasound or CT scan to monitor aneurysm size and growth.

- Blood pressure control and monitoring.

- Follow-up visits every 6-12 months for aneurysms smaller than 5.5 cm, increasing in frequency if aneurysm size approaches intervention thresholds.

Prognosis:

- The prognosis for aortic aneurysm varies depending on size, growth rate, and patient factors such as comorbid conditions.

- Small aneurysms may remain stable for years, while larger aneurysms carry a risk of rupture.

- Timely surgical intervention generally has good outcomes, but the risk increases with delayed treatment and if rupture occurs.

- Regular monitoring and managing risk factors can help improve the prognosis.

Differential diagnoses:

1. Kidney stones - less likely due to the absence of renal colic and urinary symptoms.

2. Pyelonephritis - less likely in the absence of fever, urinary symptoms, or leukocytosis.

3. Spinal stenosis - less likely due to the sudden onset and radiating pain described.

4. Musculoskeletal strain - typically, the pain is not as severe or sudden as described in the case of an aortic aneurysm.

Keyword Filters:

Speciality Filter:

Cardiovascular; General Practice; Surgery;

Presenting Complaint Filter:

Back Pain; Abdominal Distension;

Condition Filter:

Aortic Aneurysm;

Location Filter:

Clinic;

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_11\_AorticAneurysm

Homepage Vignette:

## A 67-year-old male called Alaric Bhattarai presents with a pulsating sensation in his abdomen and lower back pain.

Individual Page Vignette:

You are a General Practitioner and Alaric Bhattarai, a 67-year-old retired teacher, has come to your clinic complaining of a pulsating sensation in his abdomen and lower back pain.

Patient Name:

Alaric Bhattarai (pronunciation: AL-uh-ric Bhah-TAHR-eye). Alaric would like to be called by his first name.

Age:

23/08/1957

Location:

Clinic

Personality:

Alaric is a softly-spoken, contemplative individual, often pausing to think before he answers. He is analytical and meticulously attentive to details given his background in education. Despite his reserved demeanor, he speaks with clarity and handles his concerns rationally.

Presenting Complaint:

Alaric has come to the clinic today due to a noticeable pulsating sensation in his abdomen which he finds unsettling, accompanied by persistent lower back pain.

Quote:

"It's rather disconcerting, this throbbing I can feel in my tummy, I've never noticed it before, and the back ache seems unrelenting."

Symptoms:

SOCRATES:

- Site: Pulsating sensation in the abdomen and lower back

Quote: "There's a rhythmic thumping right here in the middle of my stomach and the ache is just there, in my lower back."

- Onset: Noticed over the past few months

Quote: "I started feeling this peculiar pulse a few months back, and it's gotten more noticeable."

- Character: Throbbing and aching

Quote: "It's like a drum beating inside my abdomen, and my back feels sore and aching all the time."

- Radiation: Does not radiate

Quote: "The throbbing stays put, it doesn't travel anywhere, and the pain in my back is quite localized as well."

- Associated Symptoms: None reported

Quote: "Other than the throbbing and the back pain, I can't say I've had other worries."

- Timing: Constant

Quote: "This pulsing sensation is always there, and the backache doesn’t seem to wane."

- Exacerbating and Relieving Factors: Not established

Quote: "I haven’t found anything that makes it any worse or better. It’s just there."

- Severity: Mild but worrying

Quote: "It's not agonizing, but it's quite persistent, enough for me to want to have it checked out."

Chest pain or discomfort: Negative

Shortness of breath: Negative

Palpitations: Negative

Syncope: Negative

Nausea: Negative

Vomiting: Negative

Intermittent claudication: Negative

Peripheral oedema: Negative

History of Presenting Complaint:

- Duration of symptoms: Several months

Quote: "I’ve been aware of this for a while, but brushing it off as nothing serious until now."

- Previous treatments: None

Quote: "I haven't seen anyone about this till today."

- Progression over time: Gradual increase in sensation

Quote: "What started as barely noticeable has become quite obvious of late."

- Frequency of symptoms: Constant

Quote: "It’s been steadily there, day in, day out."

- Impact on daily life and ADLs: Minimal

Quote: "I go about my day fine, but it's unsettling."

- Impact on work: Retired

Quote: "I'm retired now, so work isn’t a factor, thankfully."

- Impact on physical and mental wellbeing: Increased worry

Quote: "I must confess, it's the uncertainty of what it means that’s weighing on my mind."

Systemic Symptoms:

- Fatigue: Negative

- Fever: Negative

- Night sweats: Negative

- Unintended weight loss: Negative

- Generalised weakness: Negative

- Malaise: Negative

- Bowel habits: Normal

- Urinary habits: Normal

- Changes in sleep: Negative

- Peripheral oedema: Negative

Past Medical History:

- Surgeries: Negative

- Hospitalizations: Negative

- Previous injuries or traumas: Negative

- Psychiatric or psychological history: Negative

- History of substance abuse or addiction: Negative

- Immunizations and vaccination history: Up to date

Quote: "I keep my vaccinations in check, just as a matter of good practice."

- Any other relevant medical conditions or significant health events: Negative

Drug History:

Alaric takes paracetamol occasionally for the back pain, 500 mg as needed, and a daily multivitamin supplement.

Allergies:

Alaric has no known allergies.

Family History:

Parents both passed away from cardiac-related conditions, but there is no history of aortic aneurysms.

Social History:

Lifestyle: Enjoys a calm and quiet retired life.

Occupation: Retired teacher.

Activities of Daily Living & Hobbies: Enjoys gardening, reading, and occasionally volunteers at the local library.

Smoking: Never smoked.

Alcohol: Drinks wine moderately, 3-4 units per week.

Recreational Drug Use: Negative.

Diet: Balanced diet with plenty of vegetables and fruits.

Exercise: Walks in the park daily for about 30 minutes.

Ideas, Concerns, and Expectations:

Ideas: Alaric believes the symptoms might be related to ageing but wants to rule out anything serious.

Quote: "One does wonder if these could be the trappings of advancing years, but it’s better to be on the safe side, I reckon."

Concerns: Concerned about the possibility of a serious underlying health issue.

Quote: "The notion that this could stem from something grave is disconcerting."

Expectations: Expects a thorough examination and appropriate investigations to determine the cause of his symptoms.

Quote: "I trust you will dig deep enough to unearth whatever is at the root of this abdominal phenomenon."

Observations:

Respirations (Breaths/min): 16

Oxygen Saturation (%): 98% on room air

Air or Oxygen?: Room air

Blood Pressure (mmHg): 142/88

Pulse (Beats/min): 78

Consciousness (AVPU): Alert

Temperature (Celsius): 36.5°C

NEWS Total Score: 0

\*\*Physical Examination:\*\*

\*\*General inspection:\*\*

- Alaric appears relaxed and converses easily. There are no visible signs of cyanosis or distress. He does not display shortness of breath or pallor while sitting. There is no evidence of oedema, and no medical aids or prescriptions are present around him.

\*\*Inspection of the hands:\*\*

- The hands are well-perfused with no signs of tar staining, xanthomata, or arachnodactyly. There are no clubbing, splinter hemorrhages, Janeway's lesions, Osler's nodes, or koilonychia.

- Palpation indicates that hands have a normal temperature, with a capillary refill time of less than 2 seconds.

\*\*Pulses and blood pressure:\*\*

- The radial pulse is regular in rate and rhythm at 78 beats per minute, with no radio-radial delay observed.

- No collapsing pulse is noted, and the brachial pulses have a normal volume and character.

- Blood pressure reading is slightly elevated at 142/88 mmHg but equal in both arms.

- No significant carotid pulse abnormalities are detected; carotid bruits are absent on auscultation.

\*\*Jugular venous pressure:\*\*

- JVP is not visible or elevated, and hepatojugular reflux is not present upon examination, suggesting no acute right heart strain or congestion.

\*\*Inspection of the face:\*\*

- No conjunctiva pallor indicating anemia. There is an absence of corneal arcus, xanthelasma, or Kayser-Fleischer rings.

- There are no signs of central cyanosis in the mouth, angular stomatitis, or malnutrition signs such as a high arched palate.

\*\*Close inspection of the chest:\*\*

- No pectus excavatum, pectus carinatum deformities, visible pulsations, or surgical scars, which might suggest prior cardiac surgeries, are noted on the patient's chest.

\*\*Palpation of the chest:\*\*

- The apex beat is found within the normal anatomical location, and no abnormal pulsation, heave, or thrill is palpated on the chest wall.

\*\*Auscultation of the chest:\*\*

- The aortic, pulmonary, tricuspid, and mitral areas are auscultated with normal heart sounds heard. No murmur is detected with the use of the diaphragm and bell at any of the valvular sites. No supraclavicular or carotid bruits are detected, suggesting an absence of major vascular obstruction or stenosis.

\*\*Inspection of the back:\*\*

- Inspection of the back shows no deformities, abnormalities, or scars.

\*\*Palpation of the back:\*\*

- No sacral edema is palpable, which might indicate fluid retention or heart failure.

\*\*Auscultation of the back:\*\*

- Clear breath sounds are heard on auscultation of the lung fields posteriorly, with no coarse crackles, wheezes, or signs of pulmonary congestion.

\*\*Examination of the legs:\*\*

- Inspection and palpation of the legs reveal no pitting edema, which could suggest venous insufficiency or heart failure. The leg is examined for any signs of previous vascular surgery, such as scars from saphenous vein harvesting, which are absent.

Diagnostic Tests:

Blood Tests (Reference Ranges):

Full Blood Count (FBC) within normal limits.

Renal function tests within normal limits.

Liver function tests within normal limits.

Imaging Tests:

Abdominal ultrasound showing evidence of an enlarged aorta with a diameter greater than 3 cm.

Condition:

Aortic Aneurysm

Patient Questions:

1. "What exactly is an aortic aneurysm, and should I be worried?"

Simple answer: "An aortic aneurysm is a bulge in the blood vessel that can vary in size and risk, but we'll do some tests to assess the risk and discuss the best approach to manage it."

2. "How did I get this condition, was it something I did?"

Simple answer: "It's often related to age and other factors like family history; it's unlikely to be something you directly did or could have prevented."

3. "Will I need surgery?"

Simple answer: "Whether you will need surgery depends on the size and risk of rupture; we'll need to review the imaging results first."

Examiner Questions:

1. What is the most typical location for an aortic aneurysm and why?

Answer: The abdominal aorta as it is subject to high hemodynamic stress and has fewer vasa vasorum compared to the thoracic aorta.

2. Why is it important to control blood pressure in patients with an aortic aneurysm?

Answer: High blood pressure increases the risk of aneurysm expansion and rupture, so control is vital in management.

3. How do you distinguish between an aortic aneurysm and renal artery stenosis on examination?

Answer: Aortic aneurysm presents with a pulsating abdominal mass, while renal artery stenosis may present with hypertension and a bruit over the renal arteries.

4. What are possible complications of an aortic aneurysm?

Answer: Rupture, dissection, and compression of surrounding structures.

5. What is the surveillance strategy for small aortic aneurysms?

Answer: Regular ultrasound monitoring, with the frequency depending on the aneurysm size and growth rate.

Treatment:

The treatment plan includes regular monitoring with ultrasounds, management of cardiovascular risk factors, and consideration of surgery based on the aneurysm size, growth rate, and patient symptoms. For small aneurysms measuring below 5.5 cm, conservative management with control of blood pressure and risk factors might be advised. If the aneurysm is over 5.5 cm or symptomatic, elective surgical repair may be recommended.

- Blood pressure management: ACE inhibitors or angiotensin receptor blockers as first-line therapy.

- Cholesterol management: Statins as indicated.

- Smoking cessation is imperative if patient smokes.

Monitoring:

- Regular ultrasounds every six months for aneurysms 3.0-4.5 cm in size, or more frequently if growth is faster.

- Immediate medical attention if sudden severe abdominal or back pain occurs, as it may indicate rupture.

- Follow-up visits with a vascular surgeon should be arranged for consideration for elective surgery.

- Blood pressure and cholesterol levels should be closely monitored.

Prognosis:

- Risk of rupture increases with the size of the aneurysm.

- Survival rates after rupture are low, which is why monitoring and elective repair are important.

- Prognosis after elective surgical repair is generally good if other comorbidities are managed.

Differential diagnoses:

1. Renal artery stenosis: Less likely due to absence of hypertension and kidney function abnormalities.

2. Pancreatitis: Less likely due to absence of gastrointestinal symptoms.

Keyword Filters:

Speciality Filter:

Cardiovascular; Surgery

Presenting Complaint Filter:

Abdominal Distension; Back Pain

Condition Filter:

Aortic Aneurysm

Location Filter:

Clinic

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_12\_Aortic Aneurysm

Homepage Vignette:

## A 65-year-old male called Kaveh Azar presents with a pulsating mass in the abdomen.

Individual Page Vignette:

You are a General Practitioner reviewing a 65-year-old male called Kaveh Azar, a retired linguist. Mr. Azar has come into your practice concerned about a noticeable pulsating mass in his abdomen.

Patient Name:

Kaveh Azar (pronounced as "kah-veh ah-zahr"), prefers to be addressed as Mr. Azar.

Age:

13/02/1959

Location:

General Practice

Personality:

Mr. Azar is an articulate and well-spoken individual, displaying a calm and considered approach to communication. Despite his concern, he remains respectful and patient. His curiosity as a retired linguist often leads him to ask questions about medical terminology.

Presenting Complaint:

Mr. Azar came to the clinic after noticing a strange pulsation in his abdomen which he describes as a 'throbbing sensation'.

Quote:

"I can feel this odd throbbing in my belly, right here above the navel. It's like there's a heartbeat in my abdomen."

Symptoms:

SOCRATES:

Site: The sensation is located in Mr. Azar's abdomen, just above the navel.

Quote: "It’s right here, above my belly button, that I feel the pulsing."

Onset: Mr. Azar noticed the pulsating mass a few weeks ago; it appears to have grown slowly.

Quote: "A few weeks back, I noticed this throbbing, and it's been there ever since."

Character: He describes it as a constant throbbing sensation.

Quote: "This constant throbbing is quite peculiar, doesn't hurt, but it's hard to ignore."

Radiation: The sensation does not radiate; it is isolated to one area.

Quote: "No, it doesn't move anywhere else; it's just focused right here."

Associated Symptoms: There are no associated symptoms such as pain or discomfort.

Quote: "Apart from the throbbing, I don't feel anything else out of the ordinary."

Timing: The throbbing is persistent and does not come and go.

Quote: "It's there all the time, like clockwork."

Exacerbating and Relieving Factors: Nothing appears to make the sensation better or worse.

Quote: "I can't say anything makes it more noticeable or helps it dissipate, it’s just there."

Severity: The sensation is not severe but is causing Mr. Azar concern.

Quote: "I wouldn't say it's intense, but it's certainly got my attention."

- Chest pain or discomfort: Negative

- Shortness of breath: Negative

- Palpitations: Negative

- Syncope: Negative

- Nausea: Negative

- Vomiting: Negative

- Intermittent claudication: Negative

- Peripheral oedema: Negative

Quote:

“As I’ve said, aside from this unusual pulsating mass, I haven't encountered any other problematic symptoms.”

History of Presenting Complaint:

- Duration of symptoms: Several weeks

- Previous treatments: None

- Progression over time: Gradual increase in the perceptibility of the pulsating mass

- Frequency of symptoms: Constant

- Impact on daily life and activities of daily living: Minimal, apart from causing concern

- Impact on work: Not applicable as retired

- Impact on physical and mental wellbeing: Causing mild anxiety

Quote:

“I first felt this pulsation in my stomach a few weeks back. It's steady and doesn't really affect my day-to-day life, but it does make me wonder if something's not quite right. As a retired man, it doesn't affect my work but does leave me feeling a tad anxious.”

Systemic Symptoms:

- Fatigue: Negative

- Fever: Negative

- Night sweats: Negative

- Unintended weight loss: Negative

- Generalised weakness: Negative

- Malaise: Negative

- Bowel habits: Normal

- Urinary habits: Normal

- Changes in sleep: Negative

- Peripheral oedema: Negative

Quote:

“I've been feeling well overall. My sleep and energy levels are quite good for someone my age, and I've had no changes in weight, bowel, or bladder habits.”

Past Medical History:

- Surgeries: Negative

- Hospitalizations: Negative

- Previous injuries or traumas: Negative

- Psychiatric or psychological history: Negative

- History of substance abuse or addiction: Negative

- Immunizations and vaccination history: Up-to-date on vaccinations

- Any other relevant medical conditions or significant health events: Hypertension managed by medication

Quote:

“My medical history has been reasonably uneventful; I do have hypertension, but it's well-controlled with medication. Everything else has been fairly routine, and I've kept up with my vaccinations.”

Drug History:

Mr. Azar takes antihypertensive medication, Ramipril 5mg once daily.

No history of medication non-compliance, missed doses, or use of herbal supplements. No contraception or non-pharmacological interventions. No overdose incidents.

Quote:

“I’ve been diligent with my blood pressure medication, Ramipril I believe it’s called, just the one pill each day. I don't take any other medications or supplements.”

Allergies:

Mr. Azar has no known allergies.

Quote:

“I've been lucky in that regard; no allergies to speak of.”

Family History:

No known family history of aortic aneurysm or cardiovascular diseases.

Quote:

“There's no history of this sort of condition in my family that I’m aware of. Most have lived long, healthy lives.”

Social History:

Lifestyle: Healthy, with regular walks and social activities with friends.

Occupation: Retired linguist.

Activities of Daily Living & Hobbies: Enjoys reading, crossword puzzles, and attending local book club meetings.

Smoking: Non-smoker.

Alcohol: Drinks socially, approximately 4 units per week.

Recreational Drug Use: None.

Diet: Balanced with an emphasis on Mediterranean cuisine.

Exercise: Walks daily for 30 minutes.

Quote 1:

“I lead a simple life now, with daily strolls and much time spent with friends and books. A good conversation over a glass of wine is one of life’s little pleasures.”

Quote 2:

“Smoking was never my vice, and I only indulge in alcohol on occasion, never excessively. My diet leans towards the Mediterranean; I find it quite agreeable.”

Quote 3:

“Exercise is not strenuous but routinely leisurely walks, which I find refreshing for both mind and body.”

Ideas, Concerns, and Expectations:

Ideas:

Mr. Azar understands his symptoms could be a sign of an underlying health issue, perhaps related to his known hypertension or a new cardiovascular condition.

Quote:

“I'm well-read and aware that unusual pulsations like this could be a sign of something more serious, possibly linked to my blood pressure or the heart, I presume?”

Concerns:

Mr. Azar is concerned this might be a sign of a significant health problem that has gone unnoticed and could have serious consequences.

Quote:

“My primary worry is that this could be a harbinger of an undiagnosed health condition that's serious, potentially life-threatening. It’s not knowing that has me on edge.”

Expectations:

He expects a thorough examination, clear communication, appropriate investigations, and a management plan that addresses his symptoms and concerns.

Quote:

“I expect a meticulous examination and straightforward communication about what could be wrong. I value clarity and would appreciate knowing how we will manage whatever this is.”

Observations:

Respirations (Breaths/min): 16 (0 points)

Oxygen Saturation (%): 98% on room air (0 points)

Blood Pressure (mmHg): 125/85 (0 points)

Pulse (Beats/min): 68 (0 points)

Consciousness (AVPU): Alert (0 points)

Temperature (Celsius): 36.8°C (0 points)

NEWS Total Score: 0

(No points were allocated as all observations are within normal range.)

Physical Examination:

General inspection:

- No clinical signs of cyanosis, shortness of breath, pallor, malar flush, or oedema.

- No objects or equipment around Mr. Azar indicate a current clinical concern.

Inspection of the hands:

- No abnormalities such as tar staining, xanthomata, arachnodactyly or Janeway's lesions.

- Capillary refill time normal.

Pulses and blood pressure:

- Regular radial pulse rate and rhythm.

- No radio-radial delay or collapsing pulse.

- Normal brachial pulse volume and character.

- Blood pressure is within normal limits in both arms

- No abnormalities in carotid pulse volume and character.

Jugular venous pressure:

- Jugular venous pressure within the normal range.

- No hepatojugular reflux.

Inspection of the face:

- No conjunctiva pallor, corneal arcus, xanthelasma, or Kayser-Fleischer rings.

- Mouth and mucous membranes are well-kept with no signs of central cyanosis or angular stomatitis.

Close inspection of the chest:

- Chest appears normal; no signs of surgery or abnormal pulsations.

Palpation of the chest:

- Apex beat palpable in the fifth intercostal space, mid-clavicular line.

- No heaves or thrills are felt.

Auscultation of the chest:

- Heart sounds S1 and S2 are present with no additional sounds or murmurs detected in all areas.

Inspection of the back:

- No spinal deformities.

Palpation of the back:

- No sacral oedema.

Auscultation of the back:

- Clear lung fields, no crackles or wheezes.

Examination of the legs:

- No pitting oedema at the ankles.

- No evidence of previous saphenous vein harvesting.

Special Tests:

Abdominal examination reveals a palpable pulsatile mass in the epigastric region, consistent with an abdominal aortic aneurysm.

Diagnostic Tests:

Blood Tests (Reference Ranges):

Full Blood Count (FBC):

Haemoglobin (Hb): 145 g/​L (Male: 130 - 180 g/L)

Mean Corpuscular Volume (MCV): 89 fL (80 – 100 fL)

White Blood Cell Count: 6.0 x10^9/L (3.6 - 11.0 x10^9/L)

Platelets: 250 x10^9/L (140 - 400 x10^9/L)

Urea and Electrolytes:

Sodium: 140 mmol/L (133–146 mmol/L)

Potassium: 4.2 mmol/L (3.5–5.3 mmol/L)

Calcium (adjusted): 2.4 mmol/L (2.2-2.6 mmol/L)

Magnesium: 0.85 mmol/L (0.7–1.0 mmol/L)

Urea: 4.5 mmol/L (2.5 – 7.8 mmol/L)

Creatinine: 90 μmol/L (Male: 59–104 μmol/L)

Estimated Glomerular Filtration Rate (eGFR): 95ml/min/1.73m3 (>90ml/min/1.73m3)

Liver Function Tests:

Alanine transferase (ALT): 25 iu/L (3-40 iu/L)

Aspartate transaminase (AST): 22 iu/L (3-30 iu/L)

Alkaline phosphatase (ALP): 70 umol/L (30-100 umol/L)

Gamma glutamyl transferase (yGT): 40 u/L (8-60 u/L)

Bilirubin: 10 umol/L (3-17 umol/L)

Albumin: 45 g/L (35-50 g/L)

Thyroid Function Tests:

Thyroid Stimulating Hormone (TSH): 2.5 mu/L (0.4-4.5 mu/L)

Free T3: 5.4 pmol/L (3.5-7.8 pmol/L)

Free T4: 14 pmol/l (9-25 pmol/l)

Imaging Tests:

Ultrasound Scan: Demonstrates an abdominal aortic aneurysm measuring 6 cm in maximum diameter with no evidence of leakage or rupture.

CT Scan: Confirms the presence of an infrarenal abdominal aortic aneurysm with uniform shape and no signs of impending rupture or dissection.

Treatment:

For Mr. Azar's abdominal aortic aneurysm, the treatment plan would be based on the size and symptoms of the aneurysm.

- For aneurysms ≥5.5 cm in diameter (as in Mr. Azar's case) or those causing symptoms, referral to a vascular surgeon for a surgical assessment is recommended.

- Options include open surgical repair or endovascular aneurysm repair (EVAR).

- If allergic to contrast media used during surgical planning, premedication with steroids and antihistamines may be required.

- If surgery is contraindicated or not desired by the patient, careful monitoring and conservative management, including blood pressure control, would be necessary.

Monitoring:

- Monitor blood pressure tightly to maintain it within the target range to reduce the risk of aneurysm expansion.

- Regular ultrasound or CT monitoring to assess aneurysm size and growth rate.

- Immediate referral to an emergency department if Mr. Azar experiences any sudden, severe, or persistent abdominal or back pain, suggesting a potential aneurysm rupture.

- Follow-up visits with a vascular surgeon recommended every 6 to 12 months, or more frequently if indicated.

Prognosis:

- The risk of rupture for an aneurysm of Mr. Azar's size is significant without intervention.

- The intervention's success depends on prompt surgical assessment and appropriate treatment selection.

- Prognosis post-repair is generally good if there are no complications during the procedure.

- Smoking, if applicable, negatively impacts prognosis and is a risk factor for aneurysm expansion.

- Long-term survival rates are favorable post-surgery, with regular follow-ups and good blood pressure control.

Differential diagnoses:

1. Renal mass: Less likely due to the location and pulsating nature detected on examination, which is more characteristic of an aortic aneurysm.

2. Gastrointestinal tumor: Less likely, as these are typically not pulsatile or detectable by palpation in the same manner as an aortic aneurysm.

3. Hepatic or pancreatic lesion: Less likely due to the absence of other systemic or localizing signs that usually accompany such lesions.

Keyword Filters:

Speciality Filter:

Cardiovascular; Surgery

Presenting Complaint Filter:

Abdominal Distension; Palpitations; Peripheral Oedema and Ankle Swelling; Chest Pain

Condition Filter:

Aortic Aneurysm

Location Filter:

General Practice

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_13\_AcuteCoronarySyndrome

Homepage Vignette:

## A 65-year-old male called Kofi Agyapong presents with chest pain and breathlessness.

Individual Page Vignette:

You are a doctor in the Emergency Department. A patient named Kofi Agyapong, a 65-year-old, retired banker, located in an urban clinic, presents with chest pain and difficulty in breathing.

Patient Name:

Kofi Agyapong (pronunciation: KO-fee A-jah-PONG). He prefers to be called Mr. Agyapong.

Age:

15/09/1958

Location:

Emergency Department

Personality:

Mr. Agyapong is polite, articulate, and presents with a calm demeanour despite his discomfort. He is detail-oriented, given his background in banking, which is evident in the precise description of his symptoms. He communicates his concerns with clarity and values a methodical approach to problem-solving.

Presenting Complaint:

Mr. Agyapong has come to the clinic with a complaint of acute onset chest pain radiating to his left arm, associated with shortness of breath.

Quote:

"It started quite suddenly while I was walking my dog this morning. The pain’s quite severe and is going down my left arm. I've also found myself quite short of breath."

Symptoms:

- Chest pain or discomfort: Positive

- Site: Central chest; Quote: "The pain is right here in the middle of my chest."

- Onset: Sudden while walking the dog; Quote: "It just hit me out of nowhere this morning."

- Character: Crushing; Quote: "It feels like there's a heavy weight on my chest."

- Radiation: To the left arm; Quote: "The pain is shooting down my left arm."

- Associated Symptoms: Shortness of breath; Quote: "I'm finding it hard to catch my breath."

- Timing: Persistent since onset; Quote: "The pain’s been constant since it started."

- Exacerbating and Relieving Factors: Pain exacerbated by exertion, not relieved by rest; Quote: "It seemed to get worse when I tried to keep walking."

- Severity: Severe; Quote: "On a scale from 0 to 10, I’d say it’s a good 8."

- Shortness of breath: Positive; Quote: "I'm feeling quite breathless, even now while I'm just sitting here."

- Palpitations: Negative

- Syncope: Negative

- Nausea: Negative

- Vomiting: Negative

- Intermittent claudication: Negative

- Peripheral oedema: Negative

History of Presenting Complaint:

- Duration of symptoms: Since this morning; Quote: "It all started when I was out in the park today."

- Previous treatments: None for the chest pain; Quote: "No, I've never had this kind of pain before."

- Progression over time: Unchanged since onset; Quote: "The pain has been the same since it started - hasn’t got better, hasn’t got worse."

- Frequency of symptoms: This is the first occurrence; Quote: "This is the very first time I've experienced something like this."

- Impact on daily life and activities of daily living: Significant, unable to perform regular activities; Quote: "I had to stop my morning walk mid-way. I haven’t felt confident doing much since."

- Impact on work: Retired, not currently working; Quote: "I'm retired, so it hasn't affected my work, but it would have stopped me in my tracks if I were still at the bank."

- Impact on physical and mental wellbeing: Causing distress and limiting mobility; Quote: "I must admit, this has me quite worried and I'm afraid to even move too much right now."

Systemic Symptoms:

- Fatigue: Negative

- Fever: Negative

- Night sweats: Negative

- Unintended weight loss: Negative

- Generalised weakness: Negative

- Malaise: Negative

- Bowel habits: Normal; Negative

- Urinary habits: Normal; Negative

- Changes in sleep: Non-disturbed; Negative

- Peripheral oedema: Negative

Past Medical History:

- Surgeries: Appendectomy aged 30; Quote: "I had my appendix out years ago, no issues since then."

- Hospitalizations: For appendectomy; Quote: "The last time I stayed in hospital was for that operation, been healthy since."

- Previous injuries or traumas: None; Negative

- Psychiatric or psychological history: None; Negative

- History of substance abuse or addiction: None; Negative

- Immunizations and vaccination history: Up to date; Quote: "I've had all my jabs, I believe in staying on top of that."

- Any other relevant medical conditions or significant health events: Hypertension, controlled with medication; Quote: "I have high blood pressure, but it's all under control with the pills."

Drug History:

"Let’s see, I’m on amlodipine, must be 5 mg, once a day for the blood pressure. And I take a daily aspirin, 75 mg if I remember correctly. No, I haven’t missed any doses."

Allergies:

No known allergies.

Family History:

"My father had a heart attack in his late 60s. Otherwise, we've been a fairly healthy bunch."

Social History:

Lifestyle:

"I have a fairly sedentary lifestyle since retiring. I do enjoy reading and the occasional round of golf."

Occupation:

"I had a long career in banking. I was largely desk-bound, which was demanding but not physically so."

Activities of Daily Living & Hobbies:

"I look after myself, live alone. I like to walk my dog, read history books, and I'm part of a local chess club."

Smoking:

"I used to smoke in my younger days, stopped about 20 years ago. So I suppose that would be about 20 pack-years in total."

Alcohol:

"I'll have a glass of wine or two with dinner, maybe three to four times a week."

Recreational Drug Use:

"I've never been involved with that sort of thing."

Diet:

"It's balanced, I suppose. I'm partial to fish and vegetables, and I avoid too much junk food."

Exercise:

"I walk my dog every morning for about half an hour. It's not marathon training, but it's regular at least."

Ideas, Concerns, and Expectations:

Ideas:

"I'm aware that heart problems run in my family, so I’m concerned this might be serious."

Concerns:

"I must say, this could be serious, couldn't it? With my family history and this sort of pain."

Expectations:

"I really would like to understand what's happening and receive the appropriate treatment, obviously. How soon do you think we can get this sorted?"

Observations:

Respirations (Breaths/min): 22

Oxygen Saturation (%): 94%

Air or Oxygen?: Room air

Blood Pressure (mmHg): 150/85

Pulse (Beats/min): 105

Consciousness (AVPU): Alert

Temperature (Celsius): 36.5°C

NEWS Total Score: 3

(The NEWS total score is 3 points because of the patient's respiratory rate of 22 breaths/min giving 2 points and oxygen saturation of 94% giving 1 point.)

Physical Examination:

General inspection:

- Pallor and visible discomfort

- A calm, but concerned patient with a history of hypertension

- Prescription for high blood pressure medication observed on patient’s records

Inspection of hands:

- No visible abnormalities or discolouration

- Capillary refill time within normal limits

Pulses and blood pressure:

- Radial pulse rate elevated but regular rhythm

- No radio-radial delay

- No collapsing pulse

- Brachial pulse palpable with normal volume and character

- Blood pressure raised at 150/85 in both arms

Jugular venous pressure:

- Not visibly raised

- No hepatojugular reflux

Inspection of face:

- No pallor noted in conjunctiva

- No other lesions or signs of pathology

Inspection of chest:

- No obvious deformities or surgery scars noted

- No visible pulsations or abnormality

Palpation of chest:

- Apex beat palpable at the fifth intercostal space, mid-clavicular line

- No heaves or thrills palpable

Auscultation of chest:

- Normal respiratory sounds with no added heart sounds

- No murmurs detected

Inspection of back:

- No deformities or scars

Palpation of back:

- No sacral oedema palpated

Auscultation of back:

- Clear lung fields with no crackles or wheezes

Examination of legs:

- No pitting oedema

- Saphenous veins not visibly harvested

Special Tests:

- No special tests performed at this time

Diagnostic Tests:

Blood Tests (Reference Ranges):

Full Blood Count (FBC):

Haemoglobin (Hb): Result (130 - 180 g/L)

Mean Corpuscular Volume (MCV): Result (80 – 100 fL)

White Blood Cell Count: Result (3.6 - 11.0 x10^9/L)

Platelets: Result (140 - 400 x10^9/L)

Urea and Electrolytes:

Sodium: Result (133–146 mmol/L)

Potassium: Result (3.5–5.3 mmol/L)

Urea: Result (2.5 – 7.8 mmol/L)

Creatinine: Result (59–104 μmol/L)

Estimated Glomerular Filtration Rate (eGFR): Result (>90ml/min/1.73m3)

Liver Function Tests:

Alanine transferase (ALT): Result (3-40 iu/L)

Aspartate transaminase (AST): Result (3-30 iu/L)

Alkaline phosphatase (ALP): Result (30-100 umol/L)

Gamma glutamyl transferase (yGT): Result (8-60 u/L)

Bilirubin: Result (3-17 umol/L)

Albumin: Result (35-50 g/L)

Thyroid Function Tests:

Thyroid Stimulating Hormone (TSH): Result (0.4-4.5 mu/L)

Free T3: Result (3.5-7.8 pmol/L)

Free T4: Result (9-25 pmol/l)

Cardiac Markers:

Troponin T: Elevated (reference range may vary by lab)

NT-proBNP: Result (< 75 years: < 125 pg/mL, > 75 years: < 450 pg/mL)

Arterial Blood Gases:

pH: Result (7.35 - 7.45)

pO2: Result (11 - 13 kPa)

pCO2: Result (4.7 - 6.0 kPa)

Bicarbonate: Result (22-28 mmol/l)

Base Excess: Result (-2 to +2 mmol/L)

Lipids:

Total Cholesterol: Result (< 5 mmol/l)

Triglycerides: Result (< 2 mmol/l)

HDL Cholesterol: Result (> 1 mmol/l)

LDL Cholesterol: Result (< 3 mmol/l)

Coagulation:

Prothrombin Time (PT): Result (10 – 14 seconds)

Activated Partial Thromboplastin Time (APTT): Result (25– 35 seconds)

Imaging Tests:

ECG: ST-segment elevation indicative of myocardial infarction

Chest X-ray: No pulmonary oedema; no signs of other acute pathology

Echocardiography: Regional wall motion abnormalities may be present indicating area of ischemia.

Treatment:

According to the NICE guidelines for Acute Coronary Syndromes, Mr. Agyapong's management includes:

- Initial assessment using ABCDE approach

- High-flow oxygen if saturation is less than 94%

- Sublingual nitrate for symptomatic relief of angina unless contraindicated

- Immediate aspirin chewed and swallowed if not allergic, dosage 300 mg

- Pain management with intravenous morphine, titrated dosage as necessary

- Immediate referral for primary percutaneous coronary intervention (PCI) if ST-elevation myocardial infarction (STEMI) is diagnosed or if high suspicion of ACS and ongoing symptoms despite treatment

- If PCI is not possible, then thrombolysis as per protocol

- Start on dual antiplatelet therapy, typically aspirin plus ticagrelor or clopidogrel

- Other medications may include statins, beta-blockers, and ACE inhibitors, as appropriate and after stabilisation

If allergic to any of the above medications, alternative treatment would be considered based on the specific allergy.

Monitoring:

- Continuous ECG monitoring to detect arrhythmias or further ischemic changes

- Reassess pain and symptoms regularly

- Monitor vital signs every 15 minutes initially, then according to the patient’s condition

- Blood tests including cardiac markers and FBC repeated at appropriate intervals

- Follow-up in cardiology outpatient clinic for review and possible further interventions, typically within 6 weeks

- Lifestyle advice and secondary prevention measures should be discussed before discharge

Prognosis:

- Depends on multiple factors: extent and location of the myocardial infarction, promptness of treatment, and whether any complications occur

- Generally, earlier treatment results in better outcomes

- Ongoing management of cardiovascular risk factors essential to reduce the risk of further events

Differential diagnoses:

1. Aortic dissection: Less likely due to the absence of tearing/ripping pain and differential blood pressures between arms.

2. Pulmonary embolism: Less likely due to lack of risk factors and presentation.

3. Pericarditis: Less likely given the character and radiation of the chest pain.

4. Gastroesophageal reflux disease: Not typical of the sudden onset of severe chest pain with radiation to the arm.

Patient Questions:

1. "Could this just be heartburn or something I ate?"

- "While some symptoms of heartburn can mimic a heart attack, the sudden onset and severity of your symptoms, including the pain radiating to your arm, are more concerning for something heart-related."

2. "Will I need surgery for this?"

- "Depending on the findings of further tests like an angiogram, you may need a procedure to open up blocked arteries, known as a percutaneous coronary intervention."

3. "Should I be worrying about my heart now?"

- "It's essential that we thoroughly investigate what's causing your symptoms, and we'll have more information on how to manage your heart health after these initial treatments and tests."

4. "How long will I need to stay in the hospital?"

- "The length of your hospital stay will depend on the exact nature of your heart problem, how well you respond to initial treatments, and if any other treatments are needed."

Examiner Questions:

1. What are the key components of the initial management of suspected acute coronary syndrome (ACS)?

- "Initial management should include assessment with the ABCDE approach, providing high-flow oxygen if needed, administration of aspirin, nitroglycerin for chest pain, and consideration of analgesia and referral for primary PCI if indicated."

2. Can you discuss the indications for thrombolytic therapy in ACS?

- "Thrombolysis is indicated when PCI is not available within 120 minutes and in patients presenting with ST-elevation or a new left bundle branch block within 12 hours of symptom onset."

3. How might the ECG findings vary with different types of ACS?

- "In STEMI you'll see ST-elevation. In non-ST-elevation ACS (NSTE-ACS), you may see ST depression, T-wave inversion, or nothing at all."

4. What is the role of echocardiography in the initial assessment of ACS?

- "Echocardiography can assess ventricular function, detect complications such as ventricular septal rupture, and exclude alternative diagnoses like aortic dissection."

5. What complications can arise from ACS and how can they be identified?

- "Complications can include arrhythmias, heart failure, cardiogenic shock, and ventricular septal defect, often identified clinically supported by ECG and echocardiography."

6. How is dual anti-platelet therapy managed in patients with ACS?

- "It typically involves aspirin plus a P2Y12 inhibitor like ticagrelor or clopidogrel, started immediately and continued for up to 12 months, depending on the clinical scenario."

Treatment:

The NICE guidelines dictate that Mr. Agyapong requires:

- An urgent primary percutaneous coronary intervention (PCI) if this is a confirmed STEMI

- If PCI is not possible, consider thrombolysis following contraindications check

- Begin dual antiplatelet therapy, starting with aspirin (if not contraindicated) and a P2Y12 inhibitor like ticagrelor or clopidogrel for up to 12 months

- Additional medications post-STEMI include beta-blockers, ACE inhibitors, anticoagulants, and statins

- Offer cardiac rehabilitation and lifestyle modification advice aimed at secondary prevention

Evidence of secondary prevention strategies such as smoking cessation, dietary modifications, and management of hypertension and diabetes should be emphasized.

Monitoring:

- Continuing ECG monitoring for arrhythmias or ischemic changes

- Regularly reassessment of pain severity and character

- Vital signs tracking according to established healthcare protocols

- Repeat cardiac marker blood tests to monitor for evidence of ongoing myocardial damage

- Arranging a follow-up appointment with a cardiologist or cardiac rehabilitation service

- Lifelong risk factor management and adherence to medication regimen

Prognosis:

- Timely reperfusion therapy generally improves prognosis

- The development of complications such as heart failure or recurrent MI can worsen the outlook

- Lifelong commitment to managing risk factors, including through medication adherence, lifestyle changes, and regular medical review, can improve long-term outcomes

Differential diagnoses:

1. Pericarditis

2. Gastroesophageal reflux disease (GERD)

3. Pulmonary embolism

4. Musculoskeletal chest pain

Keyword Filters:

Speciality Filter:

Cardiovascular; General Practice; Acute and Emergency

Presenting Complaint Filter:

Chest Pain; Shortness of Breath; Palpitations; Peripheral Oedema and Ankle Swelling; Breathlessness

Condition Filter:

Acute Coronary Syndromes; Myocardial Infarction; Unstable Angina

Location Filter:

Emergency Department

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_14\_Acute Coronary Syndrome

Homepage Vignette:

## A 63-year-old male called Yaromir presents with chest pain and shortness of breath.

Individual Page Vignette:

As the Emergency Department registrar, you encounter a patient, 63-year-old Yaromir, an engineer, presenting in your department with chest pain and breathing difficulties.

Patient Name:

Yaromir Stoyanov (Pronounced: "YA-ro-mir Sto-YA-nov"). He would like to be called Mr. Stoyanov.

Age:

02/05/1961

Location:

Emergency Department

Personality:

Mr. Stoyanov is a precise and methodical individual, reflective of his background in engineering. He approaches his health with the same attention to detail, preferring clear explanations and direct answers. He speaks thoughtfully, often pausing to consider his words carefully before speaking.

Presenting Complaint:

Mr. Stoyanov sought medical attention due to experiencing acute onset of chest pain radiating to his left arm and associated with difficulty in breathing.

Quote: "I've got this sharp pain right in the middle of my chest, almost as if someone's squeezing my heart. It started a few hours ago and hasn't eased off. I feel like I can't catch my breath properly, particularly when I'm moving around."

Symptoms:

SOCRATES:

Site: The pain is central in his chest. Quote: "It feels like it's right behind my breastbone."

Onset: The pain began suddenly a few hours ago. Quote: "It hit me out of nowhere, just a few hours back."

Character: Describes the pain as a squeezing sensation. Quote: "It's like a vice-grip right on my chest."

Radiation: Radiates to the left arm. Quote: "The pain is spreading down to my left arm too."

Associated Symptoms: Shortness of breath with the pain. Quote: "I'm struggling to breathe; it feels tight."

Timing: Pain has been consistent since onset. Quote: "It's been constant since it started."

Exacerbating and Relieving Factors: Moving around exacerbates the pain; rest provides minimal relief. Quote: "When I try to move, it gets worse; nothing really helps."

Severity: He rates it 8 out of 10 in severity. Quote: "On a scale of ten, I would say it's an eight."

Chest pain or discomfort: Positive. Quote as above.

Shortness of breath: Positive. Quote: "My breath feels short and insufficient, particularly with exertion."

Palpitations: Negative.

Syncope: Negative.

Nausea: Negative.

Vomiting: Negative.

Intermittent claudication: Negative.

Peripheral oedema: Negative.

History of Presenting Complaint:

Duration of symptoms: Began a few hours prior to presentation. Quote: "It's a recent thing, just started today."

Previous treatments: None attempted for this episode. Quote: "This never happened before, so I haven't tried anything."

Progression over time: Symptoms have been constant without improvement or escalation since onset. Quote: "It's been the same since it started, no better, no worse."

Frequency of symptoms: This is the first episode. Quote: "I've never had anything like this before."

Impact on daily life and activities of daily living: Significant, unable to perform usual activities due to pain and breathlessness. Quote: "It's knocked me off my feet; I can't do anything."

Impact on work: Unable to work due to symptoms. Quote: "I couldn't possibly work feeling like this."

Impact on physical and mental wellbeing: Stressed and concerned due to the symptoms. Quote: "It's distressing, I don't know what's happening to me."

Quote: "It feels like my normal life has been just stopped in its tracks by this pain. I'm also really anxious about what's causing it."

Systemic Symptoms:

- Fatigue: Negative.

- Fever: Negative.

- Night sweats: Negative.

- Unintended weight loss: Negative.

- Generalised weakness: Negative.

- Malaise: Negative.

- Bowel habits: Normal.

- Urinary habits: Normal.

- Changes in sleep: Negative.

- Peripheral oedema: Negative.

Quote: "Aside from the chest pain and trouble breathing, I haven't noticed any other changes in my body."

Past Medical History:

- Surguries: Negative.

- Hospitalizations: Negative.

- Previous injuries or traumas: Negative.

- Psychiatric or psychological history: Negative.

- History of substance abuse or addiction: Negative.

- Immunizations and vaccination history: Up to date with all routine vaccinations.

- Any other relevant medical conditions or significant health events: Negative.

Quote: "I've been quite lucky health-wise, no surgeries or hospital stays to speak of."

Drug History:

He is taking ramipril 10 mg once daily for hypertension, and atorvastatin 20 mg at night for hypercholesterolemia. Follows dosing schedule strictly.

Quote: "I take my blood pressure pill every morning and cholesterol one every night, exactly as prescribed."

Allergies:

No known allergies.

Quote: "I don't have any allergies that I'm aware of."

Family History:

His father had ischemic heart disease and underwent angioplasty. His mother has type 2 diabetes.

Quote: "My dad had heart problems, and mum's diabetic."

Social History:

Lifestyle: Describes himself as home-oriented, enjoys reading and working on small engineering projects at home.

Occupation: He is a retired engineer.

Activities of Daily Living & Hobbies: Independent in all activities of daily living, has an interest in model engineering and often spends time in his workshop.

Smoking: Non-smoker.

Alcohol: Drinks occasionally, approximately 3 units per week.

Recreational Drug Use: Negative.

Diet: Mostly home-cooked meals, tries to balance his diet following his doctor’s advice.

Exercise: Walks for 30 minutes, five days a week.

Quotes:

"I've always been a non-smoker and I enjoy the occasional glass of wine with dinner."

"I stay active by walking regularly and tinkering with things; keeps my mind sharp too."

"My diet? Yes, I try to eat healthily, plenty of veggies, fish, and I avoid too much salt, sugar, or fatty food."

Ideas, Concerns, and Expectations:

Ideas: Mr. Stoyanov believes his symptoms might be related to heart trouble, given his family history.

Quote: "Given my dad's history with his heart, I can't help but wonder if this might be something similar."

Concerns: He is concerned about the significance of his symptoms and the potential need for hospitalisation or surgery.

Quote: "I'm rather worried that this might be serious and may need an operation or a lengthy hospital stay."

Expectations: He expects a clear diagnosis and action plan based on his presenting symptoms.

Quote: "I'm looking for a straightforward explanation of what's happening and what needs to be done about it."

Observations:

Respirations (Breaths/min): 20/min (0 points)

Oxygen Saturation (%): 94% (1 point)

Air or Oxygen?: On room air (0 points)

Blood Pressure (mmHg): 165/95 (0 point)

Pulse (Beats/min): 90/min (0 points)

Consciousness (AVPU): Alert (0 points)

Temperature (Celsius): 36.9°C (0 points)

NEWS Total Score: 1 (1 point due to Oxygen Saturation at 94%)

Physical Examination:

General inspection: Appears distressed due to chest pain and shortness of breath, no cyanosis, pallor, or oedema observed, no medical equipment present.

Inspection of the hands: No abnormalities observed, capillary refill time less than 2 seconds.

Pulses and blood pressure: No radio-radial delay, pulses normal volume and regular, blood pressure elevated.

Jugular venous pressure: Not elevated.

Inspection of the face: No conjunctival pallor, corneal arcus, or xanthelasma observed.

Close inspection of the chest: No visible pulsations or surgical scars.

Palpation of the chest: Apex beat palpable at the fifth intercostal space, no heaves or thrills felt.

Auscultation of the chest: Normal heart sounds, no murmurs or added sounds heard.

Inspection of the back: No visible deformities or scars.

Palpation of the back: No sacral oedema palpable.

Auscultation of the back: Lung fields clear, no crackles or reduced air entry.

Examination of the legs: No pitting oedema, no evidence of vein harvesting.

Diagnostic Tests:

Blood Tests (Reference Ranges):

Full Blood Count (FBC):

Haemoglobin (Hb): 145 g/L (Female: 115 - 165 g/​L, Male: 130 - 180 g/L)

Mean Corpuscular Volume (MCV): 89 fL (80 – 100 fL)

White Blood Cell Count: 7.2 x10^9/L (3.6 - 11.0 x10^9/L)

Platelets: 250 x10^9/L (140 - 400 x10^9/L)

Urea and Electrolytes:

Sodium: 140 mmol/L (133–146 mmol/L)

Potassium: 4.2 mmol/L (3.5–5.3 mmol/L)

Calcium (adjusted): 2.4 mmol/L (2.2-2.6 mmol/L)

Magnesium: 0.9 mmol/L (0.7–1.0 mmol/L)

Urea: 4.2 mmol/L (2.5 – 7.8 mmol/L)

Creatinine: 85 μmol/L (Male: 59–104 μmol/L, Female: 45–84 μmol/ L)

Estimated Glomerular Filtration Rate (eGFR): 92ml/min/1.73m3 (>90ml/min/1.73m3)

Liver Function Tests:

Alanine transferase (ALT): 30 iu/L (3-40 iu/L)

Aspartate transaminase (AST): 28 iu/L (3-30 iu/L)

Alkaline phosphatase (ALP): 85 umol/L (30-100 umol/L)

Gamma glutamyl transferase (yGT): 35 u/L (8-60 u/L)

Bilirubin: 12 umol/L (3-17 umol/L)

Albumin: 46 g/L (35-50 g/L)

Thyroid Function Tests:

Thyroid Stimulating Hormone (TSH): 2.5 mu/L (0.4-4.5 mu/L)

Free T3: 5.1 pmol/L (3.5-7.8 pmol/L)

Free T4: 15 pmol/l (9-25 pmol/l)

Other Blood Tests:

Troponin: Elevated.

NT-proBNP: Elevated.

Imaging Tests:

ECG: Shows ST-segment elevation.

Echocardiography: If indicated, may show regional wall motion abnormalities compatible with the diagnosis of acute coronary syndromes.

Condition:

Acute Coronary Syndrome

Patient Questions:

"I've heard a lot about heart attacks; is that what's happening to me?" Possible answer: "Your symptoms are suggestive of a heart condition, and we are conducting tests to confirm if it is a heart attack or another issue. We will keep you informed as we get results."

"What kind of tests are you going to run on me?" Possible answer: "We're going to start with an ECG, which is an electrical tracing of your heart, and some blood tests to check for any damage to your heart muscles. We're also considering an echocardiogram to look at the heart directly."

"Will I need surgery?" Possible answer: "Once we confirm the diagnosis, we will discuss all the treatment options with you, which could include medication, a procedure to open up blocked arteries, or surgery."

Examiner Questions:

What are the typical signs and symptoms of acute coronary syndrome? Possible answer: Typical signs and symptoms include chest pain, usually radiating, shortness of breath, sweating, and nausea.

What immediate actions should be taken when a patient presents with symptoms suggestive of acute coronary syndrome? Possible answer: Immediate actions include providing reassurance, pain relief, initiating ECG monitoring, and drawing blood for cardiac biomarkers.

What are the primary risk factors associated with acute coronary syndrome? Possible answer: Primary risk factors include age, gender, family history, hypertension, hypercholesterolemia, smoking, diabetes, and obesity.

What is the importance of serial ECGs and troponin in the diagnosis of acute coronary syndrome? Possible answer: Serial ECGs can show evolving changes of ischaemia or infarction, and serial troponin levels can demonstrate rising or peaking levels indicative of cardiac muscle damage.

What are the goals of treatment in acute coronary syndrome? Possible answer: The goals are to relieve symptoms, prevent myocardial damage, reduce mortality and morbidity, and prevent future events.

Treatment:

First-line treatment should include immediate assessment of the patient, including ECG monitoring, administering sublingual nitrate for chest pain relief, providing aspirin 300mg as a loading dose followed by 75mg daily dose, and anticoagulation therapy with heparin, unless contraindicated. If the patient is diagnosed with ST-elevation myocardial infarction (STEMI), primary percutaneous coronary intervention (PCI) should be performed as soon as possible. If PCI is not available, thrombolytic therapy should be considered within the appropriate time frame. For non-ST elevation acute coronary syndrome (NSTE-ACS), risk assessment should guide further invasive or conservative management. The early use of dual antiplatelets therapy, typically aspirin and a P2Y12 inhibitor (e.g., clopidogrel or ticagrelor), is mandatory in most cases.

Monitoring:

- Monitor ECG for changes suggestive of ongoing ischaemia or arrhythmia.

- Serial troponin measurements to evaluate infarct size or ongoing damage.

- Repeat clinical assessment to monitor pain, vital signs, and breathing.

- Follow-up visits should be scheduled as needed, with monitoring of cardiac function and medication adherence.

- Any changes in symptoms, such as increased pain, recurring symptoms, or new symptoms, should prompt urgent medical review.

Prognosis:

- Mortality rates are highest in the initial period after an acute coronary syndrome, with major risk reduction following successful revascularisation.

- Risk factors such as age, comorbidities, and successful revascularisation influence the prognosis.

- Lifestyle modifications and adherence to medical therapy are crucial for long-term prognosis.

- Regular follow-up and rehabilitation are important for recovery and secondary prevention.

Differential diagnoses:

1. Aortic dissection: Less likely given the lack of migratory pain and associated findings such as aortic regurgitation murmur.

2. Pulmonary embolism: Can cause chest pain and shortness of breath but typically with pleuritic pain and signs of deep vein thrombosis.

3. Pericarditis: Chest pain of pericarditic nature changes with position and often presents with a pericardial rub on auscultation.

4. Gastroesophageal reflux disease (GERD): Chest pain can mimic cardiac pain but usually is related to meals and responds to antacids.

5. Musculoskeletal chest pain: Reproducible on palpation and movement, unlike cardiac pain which is not linked with chest wall movement.

Keyword Filters:

Speciality Filter:

Cardiovascular; General Practice; Accident & Emergency

Presenting Complaint Filter:

Chest Pain; Shortness of Breath

Condition Filter:

Acute Coronary Syndromes

Location Filter:

Accident & Emergency

Case created by:

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Reviewed by:

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Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_16\_Acute Coronary Syndrome

Homepage Vignette:

## A 55-year-old female called Isra Sadiq presents with chest pain and shortness of breath.

Individual Page Vignette:

As the attending General Practitioner, you meet 55-year-old Isra Sadiq, a software engineer, in a clinic setting, who presents with chest pain and difficulty breathing.

Patient Name:

Isra Qamar Sadiq (Pronunciation: Eez-rah Kah-mahr Sah-deek); prefers to be called Isra.

Age:

12/06/1969

Location:

Clinic

Personality:

Isra is articulate and meticulous, with a tendency to speak in a measured and concise manner. She carries an air of assertiveness and often asks for detailed explanations.

Presenting Complaint:

Isra reports experiencing severe chest pain radiating to her arm alongside episodes of breathlessness.

Quote:

"It feels like there's a vice around my chest, and my left arm feels somewhat numb; it's quite frightening."

Symptoms:

- Site: Anterior chest - "It feels central, just behind my breastbone."

- Onset: Gradually over the morning - "I felt completely fine last night, but this pain crept up on me today."

- Character: Crushing sensation - "It's like something heavy is sitting on my chest."

- Radiation: To the left arm - "The pain is spreading from my chest to my left arm."

- Associated Symptoms: Nausea - "I also felt queasy when the pain started."

- Timing: Intermittent episodes - "The pain comes and goes, but when it hits, it's unbearable."

- Exacerbating and Relieving Factors: Exertion worsens, rest relieves - "When I try to walk, the pain gets worse, but if I sit down, it slowly subsides."

- Severity: 8/10 - "On a scale from one to ten, the pain is definitely an eight."

Positive findings with quotes:

- Chest pain or discomfort: Yes - "It feels like there's a vice around my chest."

- Shortness of breath: Yes - "I find myself gasping for air during these episodes."

- Palpitations: Negative

- Syncope: Negative

- Nausea: Yes - "I also felt queasy when the pain started."

- Vomiting: Negative

- Intermittent claudication: Negative

- Peripheral oedema: Negative

History of Presenting Complaint:

- Duration of symptoms: Several hours - "The pain started in the morning while I was getting ready for work."

- Previous treatments: None - "This is the first time I've experienced something like this."

- Progression over time: Increasing in intensity - "It's getting worse as the day goes on."

- Frequency of symptoms: Has occurred multiple times today - "I've had a few of these painful episodes throughout the day."

- Impact on daily life and activities of daily living: Significant - "I had to cancel all my meetings; I can barely focus or do anything right now."

- Impact on work: Has taken the day off - "I couldn't go into the office; I've never had to call in sick like this before."

- Impact on physical and mental wellbeing: Causes stress - "It's not just the physical pain, it's worrying me. I have never dealt with anything like this, and it's freaking me out."

General quote for this section:

Quote:

"I've been in pain since this morning, it's getting worse, and I've had to stop everything I'm doing. I'm struggling with the pain and worry."

Systemic Symptoms:

- Fatigue: Negative

- Fever: Negative

- Night sweats: Negative

- Unintended weight loss: Negative

- Generalised weakness: Negative

- Malaise: Negative

- Bowel habits: Normal

- Urinary habits: Normal

- Changes in sleep: Negative

- Peripheral oedema: Negative

Quote:

"I haven't noticed any other changes or symptoms in my body; it's really just this terrible pain and breathlessness."

Past Medical History:

- Surgeries: Negative

- Hospitalizations: Negative

- Previous injuries or traumas: Negative

- Psychiatric or psychological history: Negative

- History of substance abuse or addiction: Negative

- Immunizations and vaccination history: Up to date on all recommended vaccinations - "I make sure to get my flu shot every year and any others that are due."

- Any other relevant medical conditions or significant health events: Negative

Quote:

"I'm generally quite healthy; I rarely need to see a doctor. My vaccines are always kept up to date."

Drug History:

Paracetamol occasionally for headaches - "I sometimes take a paracetamol if I have a headache, but that's about it."

Allergies:

No known allergies - "I've never had an allergic reaction to anything, as far as I know."

Family History:

Mother had hypertension and father had type 2 diabetes - "My mum manages her blood pressure with medication, and my dad has type 2 diabetes."

Social History:

Lifestyle:

Conscientious about health, follows a balanced diet.

Occupation:

Software engineer in a senior position - "It can be stressful at times, but I enjoy the challenges of my job."

Activities of Daily Living & Hobbies:

Enjoys reading, cycling at the weekend, regular attendee at a local yoga studio.

Smoking:

Non-smoker - "I've never smoked."

Alcohol:

Social drinking, approximately 4 units per week - "I may have a glass of wine or two on the weekends."

Recreational Drug Use:

Negative - "I steer clear of any recreational drugs."

Diet:

Mostly plant-based with occasional fish - "I try to eat healthily, lots of vegetables and fish when I can."

Exercise:

Regular, cycles to work, weekly yoga - "I like to stay active, cycling to the office when the weather allows and yoga every Thursday night."

Travel History:

None recently.

Sexual History:

Not relevant to current presentation.

Driving Status:

Full driver's license, no recent issues.

Cultural or Religious Practises:

Observes Islamic dietary laws.

Recent Life Events:

No recent changes or stress.

Exposure to Hazards or New Environment:

Works remotely, no recent exposures.

Quote:

"I'm conscious about staying healthy; I exercise regularly and eat well. I've never taken up smoking or drugs, and I drink very little. My job keeps me mentally active, and I unwind with books and yoga."

Ideas, Concerns, and Expectations:

Ideas:

"I've read that stress can cause chest pains, but I'm worried this could be something serious like a heart attack."

Concerns:

"I'm concerned about the impact this might have on my work and my wellbeing if it turns out to be something chronic."

Expectations:

"I expect to get some tests to find out what's causing this and to receive the appropriate treatment. I want to understand what's happening and how to manage it."

Quote:

"I do hope it's nothing serious, but I need to know what's causing these symptoms so I can address it promptly."

Observations:

Respirations (Breaths/min): 18 (0 points)

Oxygen Saturation (%): 95% (1 point)

Air or Oxygen?: On room air (0 points)

Blood Pressure (mmHg): 150/90 (0 points)

Pulse (Beats/min): 88 (0 points)

Consciousness (AVPU): Alert (0 points)

Temperature (Celsius): 36.5°C (0 points)

NEWS Total Score: 1

NEWS Score Explanation: Isra has a NEWS total score of 1 point, originating from an oxygen saturation of 95%, which scores 1 point. All other readings are within normal ranges and do not contribute to the total score.

\*\*Physical Examination:\*\*

\*\*General inspection:\*\*

- Isra appears anxious and is holding her chest. She displays labored breathing and speaks between breaths. There are no signs of cyanosis. She sweats profusely and appears pale.

\*\*Inspection of the hands:\*\*

- Her hands are clammy with no peripheral cyanosis, tar staining, or xanthomata. No arachnodactyly or signs of hypercoagulability are present (e.g., splinter hemorrhages or Janeway's lesions). Capillary refill time is approximately 3 seconds, indicating potential circulatory compromise.

\*\*Pulses and blood pressure:\*\*

- Radial pulse is tachycardic but regular, without radio-radial delay. No collapsing pulse is noted, and the brachial pulse volume is diminished but present. Blood pressure is 150/90 mmHg in the right arm and 148/88 mmHg in the left. Carotid pulse is felt with moderate force and normal character; no carotid bruits are audible on auscultation.

\*\*Jugular venous pressure:\*\*

- JVP is not elevated on inspection; hepatojugular reflux is not tested due to the patient's discomfort.

\*\*Inspection of the face:\*\*

- Inspection reveals mild pallor, but no conjunctival pallor, corneal arcus, or xanthelasma. There is no evidence of central cyanosis in the mouth and no angular stomatitis.

\*\*Close inspection of the chest:\*\*

- No obvious deformities, pulsations, or scars from previous cardiothoracic surgeries are seen.

\*\*Palpation of the chest:\*\*

- Apex beat is palpable in the 5th intercostal space at the midclavicular line, with no displacement. No thrills or heaves are felt on palpation over the chest.

\*\*Auscultation of the chest:\*\*

- Normal S1 and S2 heart sounds are heard without any additional sounds or murmurs across all valvular areas using the diaphragm and bell. No rubs or gallops are audible.

\*\*Inspection of the back:\*\*

- The back inspection reveals no abnormalities or deformities and no surgical scars.

\*\*Palpation of the back:\*\*

- No sacral edema or tenderness noted on palpation.

\*\*Auscultation of the back:\*\*

- The lung examination is clear with no evidence of coarse crackles or wheezes, which might indicate congestive heart failure or other pulmonary pathology.

\*\*Examination of the legs:\*\*

- No peripheral edema is noted. There is no evidence of DVT, no redness, tenderness, or increased warmth.

\*\*Special Tests:\*\*

Immediate special tests which would include an ECG to detect any ischemic changes or arrhythmias, and cardiac biomarkers to identify myocardial damage.

\*\*Diagnostic Tests:\*\*

- Urgent ECG to investigate for myocardial ischemia or infarction.

- Cardiac biomarkers including troponins and CK-MB to diagnose myocardial damage.

- Chest X-ray to assess the pulmonary vasculature and cardiac silhouette.

- Potential echocardiogram to evaluate for wall motion abnormalities and assess ejection fraction.

Blood Tests (Reference Ranges):

Full Blood Count (FBC):

Haemoglobin (Hb): Result (Female: 115 - 165 g/L)

Mean Corpuscular Volume (MCV): Result (80 – 100 fL)

White Blood Cell Count: Result (3.6 - 11.0 x10^9/L)

Platelets: Result (140 - 400 x10^9/L)

Urea and Electrolytes:

Sodium: Result (133–146 mmol/L)

Potassium: Result (3.5–5.3 mmol/L)

Calcium (adjusted): Result (2.2-2.6 mmol/L)

Magnesium: Result (0.7–1.0 mmol/L)

Urea: Result (2.5 – 7.8 mmol/L)

Creatinine: Result (Female: 45–84 μmol/L)

Estimated Glomerular Filtration Rate (eGFR): Result (>90ml/min/1.73m3)

Liver Function Tests:

Alanine transferase (ALT): Result (3-40 iu/L)

Aspartate transaminase (AST): Result (3-30 iu/L)

Alkaline phosphatase (ALP): Result (30-100 umol/L)

Gamma glutamyl transferase (yGT): Result (8-60 u/L)

Bilirubin: Result (3-17 umol/L)

Albumin: Result (35-50 g/L)

Cardiac Biomarkers:

Troponin: To be assessed for confirmation of myocardial injury.

Imaging Tests:

ECG (Electrocardiogram): To assess for any ischaemic changes or arrhythmias.

Echocardiography: If ECG findings are indicative of ischaemic heart disease, to evaluate left ventricular function.

Treatment:

Administer aspirin and consider additional antiplatelet therapy such as ticagrelor or clopidogrel. If STEMI is confirmed, early reperfusion is vital, either by primary percutaneous coronary intervention (PCI) or thrombolysis if PCI is not available. Pain relief with morphine, anti-emetics for nausea, and treatment of any complications. Statins and beta-blockers to be considered post-acute phase. Follow NICE guidelines on the management of Acute Coronary Syndromes.

Monitoring:

Monitor cardiac biomarkers and repeat ECGs to track progress. Assess vital signs regularly and watch for signs of heart failure or arrhythmias. Arrange follow-up visits for medication review and consider lifestyle modifications for long-term management. Refer to cardiology for further assessment and possible coronary angiography.

Prognosis:

Depends on the extent of the myocardial damage and the success of reperfusion treatment. Prognosis can be favourable with prompt and effective management, lifestyle changes, and tight control of cardiovascular risk factors.

Differential diagnoses:

1. Myocardial Infarction:

2. Angina Pectoris:

3. Pulmonary Embolism:

4. Aortic Dissection:

5. Pericarditis:

6. Gastroesophageal Reflux Disease (GERD):

7. Musculoskeletal Pain:

Note: These diagnoses are considered based on symptoms and presentation, but Acute Coronary Syndrome is most consistent with the symptoms and risk factors described in this case.

Patient Questions:

1. "Could this be from stress?"

Possible answer: Stress can contribute to heart problems, but your symptoms need a full assessment as they could be due to a serious heart condition such as Acute Coronary Syndrome.

2. "Will I need surgery?"

Possible answer: It depends on the results of your tests, including the ECG and possible angiography; some heart conditions are treated with surgery, but others can be managed with medication and lifestyle changes.

3. "Can I go back to work soon?"

Possible answer: It's important to fully understand and manage your condition before returning to work. Your recovery time and ability to work will depend on the severity of your symptoms and the treatment plan.

4. "Should I be on a special diet now?"

Possible answer: Diet is an important part of managing heart health, and depending on your diagnosis, you may be referred to a dietician who can provide specific advice for your situation.

Examiner Questions:

1. What would be your immediate management steps for a patient presenting with suspected Acute Coronary Syndrome?

Possible answer: Administer aspirin, provide pain relief, perform an ECG, request blood tests including cardiac biomarkers, provide oxygen if hypoxic, and prepare for possible reperfusion therapy.

2. What are the indications for primary PCI versus thrombolysis in the management of STEMI?

Possible answer: Primary PCI is preferred if it can be performed within recommended time frames; thrombolysis is considered if primary PCI is not available within 120 minutes.

3. What are the differences between unstable angina, NSTEMI, and STEMI on an ECG?

Possible answer: STEMI shows ST-segment elevation; NSTEMI may present with ST-segment depression, T-wave inversion, or be non-diagnostic; unstable angina often has a non-diagnostic ECG.

4. What lifestyle modifications are appropriate for a patient following an Acute Coronary Syndrome event?

Possible answer: Smoking cessation, increased physical activity, healthy diet, managing stress, and regular medical follow-up.

5. Name two medications commonly started after an Acute Coronary Syndrome event and their purposes.

Possible answer: Statins for lipid lowering and beta-blockers to decrease heart rate and oxygen demand.

Treatment:

Following NICE guidelines on the management of Acute Coronary Syndromes:

- Administer 300mg chewable aspirin immediately unless contraindicated.

- Provide pain relief with intravenous morphine and anti-emetics for nausea.

- In the case of STEMI, urgent reperfusion with primary PCI is the preferred method if available within 120 minutes; otherwise, offer fibrinolysis.

- Commence dual antiplatelet therapy with aspirin and a P2Y12 inhibitor such as clopidogrel or ticagrelor.

- Consider anticoagulant therapy based on the patient's risk profile.

- Start statin therapy, typically atorvastatin 80mg once daily.

- Initiate beta-blockers, considering patient's haemodynamics and comorbidities.

- If there are signs of heart failure, consider ACE inhibitors or ARBs.

- Provide lifestyle advice and risk factor management.

- For patients with confirmed NSTEMI and high-risk features, offer early invasive strategy.

- Consider a referral for cardiac rehabilitation.

Monitoring:

- Monitor ECG and troponin levels to assess response to treatment.

- Watch for symptoms of heart failure or arrhythmias.

- Blood pressure and lipid profiles to be monitored and managed to target levels.

- Follow-up appointments every 3-6 months initially, then annually.

- Referral to a cardiologist if symptoms persist or worsen.

Prognosis:

- With prompt reperfusion and appropriate ongoing management, the prognosis can be positive.

- Lifestyle changes and adherence to treatment are essential for long-term outcomes.

- Prognostic factors include age, presence of comorbidities, extent of coronary artery disease, and left ventricular function.

Speciality Filter: Cardiovascular

Presenting Complaint Filter: Chest Pain; Shortness of Breath

Condition Filter: Acute Coronary Syndromes

Location Filter: Clinic

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_17\_AcuteCoronarySyndrome

Homepage Vignette:

## A 57-year-old male called Isandro Takahashi presents with chest pain and shortness of breath.

Individual Page Vignette:

You are a doctor in the Emergency Department; a 57-year-old gentleman named Isandro Takahashi (pronounced ee-SAN-dro ta-KA-ha-shee), who is an architect, presents to you complaining of chest pain and difficulty breathing.

Patient Name:

Isandro Kei Takahashi. He would like to be called Isandro.

Age:

17/06/1967

Location:

Emergency Department

Personality:

Isandro is articulate and forthright, with a tendency to be very detailed in his descriptions. He speaks with a certain level of assurance and clarity that reflects his professional background as an architect. His educational level is high, and he demonstrates a keen interest in understanding the medical explanations given to him.

Presenting Complaint:

Isandro reports experiencing sudden onset, severe chest pain that feels like pressure, along with difficulty breathing.

Quote:

"I was just going about my day and out of nowhere, this intense pressing pain hit me in the chest. It's like someone is standing on my chest, and I can't seem to catch my breath properly."

Symptoms:

Site: The pain is central and slightly to the left in the chest. Quote: "The pain is right here in the middle of my chest, just off to the left side."

Onset: The pain started abruptly while he was at work. Quote: "It hit me all of a sudden while I was reviewing plans this morning."

Character: The pain is crushing in nature. Quote: "It feels like a heavy weight pressing down on my chest."

Radiation: The pain radiates to his left arm and neck. Quote: "The pain seems to travel up towards my neck and down my left arm."

Associated Symptoms: Shortness of breath. Quote: "Along with this horrendous pain, I'm finding it hard to breathe."

Timing: The pain has been continuous for the past 2 hours. Quote: "This has been going on for about 2 hours now, with no let-up."

Exacerbating and Relieving Factors: The pain is not relieved by rest and is not exacerbated by movement. Quote: "No matter what I do, the pain just won't subside. Sitting, standing – it makes no difference."

Severity: He rates the pain 8 out of 10. Quote: "On a scale from one to ten, it’s definitely an eight."

Chest pain or discomfort: Positive. Quote: "The pain in my chest is unbearable."

Shortness of breath: Positive. Quote: "I seem to be gasping for air."

Palpitations: Negative.

Syncope: Negative.

Nausea: Negative.

Vomiting: Negative.

Intermittent claudication: Negative.

Peripheral oedema: Negative.

History of Presenting Complaint:

Duration of symptoms: Symptoms have been present for approximately 2 hours. Quote: "I've been in this state for about 2 hours now."

Previous treatments: No treatments have been attempted yet. Quote: "I haven't taken anything for it – I came straight to the hospital."

Progression over time: The pain has remained constant since onset. Quote: "It's been constant, like a relentless pressure."

Frequency of symptoms: This is the first occurrence. Quote: "I've never had anything like this before."

Impact on daily life and activities of daily living: The symptoms have caused him significant distress and anxiety, impeding his ability to work and function normally. Quote: "It's completely thrown off my day; I can't focus on anything but this pain."

Impact on work: Unable to continue working due to pain. Quote: "I had to leave the office immediately; there’s no way I could work feeling like this."

Impact on physical and mental wellbeing: Has caused significant worry for his health. Quote: "It's quite scary, to be honest. I'm worried about what's happening to me."

Systemic Symptoms:

Fatigue: Negative.

Fever: Negative.

Night sweats: Negative.

Unintended weight loss: Negative.

Generalised weakness: Negative.

Malaise: Negative.

Bowel habits: Normal.

Urinary habits: Normal.

Changes in sleep: Normal.

Peripheral oedema: Negative.

Past Medical History:

Surgeries: Negative.

Hospitalizations: Negative.

Previous injuries or traumas: Negative.

Psychiatric or psychological history: Negative.

History of substance abuse or addiction: Negative.

Immunizations and vaccination history: Up to date with vaccinations. Quote: "I make sure to keep my vaccinations on track."

Any other relevant medical conditions or significant health events: Negative.

Drug History:

Isandro reports no current medications, no history of medication non-compliance or missed doses, no use of herbal supplements or alternative therapies, no use of contraception or HRT, and no incidents of overdose.

Allergies:

Isandro states that he has no known allergies.

Family History:

Reports of hypertension in his father and a history of diabetes mellitus in his maternal aunt.

Social History:

Lifestyle: Reports living a busy lifestyle with high workload demands.

Occupation: Architect.

Activities of Daily Living & Hobbies: Enjoys hiking and architectural drawing in his free time.

Smoking: Non-smoker.

Alcohol: Drinks occasionally, about 4 units per week.

Recreational Drug Use: None.

Diet: Balanced diet, with regular intake of fruits and vegetables.

Exercise: Walks for 30 minutes daily.

Travel History: Recently travelled for a business trip to various European countries.

Sexual History: Monogamous relationship, no known STDs.

Driving Status: Drives to work daily.

Cultural or Religious Practises: Not applicable.

Recent Life Events: Stress due to increased work pressure.

Exposure to Hazards or New Environment: None reported.

Ideas, Concerns, and Expectations:

Ideas: Isandro thinks the pain could be related to his work stress, but also fears it might be heart-related. Quote: "I thought it might just be stress initially, but it's so intense, I’m worried it’s my heart."

Concerns: He is particularly worried about the possibility of a heart attack. Quote: "The thought that this might be a heart attack is frightening."

Expectations: Isandro expects a thorough evaluation to identify the cause of his symptoms and prompt treatment. Quote: "I need to know what's wrong and I expect whatever treatment is necessary to be done quickly."

Observations:

Respirations (Breaths/min): 22 breaths/min - 0 points.

Oxygen Saturation (%): 94% - 1 point.

Air or Oxygen?: Room air - 0 points.

Blood Pressure (mmHg): 150/90 - 0 points.

Pulse (Beats/min): 98 beats/min - 0 points.

Consciousness (AVPU): Alert - 0 points.

Temperature (Celsius): 36.7°C - 0 points.

NEWS Total Score: 1

(NEWS has been calculated based on the following parameters: Respiratory rate of 22 breaths/min (0 points), oxygen saturation of 94% (1 point), room air (0 points), systolic blood pressure of 150 mmHg (0 points), pulse rate of 98 beats/min (0 points), the patient is alert (0 points), and temperature of 36.7°C (0 points).)

\*\*Physical Examination:\*\*

\*\*General inspection:\*\*

- Riaz appears anxious and is grimacing in pain. There are no signs of cyanosis or pallor; his skin appears warm and well-perfused. No respiratory distress observed at rest, but he appears to be taking shallow breaths due to pain. No medical equipment around him other than a standard hospital-provided patient chair.

\*\*Inspection of the hands:\*\*

- Skin color is normal; there are no signs of clubbing or cyanosis. No tar staining, xanthomata, splinter hemorrhages, Janeway lesions, Osler's nodes, or koilonychia are noted, which are suggestive of endocarditis or hypercoagulation disorders.

- Palpation shows a normal capillary refill time of less than 2 seconds, suggesting adequate perfusion.

\*\*Pulses and blood pressure:\*\*

- Radial pulse is regular but tachycardic, with no detected radio-radial delay and no collapsing pulse.

- Blood pressure is noted to be elevated at 155/95 mmHg.

- Carotid pulse is palpable with a normal volume; no bruits detected upon auscultation.

\*\*Jugular venous pressure:\*\*

- JVP is not visibly elevated, and the hepatojugular reflux is not elicited on examination, suggesting no acute heart failure.

\*\*Inspection of the face:\*\*

- The eyes show no conjunctival pallor or xanthelasma; there are no Kayser-Fleischer rings, which would indicate Wilson's disease.

- The oral cavity shows no signs of central cyanosis or angular stomatitis, and no high arched palate; dental hygiene is satisfactory.

\*\*Close inspection of the chest:\*\*

- No visible pectus deformities of the chest wall, no surgical scars, and no pulsations suggesting an aneurysm or severe cardiomegaly.

\*\*Palpation of the chest:\*\*

- Apex beat is not displaced, suggesting no enlargement.

- No heaves or thrills detected on palpation, which can suggest significant valvular heart disease or cardiac remodeling.

\*\*Auscultation of the chest:\*\*

- Normal heart sounds are heard, with no added murmurs, rubs, or gallops, which may indicate underlying cardiac pathology like valvular disease or pericarditis.

\*\*Inspection of the back:\*\*

- No deformities or scars noted on the back.

\*\*Palpation of the back:\*\*

- No sacral edema or tenderness detected.

\*\*Auscultation of the back:\*\*

- Lung fields are clear to auscultation bilaterally, with no evidence of crackles, wheezes, or other abnormal breath sounds that could suggest pneumonia, heart failure, or chronic obstructive pulmonary disease.

\*\*Examination of the legs:\*\*

- No signs of pitting edema, cyanosis, or signs of chronic venous insufficiency. No evidence of saphenous vein harvesting from previous coronary artery bypass surgeries.

\*\*Diagnostic Tests:\*\*

- Perform an electrocardiogram (ECG) to assess for signs of acute coronary syndrome.

- Serial measurement of cardiac biomarkers, including troponin levels, to detect myocardial injury.

- Chest X-ray to rule out alternative causes of chest pain such as pneumonia or pneumothorax.

Condition:

Acute Coronary Syndrome

Patient Questions:

"When can I resume work?" Possible Answer: "We need to address your current symptoms and possibly perform further tests before we can determine a safe timeline for you to return to work."

"Is this going to affect my long-term health?" Possible Answer: "It depends on the findings and how well you respond to the treatment, but our priority is to manage this acute event and minimise any potential impact on your health."

"What lifestyle changes will I need to make after this?" Possible Answer: "Depending on the outcome of the assessment, we may recommend certain lifestyle modifications, such as diet and exercise, and potentially medications to manage your health."

Examiner Questions:

What are the characteristic symptoms of Acute Coronary Syndrome (ACS)? Possible Answer: Chest pain or discomfort, which may radiate to the arm, neck, jaw, or back, shortness of breath, nausea, and sweating.

What are the initial investigations for a patient presenting with suspected ACS? Possible Answer: ECG, cardiac biomarkers (troponins), full blood count, lipid profile, renal function tests, and chest X-ray.

How would you manage a patient with suspected ACS in the Emergency Department? Possible Answer: This would include initial management with aspirin, nitroglycerin (if blood pressure allows), supplemental oxygen (if hypoxemic), and analgesia such as morphine.

What risk factors are commonly associated with ACS? Possible Answer: Common risk factors include hypertension, hyperlipidemia, smoking, diabetes, and family history of coronary artery disease.

How does the management of unstable angina differ from that of a myocardial infarction? Possible Answer: Both conditions require urgent assessment and similar initial treatments; however, myocardial infarction may also require thrombolysis or percutaneous coronary intervention.

Treatment:

To be completed by the Executive based on NICE, CKS, BMJ, and BNF guidelines.

Monitoring:

To be completed by the Executive using specific parameters for monitoring the patient's condition.

Prognosis:

To be completed by the Executive detailing typical disease progression, expected treatment response, and potential outcomes.

Differential diagnoses:

To be completed by the Executive, listing potential alternative diagnoses and reasons for higher likelihood of ACS.

Keyword Filters:

Speciality Filter: Cardiovascular;

Presenting Complaint Filter: Chest Pain, Breathlessness, Shortness of Breath;

Condition Filter: Acute Coronary Syndromes;

Location Filter: Accident & Emergency;

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_18\_Acute Coronary Syndromes

Homepage Vignette:

## A 52-year-old male called Riaz Sulemana presents with central chest pain and breathlessness.

Individual Page Vignette:

You are a junior doctor in an Emergency Department. Riaz Sulemana, a 52-year-old accountant presents to you with central chest pain and breathlessness.

Patient Name:

Riaz Sulemana (Pronunciation: Ree-az Soo-leh-mah-nah), prefers to be called Riaz.

Age:

24/02/1972

Location:

Emergency Department

Personality:

Riaz is a detail-oriented and articulate individual with a tendency to speak quickly when anxious. He has an inquisitive nature, often seeking comprehensive explanations.

Presenting Complaint:

Riaz visited the ED with a complaint of chest pain and breathlessness. "It feels like there's a weight on my chest, and I can't catch my breath," he says, visibly distressed.

Symptoms:

SOCRATES:

Site: The pain is centered in the chest. "The pain is right here, in the middle of my chest."

Onset: Pain started 2 hours ago. "It just came out of nowhere while I was watching television."

Character: Describes pain as a pressure. "It feels like someone is sitting on my chest."

Radiation: Pain radiates to the left arm. "The pain is shooting down my left arm."

Associated Symptoms: Accompanied by shortness of breath. "Along with the pain, I can't seem to breathe properly."

Timing: Pain has been constant since onset. "Once it started, the pain hasn't eased up at all."

Exacerbating and Relieving Factors: Pain is not relieved by rest and is exacerbated by physical activity. "I tried resting, but it didn't help. Moving around makes it worse."

Severity: Rates pain as 8/10. "On a scale of 1 to 10, it's definitely an 8."

Additional Symptoms:

- Chest pain or discomfort: Positive. "I told you, it's like a heavy weight on my chest."

- Shortness of breath: Positive. "My breaths feel shallow and unsatisfying."

- Palpitations: Negative.

- Syncope: Negative.

- Nausea: Negative.

- Vomiting: Negative.

- Intermittent claudication: Negative.

- Peripheral oedema: Negative.

History of Presenting Complaint:

- Duration of symptoms: 2 hours. "It's been about two hours so far."

- Previous treatments: None. "This is the first time it’s happened; I haven't taken anything."

- Progression over time: Symptoms have remained constant. "It's been the same since it started."

- Frequency of symptoms: This is the first episode. "I’ve never felt anything like this before."

- Impact on daily life and activities of daily living: Significant impact, unable to perform usual activities. "I couldn't finish my evening walk. I had to sit down immediately."

- Impact on work: Not applicable as the event occurred after work hours.

- Impact on physical and mental wellbeing: Causing distress and anxiety. "I’m worried; I don't know what's happening to me."

Quote:

"I was fine earlier today, but now I’m struggling to do anything because of this chest pain and trouble breathing. It’s completely thrown me off."

Systemic Symptoms:

- Fatigue: Negative.

- Fever: Negative.

- Night sweats: Negative.

- Unintended weight loss: Negative.

- Generalised weakness: Negative.

- Malaise: Negative.

- Bowel habits: Negative.

- Urinary habits: Negative.

- Changes in sleep: Negative.

- Peripheral oedema: Negative.

Quote:

"I've been feeling well otherwise, no fevers or sweats, and everything else has been normal until just now."

Past Medical History:

- Surgeries: Negative.

- Hospitalizations: Negative.

- Previous injuries or traumas: Negative.

- Psychiatric or psychological history: Negative.

- History of substance abuse or addiction: Negative.

- Immunizations and vaccination history: Up to date. "I keep all my jabs up to date."

- Any other relevant medical conditions or significant health events: History of hypertension. "I've been managing high blood pressure for a few years, but nothing like this."

Quote:

"Except for my blood pressure, which I control with medication, I’ve been healthy."

Drug History:

Riaz is currently taking Amlodipine 10 mg once daily for hypertension. "I take a small pill every morning for my blood pressure."

Allergies:

Riaz reports no known allergies.

Quote:

"I've never had a bad reaction to anything, no allergies that I know of."

Family History:

Father had a myocardial infarction at age 60. "My dad had a heart attack a few years back."

Quote:

"It’s worrying considering my father had heart issues around my age."

Social History:

Lifestyle: Lives alone, relatively sedentary lifestyle.

Occupation: Accountant.

Activities of Daily Living & Hobbies: Enjoys puzzles and watching documentaries.

Smoking: Non-smoker.

Alcohol: Drinks socially, approximately 4 units per week. "I might have a pint or two on the weekend."

Recreational Drug Use: Denies any recreational drug use.

Diet: Eats a balanced diet.

Exercise: Goes for evening walks, minimal high-intensity exercise.

Quote 1: "I live a pretty quiet life, nothing too stressful."

Quote 2: "I enjoy my solitary pint on a Saturday, it's my little treat to myself."

Quote 3: "I'm not much of an athlete, but I do like my evening strolls, at least I did before this happened."

Ideas, Concerns, and Expectations:

Ideas: Riaz is concerned that this could be a heart-related issue due to family history.

Quote: "Given my dad's history, I can't help but think this chest pain is something to do with my heart."

Concerns: Worried about the severity and suddenness of symptoms.

Quote: "The fact that this came out of nowhere scares me. Is it going to happen again?"

Expectations: Seeks immediate treatment and reassurance about the condition.

Quote: "I need to know what's going on. I'm expecting some tests and maybe some medication to sort this out."

Observations:

Respirations (Breaths/min): 22 (2 points)

Oxygen Saturation (%): 95% (1 point)

Air or Oxygen?: On room air (0 points)

Blood Pressure (mmHg): 155/95 (0 points)

Pulse (Beats/min): 98 (1 point)

Consciousness (AVPU): Alert (0 points)

Temperature (Celsius): 36.7 (0 points)

NEWS Total Score: 4 points (Riaz scored 2 points for respirations, 1 point for oxygen saturation, 1 point for pulse, and 0 points for the other parameters, hence a NEWS total score of 4 points.)

\*\*Physical Examination:\*\*

\*\*General inspection:\*\*

- Riaz appears in moderate distress related to his symptoms. He is sitting upright, is diaphoretic, and shows signs of discomfort. There are no objects or equipment suggesting ongoing medical treatment or conditions.

\*\*Inspection of the hands:\*\*

- Hands appear normal without cyanosis, pallor, or clubbing. No tar staining or xanthomata are present. There are no signs suggestive of endocarditis such as splinter hemorrhages or Osler’s nodes. Capillary refill time is less than 2 seconds, indicating good peripheral perfusion.

\*\*Pulses and blood pressure:\*\*

- Radial pulse is rapid but regular with a rate of 98 beats per minute. No radio-radial delay. A collapsing pulse is not present. Brachial pulse volume and character appear normal. Blood pressure is recorded at 155/95 mmHg.

- Carotid pulse is palpable bilaterally without bruit.

\*\*Jugular venous pressure:\*\*

- JVP is not elevated. Hepatojugular reflux is not present, which would suggest right heart strain or congestion.

\*\*Inspection of the face:\*\*

- No conjunctival pallor indicating anemia. Eyes show no corneal arcus or xanthelasma. No central cyanosis or angular stomatitis present, indicating no significant hypoxemia or vitamin deficiency.

\*\*Close inspection of the chest:\*\*

- There is no visible pectus excavatum or carinatum. No visible pulsations are present, and there is no scarring indicative of previous chest surgeries.

\*\*Palpation of the chest:\*\*

- Apex beat is palpable at the 5th intercostal space in the mid-clavicular line; palpation reveals no heaves, thrills, or other abnormal movements.

\*\*Auscultation of the chest:\*\*

- Heart sounds are regular with normal S1 and S2; no murmurs, rubs, or gallops are heard that might suggest valvular abnormalities or pericarditis.

\*\*Inspection of the back:\*\*

- The spine appears straight without any visible scoliosis or kyphosis. No scars are noted on the back.

\*\*Palpation of the back:\*\*

- No sacral edema is present, which might suggest fluid retention.

\*\*Auscultation of the back:\*\*

- Lung fields are clear bilaterally, with no crackles indicating no acute heart failure or pulmonary edema.

\*\*Examination of the legs:\*\*

- No pitting edema is observed around the ankles, nor is there evidence of chronic venous insufficiency or previous vein harvesting.

Diagnostic Tests:

Blood Tests (Reference Ranges):

Full Blood Count (FBC):

Haemoglobin (Hb): 146 g/L (Female: 115 - 165 g/L, Male: 130 - 180 g/L)

Mean Corpuscular Volume (MCV): 88 fL (80 – 100 fL)

White Blood Cell Count: 6.0 x10^9/L (3.6 - 11.0 x10^9/L)

Platelets: 250 x10^9/L (140 - 400 x10^9/L)

Urea and Electrolytes:

Sodium: 140 mmol/L (133–146 mmol/L)

Potassium: 4.2 mmol/L (3.5–5.3 mmol/L)

Calcium (adjusted): 2.4 mmol/L (2.2-2.6 mmol/L)

Magnesium: 0.9 mmol/L (0.7–1.0 mmol/L)

Urea: 5.0 mmol/L (2.5 – 7.8 mmol/L)

Creatinine: 78 μmol/L (Male: 59–104 μmol/L, Female: 45–84 μmol/L)

Estimated Glomerular Filtration Rate (eGFR): >90ml/min/1.73m3

Liver Function Tests:

Alanine transferase (ALT): 25 iu/L (3-40 iu/L)

Aspartate transaminase (AST): 18 iu/L (3-30 iu/L)

Alkaline phosphatase (ALP): 80 umol/L (30-100 umol/L)

Gamma glutamyl transferase (yGT): 30 u/L (8-60 u/L)

Bilirubin: 10 umol/L (3-17 umol/L)

Albumin: 45 g/L (35-50 g/L)

Cardiac markers:

Cardiac troponin: Elevated level indicating myocardial injury.

Imaging Tests:

ECG (Electrocardiogram): Demonstrates ST-segment elevation in leads II, III, and aVF, consistent with an inferior STEMI.

Treatment:

Initial Management:

- Administer 300 mg aspirin chewed immediately, unless the patient has a known aspirin allergy.

- Provide high-flow oxygen if oxygen saturation falls below 94%.

- Attach a cardiac monitor to observe heart rate and rhythm.

- Administer analgesia such as intravenous morphine 5–10 mg slowly, titrated according to pain relief.

- Start an intravenous infusion of nitrates unless contraindicated by hypotension.

Reperfusion Therapy:

- Urgent referral to cardiology for primary percutaneous coronary intervention (PCI) if within 12 hours of symptom onset and PCI can be performed within 120 minutes.

- If PCI is not available, consider thrombolysis if no contraindications exist.

Secondary Prevention:

- Start dual antiplatelet therapy with clopidogrel 75 mg OD as an addition to low-dose aspirin for 12 months after stent placement.

- Consider beta-blockers for left ventricular dysfunction or continuing ischaemia.

Monitoring:

- Continuous ECG monitoring during acute phase to detect arrhythmias.

- Monitor vital signs including blood pressure and heart rate.

- Follow-up with cardiac rehabilitation following discharge.

- Monitor lipid profile and adjust therapy according to lipid management guidelines.

Prognosis:

- The prognosis is dependent on the extent of myocardial damage and the success of reperfusion therapy.

- Early revascularisation improves outcomes.

- Risk stratification using tools like the GRACE score helps identify patients with a poorer prognosis.

- Lifestyle modifications and adherence to treatment reduce the risk of recurrent events.

Differential diagnoses:

1. Aortic dissection: Less likely due to focal presentation and normal blood pressures between arms.

2. Pulmonary embolism: Less likely given the normal oxygen saturation and absence of risk factors.

3. Gastroesophageal reflux disease (GERD): Less likely due to the sudden onset with radiating pain and associated with exertion.

4. Musculoskeletal chest pain: Less likely because of its association with respiratory distress.

\*\*Insert presenting complaint and condition filters for speciality\*\*

Patient Questions:

Question: "Why do I need to go to the cath lab? Can't you just give me some medicine here?"

Answer: "The cath lab allows us to visualize your heart's arteries and perform a procedure that can open up any blockages, providing a better outcome than medication alone in this situation."

Question: "Is this pain going to last forever?"

Answer: "With proper treatment, the pain should diminish, and we’ll work on improving your heart's health which will help prevent future chest pain."

Question: "What happens if the blockage doesn't get removed?"

Answer: "If the blockage remains, it can cause damage to your heart muscle. That’s why we need to act quickly and efficiently to restore blood flow."

Question: "Could stress from my job have caused this?"

Answer: "Stress can be a contributing factor to heart disease, but it’s usually a combination of different elements, including genetics and lifestyle."

Examiner Questions:

Question: Describe the immediate management of a patient presenting with suspected acute coronary syndrome.

Answer: Administer aspirin, provide oxygen if Sats <94%, cardiac monitor attach, and pain relief using morphine. Refer for PCI or thrombolysis based on availability and time since onset.

Question: What is the role of troponin in the diagnosis of acute coronary syndrome?

Answer: Troponin is a biomarker indicative of myocardial injury. Elevated levels in the context of symptoms suggest a myocardial infarction.

Question: How does dual antiplatelet therapy benefit patients with acute coronary syndrome?

Answer: It reduces the risk of stent thrombosis and recurrent ischemic events by inhibiting platelet aggregation.

Question: What are potential complications following an inferior myocardial infarction?

Answer: Potential complications include arrhythmia, heart failure, papillary muscle rupture, and ventricular aneurysm.

Question: Why is revascularisation important in the management of acute coronary syndrome?

Answer: Revascularisation restores blood flow to the ischaemic myocardium, limiting heart muscle damage and improving survival and outcomes.

Treatment:

Initial Management based on NICE Guidelines:

- Administer aspirin 300mg chewed and then maintain on aspirin 75mg daily.

- Attach to cardiac monitor for continuous monitoring.

- Administer GTN (Glyceryl Trinitrate) spray if systolic blood pressure >90 mmHg.

- Analgesia with IV morphine and anti-emetic such as metoclopramide as needed.

Reperfusion:

- PCI if within 12 hours of onset and can be performed within 120 minutes of diagnosis.

- If PCI not possible, consider fibrinolysis if within 12 hours and no contraindications.

Secondary Prevention:

- Start dual antiplatelet therapy for a minimum of 12 months.

- Statin therapy, starting with a high-intensity statin such as atorvastatin 80mg once daily.

- Beta-blocker therapy, particularly in patients with left ventricular systolic dysfunction.

- ACE inhibitor for those with signs of heart failure or left ventricular systolic dysfunction.

\*\* Include any other speciality guidelines used for cardiology if any others are used on top of CKS, BMJ, BNF, NICE \*\*

Monitoring:

- Monitor cardiac rhythm, vital signs, and clinical status continuously in the acute phase.

- Check cardiac biomarkers and repeat at intervals to assess for rise/fall patterns.

- Repeat ECGs to monitor for changes or complications.

- Check full blood count, urea and electrolytes, and other relevant blood tests.

- Initiate secondary prevention medications as per guidelines and monitor for side effects.

- Arrange follow-up for cardiac rehabilitation and ongoing risk factor management.

Prognosis:

- Early and effective treatment can significantly improve prognosis.

- Prognosis is worse with increasing age, comorbid conditions, and delayed treatment.

- Long-term prognosis will depend on the extent of the myocardial damage and comorbid conditions.

- Risk modification through lifestyle changes and medications is crucial for a favourable outcome.

Differential diagnoses:

1. Pericarditis - Similar chest pain but often with a pericardial friction rub and different ECG changes.

2. Gastroesophageal Reflux Disease (GERD) - Chest pain maybe burning, often worse on lying down or after meals, and not typically associated with the shortness of breath seen in ACS.

3. Pulmonary embolism - May present with chest pain and shortness of breath but often with pleural rub, tachycardia, and risk factors for venous thromboembolism present.

4. Costochondritis - Chest pain is reproducible with palpation and lacks systemic symptoms.

Keyword Filters:

Speciality Filter:

Cardiovascular;

Presenting Complaint Filter:

Breathlessness; Chest Pain;

Condition Filter:

Acute Coronary Syndromes;

Location Filter:

Emergency Department;

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_19\_Arterial Thrombosis

Homepage Vignette:

## A 65-year-old male called Takeshi Miyahara presents with sudden onset of severe right leg pain and foot numbness.

Individual Page Vignette:

You are the attending physician in the Acute Medical Unit. Takeshi Miyahara, a 65-year-old accountant, arrives at the clinic with severe pain in the right leg and foot numbness.

Patient Name:

Takeshi Miyahara (Tah-keh-shee Mee-yah-hah-rah). He prefers to be called Takeshi.

Age:

Date of Birth: 22/05/1959

Location:

Emergency Department

Personality:

Takeshi is a meticulous and reserved individual who speaks thoughtfully and precisely. He exudes a sense of calm despite his current discomfort and appears to be coping with his symptoms with a stoic attitude.

Presenting Complaint:

Takeshi reports sudden onset of severe right leg pain and an accompanying sensation of foot numbness which began earlier in the day.

Quote:

"My right leg started hurting terribly out of nowhere this morning, and now my foot feels numb."

Symptoms:

- Chest pain or discomfort: Negative

- Shortness of breath: Negative

- Palpitations: Negative

- Syncope: Negative

- Nausea: Negative

- Vomiting: Negative

- Intermittent claudication: Negative

- Peripheral oedema: Positive. Takeshi reports a feeling of tightness around his ankle.

Quote: "I've noticed my ankle is unusually swollen, and it feels tight."

History of Presenting Complaint:

- Duration of symptoms: Sudden onset earlier today. Quote: "The pain started this morning, very suddenly."

- Previous treatments: None. Quote: "I haven't taken anything for it, no."

- Progression over time: The pain has remained constant since onset. Quote: "It's been relentless since it first began."

- Frequency of symptoms: Constant since onset. Quote: "It hasn't let up at all since it started."

- Impact on daily life and ADLs: Marked impact, has difficulty walking. Quote: "I can't walk properly; it's rather handicapping."

- Impact on work: Happened today; unable to go to work. Quote: "It all started this morning, so I called in sick."

- Impact on physical and mental wellbeing: Reports severe pain affecting his concentration. Quote: "The pain is so severe it's all I can focus on."

Systemic Symptoms:

- Fatigue: Negative

- Fever: Negative

- Night sweats: Negative

- Unintended weight loss: Negative

- Generalised weakness: Negative

- Malaise: Negative

- Bowel habits: Normal

- Urinary habits: Normal

- Changes in sleep: Negative

- Peripheral oedema: Positive. Takeshi reports swelling in the affected leg. Quote: "My right leg seems more swollen than usual."

Past Medical History:

- Surgeries: Negative

- Hospitalizations: Negative

- Previous injuries or traumas: Negative

- Psychiatric or psychological history: Negative

- History of substance abuse or addiction: Negative

- Immunizations and vaccination history: Up to date. Quote: "My jabs are all current, as far as I'm aware."

- Any other relevant medical conditions or significant health events: Negative

Drug History:

Takeshi takes no regular medications, has no history of medication non-compliance, does not use herbal supplements or alternative therapies, contraception or HRT are not applicable, and there have been no non-pharmacological interventions or overdose incidents.

Allergies:

Takeshi has no known allergies.

Family History:

- No known family history of arterial thrombosis or similar vascular diseases.

Social History:

Lifestyle: Takeshi leads a sedentary lifestyle due to the nature of his work.

Occupation: Takeshi is an accountant.

Activities of Daily Living & Hobbies: Prefers reading and chess, activities that are passive and do not require much physical exertion.

Smoking: Non-smoker (0 pack-years).

Alcohol: Drinks socially, approximately 3 units per week.

Recreational Drug Use: None

Diet: Balanced diet with no particular restrictions.

Exercise: Minimal, mainly light walking.

Travel History: No recent travel.

Sexual History: Not discussed as not directly relevant to the current presentation.

Driving Status: Drives to work daily.

Cultural or Religious Practises: Not disclosed.

Exposure to Hazards or New Environment: None.

Recent Life Events: No recent significant life events.

Quote:

"As an accountant, I'm mostly at my desk, so I don't get much exercise. I enjoy a glass of wine with dinner on weekends, and I've never smoked or used drugs. My diet is fairly typical, nothing out of the ordinary"

Ideas, Concerns, and Expectations:

Ideas: Takeshi suspects that the problem might be linked to his sedentary lifestyle.

Quote: "I'm worried that all these years sitting at work could be catching up with me."

Concerns: Takeshi is concerned about the severity of the symptoms and their sudden onset.

Quote: "I'm quite concerned about how suddenly this all started, could it be something serious?"

Expectations: Takeshi expects a thorough assessment and clear information on what might be causing his symptoms.

Quote: "I would like to have a clear understanding of what is going on and how we can treat it."

Observations:

- Respirations (Breaths/min): 16 (0 points)

- Oxygen Saturation (%): 98% on room air (0 points)

- Air or Oxygen?: Room air (0 points)

- Blood Pressure (mmHg): 130/75 (0 points)

- Pulse (Beats/min): 78 regular (0 points)

- Consciousness (AVPU): Alert (0 points)

- Temperature (Celsius): 36.5°C (0 points)

- NEWS Total Score: 0

Physical Examination:

General inspection:

- No cyanosis, shortness of breath, pallor, or malar flush noted.

- A single medical alert bracelet on the right wrist indicating no known drug allergies.

- A noticeable swelling of the right calf.

Inspection of the hands:

- Skin appears healthy with no significant findings.

Pulses and blood pressure:

- Radial pulse strong and regular bilaterally.

- No radio-radial delay.

- Blood pressure equal in both arms.

Close inspection of the chest:

- No visible pulsations or scars from previous surgery.

Auscultation of the chest:

- Heart sounds normal; no added sounds or murmurs.

Examination of the legs:

- Right ankle demonstrates pitting oedema.

- No evidence of saphenous vein harvesting.

Special Tests:

Not applicable for the current presentation.

Diagnostic Tests:

Further tests which may be indicated for diagnostic purposes include Doppler ultrasound studies of the leg to assess for vascular flow, and possibly a CT angiogram if arterial thrombosis is suspected.

Treatment:

Initial management may include anticoagulants, such as heparin, following a confirmed diagnosis of arterial thrombosis. Additionally, an urgent referral to a vascular surgeon may be appropriate depending on the extent and acuity of the ischaemia.

Monitoring:

- Monitor vital signs frequently initially.

- Observe for any changes in the colour, temperature, and sensory perception in the affected leg.

- Frequent evaluation of the limb perfusion and pain.

- Schedule follow-up visits initially at 1-2-week intervals, then less frequently based on clinical improvement.

- Referral to a vascular surgeon or a specialist clinic should be considered for ongoing management.

Prognosis:

- Prognosis for arterial thrombosis depends on the location and extent of the occlusion, collateral circulation, and timely initiation of treatment.

- With prompt treatment, reperfusion of the affected limb can be achieved which may result in good functional recovery.

- Factors affecting prognosis include underlying comorbidities, severity of ischaemia, and delay in treatment.

Differential diagnoses:

1. Peripheral Artery Disease (less acute presentation typically);

2. Venous Thromboembolism (presents with different clinical features);

3. Acute Compartment Syndrome (typically post-traumatic or associated with prolonged compression).

Speciality Filter:

Cardiovascular; Surgery

Presenting Complaint Filter:

Chest Pain; Breathlessness; Palpitations; Peripheral Oedema and Ankle Swelling; Cold, Painful, Pale, Pulseless Leg/Foot

Condition Filter:

Arterial Thrombosis

Location Filter:

Accident & Emergency

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_20\_ArterialThrombosis

Homepage Vignette:

## A 70-year-old male called Etienne Duchamps presents with acute, severe pain in his left lower leg and foot.

Individual Page Vignette:

You are an ED (Emergency Department) doctor and Etienne Duchamps, a 70-year-old retired librarian, presents to your clinic with acute severe pain in his left lower limb located below the knee.

Patient Name:

Etienne Michel Duchamps /ˈɛtjɛn mɪˈʃɛl dyˈʃɑ̃/; prefers to be called Etienne.

Age:

19/06/1954

Location:

Emergency Department

Personality:

Etienne is a softly-spoken, thoughtful individual who enjoys reading historical fiction. He is highly articulate, often using literary references to describe his experiences. He has a methodical way of explaining things, reflecting his background as a librarian.

Presenting Complaint:

Etienne attended the emergency department with sudden onset of severe pain in his left lower leg and foot, describing it as a 'sharp jabbing sensation akin to being pierced by arrows of fire'.

Quote:

"It's like my leg's been struck by a bolt out of the blue; the pain's simply insufferable!"

Symptoms:

Site: Left lower leg and foot. Quote: "It feels like my calf and foot have been targeted by a sniper, picking off my comfort and peace!"

Onset: Sudden. Quote: "Just this morning, out of nowhere, it felt like someone flicked a switch and my leg erupted into pain."

Character: Sharp, severe. Quote: "There's a sharpness to it, like needles poking through from within."

Radiation: Does not radiate. Quote: "No, the agony seems content to stake its claim exactly where it struck; it hasn't wandered."

Associated Symptoms: Absence of foot pulses, pallor, and coldness of the foot. Quote: "There's a deadness to the touch, and the pallor... it's as though life itself is ebbing away from my foot."

Timing: Continuous. Quote: "It's been a constant companion since this morning, not letting up for a second."

Exacerbating and Relieving Factors: Pain is exacerbated by movement, no relieving factors. Quote: "Moving only sharpens the blade, as it were, and rest offers no solace or sanctuary."

Severity: Extremely severe. Quote: "On a scale, we're veering dangerously close to the worst pain I've ever felt."

- Chest pain or discomfort: Negative

- Shortness of breath: Negative

- Palpitations: Negative

- Syncope: Negative

- Nausea: Negative

- Vomiting: Negative

- Intermittent claudication: Positive. Quote: "Leading up to today, I've had moments of pain during my walks, had to stop and rest for it to go away."

- Peripheral oedema: Negative

History of Presenting Complaint:

- Duration of symptoms: Sudden onset this morning. Quote: "Today's the first day my leg's been held hostage by pain."

- Previous treatments: No previous treatments for this new complaint. Quote: "I've never felt the need for remedies before this for my leg."

- Progression over time: Acute without previous similar episodes. Quote: "Nothing gradual about it, it was as if a curtain dropped, suddenly and without announcement."

- Frequency of symptoms: No previous episodes. Quote: "This was the debut of this particularly unpleasant drama."

- Impact on daily life and activities of daily living: Significant impact with inability to walk. Quote: "I've been rendered quite incapacitated; I can't even hobble to my beloved books."

- Impact on work: Retired, not applicable. Quote: "Thankfully, my days of professional duty are behind me, or this would have been truly catastrophic."

- Impact on physical and mental wellbeing: Causing severe distress. Quote: "It's an assault not just on the limb, but my peace of mind has been thoroughly disturbed too."

Quote:

"The pain sprang up today, a nasty surprise, and I've had no need for treatments before for my leg. It's been relentless, making it impossible for me to do anything. I'm grateful I'm retired; still, this has shaken me deeply."

\*Trauma history is negative for this case.

\*Vascular history — intermittent claudication present.

Systemic Symptoms:

- Fatigue: Negative

- Fever: Negative

- Night sweats: Negative

- Unintended weight loss: Negative

- Generalised weakness: Negative

- Malaise: Negative

- Bowel habits: Normal

- Urinary habits: Normal

- Changes in sleep: Negative

- Peripheral oedema: Negative

Quote:

"I don't think the rest of me has been put out of order, just this wretched leg. Everything else is as it should be."

Past Medical History:

- Surgeries: Appendix removed 30 years ago. Quote: "The only time I've been under the knife was to say goodbye to an inflamed appendix."

- Hospitalizations: For appendectomy 30 years ago. Quote: "Apart from that appendectomy stay, hospitals have remained alien environments to me."

- Previous injuries or traumas: Broken arm from cycling accident 10 years ago. Quote: "I once took on gravity and lost, breaking my arm in the affair."

- Psychiatric or psychological history: None. Quote: "My mental history is as clean as my bookshelves."

- History of substance abuse or addiction: None. Quote: "Not even a whiff of anything more potent than the scent of old paper for me."

- Immunizations and vaccination history: Up to date. Quote: "Always up to date on jabs - like keeping up with footnotes."

- Any other relevant medical conditions or significant health events: Controlled hypertension. Quote: "Only my blood pressure has been a tale worth telling, and even that is well-managed."

Quote:

"My medical tale is fairly mundane, save for an inflamed appendix and a tussle with a bicycle. Mentally and substance-wise, I've maintained a clean bibliothèque. Jabs are up to date, and hypertension is the only chronic character in my story, well-managed with medication."

Drug History:

Etienne is currently taking ramipril 5mg once daily for hypertension and uses no other medications, herbal supplements, or alternative therapies. He has not missed any doses and reports no history of medication non-compliance or overdoses.

Quote:

"I take a daily tablet of ramipril for the blood pressure, that's all. No potions or lotions besides that, and I'm rather religious about not missing my daily dose."

Allergies:

Etienne has no known allergies to medications, foods, or environmental allergens.

Quote:

"As for allergies, I seem to have dodged that bullet entirely. Never had an adverse reaction to anything."

Family History:

Etienne mentions his father had a history of coronary artery disease and underwent a bypass surgery, his mother had diabetes, and his elder sister has been managing rheumatoid arthritis.

Quote:

"My paternal side is riddled with heart issues, my father had those arteries bypassed, and my mother had a lifelong dalliance with diabetes. My sister grapples with rheumatoid arthritis."

Social History:

Lifestyle:

Etienne enjoys a quiet and structured retirement, reading and occasionally writing poetry. He expresses a particular interest in gardening.

Occupation:

Retired librarian.

Activities of Daily Living & Hobbies:

Etienne is self-sufficient, cooks his meals, which are mostly vegetarian, and enjoys taking daily morning walks in his garden.

Smoking: Non-smoker.

Alcohol: Drinks a glass of red wine occasionally, not more than 3 units per week.

Recreational Drug Use: None.

Diet: Largely vegetarian, nutrient-rich, balanced diet.

Exercise: Gentle walking and gardening.

Travel History:

Etienne used to travel extensively but has not travelled outside the country in the past year.

Sexual History:

Prefers not to discuss, deems it irrelevant to current situation.

Driving Status:

Has a driving license but hasn’t driven since the onset of pain.

Cultural or Religious Practises:

He is a secular humanist and participates in community discussions.

Recent Life Events:

No significant recent life events noted.

Exposure to Hazards or New Environment:

No new exposure reported.

Quote 1:

"I've spent my retirement communing with the written word and the quiet wonders of flora. Waking moments are measured in pages turned and tending to my garden."

Quote 2:

"I shan't pour scorn on Dionysus; an occasional glass of Bordeaux is one of life's simple pleasures, as is the discipline of a vegetable patch's cultivation."

Quote 3:

"As for travel, my days of gallivanting around the globe are currently shelved. I haven't ventured afar since well before this unwelcome epistle of pain."

Ideas, Concerns, and Expectations:

Ideas:

Etienne believes his symptoms may be related to his age and possibly a result of restricted blood flow, citing a know-.detectChanges of medical conditions throughout his family.

Quote:

"One can't help but contemplate that age has ushered in this tribulation, a possible prelude to the familial heritage of vascular malaise."

Concerns:

He is worried about the loss of independence and the severity of the pain, fearing permanent damage or disability.

Quote:

"I'm consumed by dread at the thought that this may be an overture to a more permanent parting from my cherished independence."

Expectations:

Etienne expects a thorough examination and hopes for an effective treatment plan that can alleviate his pain and restore his mobility.

Quote:

"I'd very much appreciate a discerning eye on the cause of this affliction, followed by some measure of hope that I may once again stroll through my garden unimpeded by suffering."

Observations:

Respirations (Breaths/min): 16 (0 points)

Oxygen Saturation (%): 98% on room air (0 points)

Air or Oxygen?: On room air (0 points)

Blood Pressure (mmHg): 135/85 (0 points)

Pulse (Beats/min): 74 regular (0 points)

Consciousness (AVPU): Alert (0 points)

Temperature (Celsius): 36.5 (0 points)

NEWS Total Score: 0

(The NEWS score is 0 as all observations are within normal ranges).

Physical Examination:

General inspection:

- No clinical signs suggestive of underlying pathology such as cyanosis or pallor.

Inspection of the hands:

- No abnormalities observed on the hands.

Pulses and blood pressure:

- Left dorsalis pedis and posterior tibial pulses not palpable, right pulses normal.

Jugular venous pressure:

- No elevation of jugular venous pressure.

Inspection of the face:

- No signs of cyanosis, pallor, or other facial abnormalities.

Close inspection of the chest:

- No significant findings on the chest inspection.

Palpation of the chest:

- Normal apex beat, no heaves or thrills palpated.

Auscultation of the chest:

- Normal heart sounds without added sounds or murmurs detected.

Inspection of the back:

- No deformities or scars noted.

Palpation of the back:

- No sacral oedema palpated.

Auscultation of the back:

- Lung fields clear without crackles or wheezes.

Examination of the legs:

- Left leg shows signs of pallor, coldness to touch, and reduced sensation; no pitting oedema on either leg.

Special Tests:

- Ankle-brachial pressure index (ABI) likely to be low on the affected side, indicating peripheral arterial disease.

Diagnostic Tests:

Blood Tests (Reference Ranges):

Full Blood Count (FBC):

Haemoglobin (Hb): 145 g/L (Male: 130 - 180 g/L)

Mean Corpuscular Volume (MCV): 89 fL (80 – 100 fL)

White Blood Cell Count: 6.5 x10^9/L (3.6 - 11.0 x10^9/L)

Platelets: 250 x10^9/L (140 - 400 x10^9/L)

Urea and Electrolytes:

Sodium: 140 mmol/L (133–146 mmol/L)

Potassium: 4.2 mmol/L (3.5–5.3 mmol/L)

Calcium (adjusted): 2.4 mmol/L (2.2-2.6 mmol/L)

Magnesium: 0.85 mmol/L (0.7–1.0 mmol/L)

Urea: 5.6 mmol/L (2.5 – 7.8 mmol/L)

Creatinine: 80 μmol/L (Male: 59–104 μmol/L)

Estimated Glomerular Filtration Rate (eGFR): >90ml/min/1.73m^2

CRP: 12 mg/L (< 10 mg/L)

Imaging Tests:

Doppler Ultrasound of the lower limbs: Suggestive of an acute arterial occlusion in the left lower limb with absent flow below the knee.

Condition:

Arterial Thrombosis

Patient Questions:

1. "Do you think I could lose my leg because of this?"

Possible Answer: "We are doing everything we can to treat the blocked artery and restore blood flow. It's important to act quickly to improve the chances of saving the limb."

2. "How long will I have to stay in the hospital?"

Possible Answer: "It will depend on the severity of the blockage and the treatment required. We'll be able to give you a better timeline once we start treatment."

3. "Will I be able to walk properly again?"

Possible Answer: "After treatment, you'll likely have a period of recovery and maybe some physiotherapy. Our goal is for you to regain as much function as possible."

4. "Is this going to happen to my other leg as well?"

Possible Answer: "We will monitor both your legs closely. Managing risk factors and making lifestyle changes can help prevent further issues."

Examiner Questions:

1. What is the first-line investigative modality for suspected arterial thrombosis in the limbs?

Possible Answer: The first-line investigation is Doppler Ultrasound to assess the blood flow in the arteries.

2. What are the risk factors for arterial thrombosis?

Possible Answer: Risk factors include smoking, hypertension, diabetes, hyperlipidemia, and a family history of cardiovascular disease.

3. Which physical examination findings are suggestive of acute limb ischaemia?

Possible Answer: The "six Ps": pain, pallor, pulselessness, paraesthesia, paralysis, and poikilothermia (coolness).

4. Which medications might you start for an individual with suspected arterial thrombosis in the ED?

Possible Answer: Anticoagulation therapy with heparin to prevent further clotting is typically initiated.

5. How would you differentiate between arterial and venous thrombosis on clinical examination?

Possible Answer: Arterial thrombosis often presents with absent pulses, pallor, and coolness, whereas venous thrombosis may present with oedema, warmth, and visible veins.

6. Why is it important to assess both limbs in suspected arterial thrombosis?

Possible Answer: To compare and look for signs of chronic peripheral arterial disease which may exist in both limbs but have been asymptomatic until now.

Treatment:

Initial management in the ED of a patient with suspected arterial thrombosis includes:

- Immediate full anticoagulation with intravenous unfractionated heparin or subcutaneous low molecular weight heparin, unless contraindicated.

- Adequate analgesia.

- Urgent vascular surgery referral for possible surgical intervention, which may include thromboembolectomy.

- In patients not suitable for surgery or in the case of non-emergency, treatment may include antiplatelets and risk factor modification, including smoking cessation and management of hypertension, diabetes, and hyperlipidemia, among others.

Monitoring:

- Regularly monitor vital signs and neurological status of the affected limb every 15 minutes initially, then hourly as stability is confirmed.

- Review the anticoagulation therapy dosage, adjusting as necessary based on aPTT or anti-Xa levels.

- Monitor for signs of bleeding or heparin-induced thrombocytopenia.

- Follow-up with vascular surgery consultation to determine need for intervention, surveillance, or additional therapies.

- Schedule follow-up appointments post-discharge to assess limb recovery and the efficacy of the ongoing treatment.

Prognosis:

- With prompt treatment, the short-term prognosis for arterial thrombosis can be favourable, with limb salvage rates varying.

- Long-term prognosis depends on underlying comorbidities, the extent of ischaemia, and the patient's ability to comply with lifestyle modifications and medical therapy.

- Delay in treatment can lead to irreversible tissue damage, leading to poor outcomes, including possible amputation.

- Ongoing surveillance is required to monitor for recurrence or the development of complications associated with anticoagulation therapy.

Differential diagnoses:

1. Venous Thrombosis: Less likely due to the presence of pallor and the absence of oedema, which is typically found in venous thrombosis.

2. Neuropathy: Absence of pulses and acute onset of extreme pain make artery-related pathology more likely.

3. Cellulitis: The absence of redness, warmth, and systemic symptoms makes this less likely.

4. Compartment Syndrome: More often associated with a history of trauma, and typically doesn't present with pulselessness.

5. Musculoskeletal Injury: Pulselessness and the acute, severe nature of the symptoms are not typical features.

Keyword Filters:

Speciality Filter:

Cardiovascular; Surgery;

Presenting Complaint Filter:

Cold, Painful, Pale, Pulseless Leg/Foot;

Condition Filter:

Arterial Thrombosis;

Location Filter:

Emergency Department;

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_21\_ArterialThrombosis

Homepage Vignette:

## A 68-year-old male called Mubashir Anand presents with a sudden onset of a cold, painful, and pale lower limb.

Individual Page Vignette:

You are a doctor in a General Practice. Today you are seeing a 68-year-old patient named Mubashir Anand, an editor residing in a suburban area. He complains of experiencing a sudden onset of a cold, painful, and pale lower limb.

Patient Name:

Mubashir Anand (Pronounced: Moo-bah-sheer A-nand). He prefers being called Mr. Anand.

Age:

Date of Birth: 15/09/1956

Location:

General Practice

Personality:

Mr. Anand is articulate and resourceful, having a career in editing that involved meticulous attention to detail. He speaks concisely and prefers to get straight to the point. His educational background is extensive, which is reflected in his sophisticated vocabulary and analytical approach to problem-solving.

Presenting Complaint:

Mr. Anand is seeking medical attention due to the sudden onset of his left leg becoming cold, pale, and painful.

Quote:

"It was quite abrupt, doctor. My left leg turned starkly pale and it's ice cold. Most distressing, to say the least."

Symptoms:

SOCRATES:

Site: The pain is in Mr. Anand's entire left leg. Quote: "The pain is all over my left leg, it doesn't spare any part of it."

Onset: The symptoms onset was sudden. Quote: "It all happened in the blink of an eye, without any warning."

Character: Describes the pain as sharp. Quote: "It's a sharp, almost biting pain that's grabbed hold of my leg."

Radiation: Does not radiate. Quote: "The pain is localized; it doesn't seem to move or radiate anywhere."

Associated Symptoms: There is an associated loss of hair on the affected limb, noted as a new change. Quote: "I've noticed some hair loss on the affected leg, which is unusual for me."

Timing: Constant since the onset. Quote: "It's persistent, the pain hasn't given me respite since it started."

Exacerbating and Relieving Factors: Nothing appears to alleviate or exacerbate the pain. Quote: "I've tried elevating it, resting it, but nothing changes the cold or the ache."

Severity: Rates the severity as 8/10. Quote: "On a scale, I'd place it at an eight. Quite unbearable."

Findings:

- Chest pain or discomfort: Negative.

- Shortness of breath: Negative.

- Palpitations: Negative.

- Syncope: Negative.

- Nausea: Negative.

- Vomiting: Negative.

- Intermittent claudication: Positive. Quote: "I've had issues with walking distances due to cramps before this happened."

- Peripheral oedema: Negative.

Quote:

"Except for some cramping when I walk too much, I've not had chest pains, breathing difficulties, heart racing, or fainting spells."

History of Presenting Complaint:

- Duration of symptoms: Symptoms began abruptly two hours ago. Quote: "About two hours ago, this ordeal with my leg began."

- Previous treatments: No previous treatment for this leg issue, but mentions having to stop occasionally when walking due to previous claudication. Quote: "I've had to pause my walks lately due to some leg cramps, but never needed treatment for this cold and pain until now."

- Progression over time: Explains the complaint is static since onset. Quote: "It hasn't gotten any better or worse since it started."

- Frequency of symptoms: This is the first episode of this kind of pain. Quote: "This is the first time this has happened."

- Impact on daily life and activities of daily living: Describes it as highly debilitating. Quote: "I can't even walk to the mailing room without searing pain, let alone manage stairs."

- Impact on work: States it has severely affected his ability to concentrate on work. Quote: "As you can imagine, I'm not in the right state to edit manuscripts with this."

- Impact on physical and mental wellbeing: Reports significant distress due to the symptoms. Quote: "It's all I can think about, terribly distracting and upsetting."

General quote:

"I assure you, this isn't normal for me. The pain's debilitating, keeping me from even the simplest activities. I haven't treated it before because it hasn't occurred before."

Systemic Symptoms:

- Fatigue: Negative.

- Fever: Negative.

- Night sweats: Negative.

- Unintended weight loss: Negative.

- Generalised weakness: Reports mild generalised weakness. Quote: "Perhaps I've felt a little more feeble lately, but nothing too pronounced."

- Malaise: Negative.

- Bowel habits: Normal.

- Urinary habits: Normal.

- Changes in sleep: Negative.

- Peripheral oedema: Negative.

General quote:

"Apart from a touch of general tiredness, I've been spared fevers, night sweats, and weight changes. My sleep and daily routines haven't been interfered with either."

Past Medical History:

- Surgeries: Appendectomy many years ago. Quote: "I had my appendix out as a schoolboy, but that's ancient history."

- Hospitalizations: None related to the current condition. Quote: "I've not been in hospitals besides the time for my appendix."

- Previous injuries or traumas: Mentions an old sports injury to his knee. Quote: "Some old knee trouble from my cricket days, nothing recent."

- Psychiatric or psychological history: Treatment for anxiety several years ago. Quote: "Had some sessions for managing my anxiety, but I've since learned to cope well."

- History of substance abuse or addiction: Denies history. Quote: "I've never had issues with substance abuse."

- Immunizations and vaccination history: Up to date with immunisations. Quote: "I'm all caught up with the jabs, as per schedule."

- Any other relevant medical conditions or significant health events: None reported. Quote: "Nothing else to note in terms of medical events, really."

General quote:

"My medical past isn't cluttered — just the appendix and an old knee injury. I've kept up with immunisations and had some help for anxiety in the past."

Drug History:

Taking atorvastatin 20mg once daily for hypercholesterolemia and ramipril 5mg once daily for hypertension. No history of medication non-compliance or missed doses. No use of herbal supplements, alternative therapies, contraception or HRT, or any overdose incidents.

Quote:

"I've been compliant with my prescriptions for cholesterol and blood pressure, and I haven't ventured into herbal or alternative treatments."

Allergies:

Allergic to penicillin, which causes a rash. Otherwise, no other allergies.

Quote:

"I avoid penicillin since I get a nasty rash from it, but I tolerate everything else just fine."

Family History:

Father had ischaemic heart disease. Mother had hypertension. One sibling with type 2 diabetes. No other known family medical conditions.

Quote:

"There's a smattering of heart problems and high blood pressure on my father's side, and a sibling manages diabetes."

Social History:

Lifestyle: Describes a sedentary lifestyle due to the nature of editing work.

Occupation: A long-standing editor at a publishing house.

Activities of Daily Living & Hobbies: Enjoys reading and occasionally engages in light gardening.

Smoking: Never smoked.

Alcohol: Drinks occasionally, around 4 units per week.

Recreational Drug Use: None.

Diet: Generally balanced with occasional indulgences.

Exercise: Limited to short walks and gardening due to work demands and past knee injury.

Quotes:

"I spend most hours at a desk due to my job, which doesn't help my activity level."

"I enjoy a glass of wine or two over the weekend but never overindulge."

"I've never been one for drugs, and I try to eat sensibly, though my exercise is limited these days."

Ideas, Concerns, and Expectations:

Ideas:

Mr. Anand thinks the problem might be related to circulation and is aware of the seriousness due to his background in reading medical articles.

Quote:

"Given my readings, I suspect the circulation in my leg is compromised. The swiftness and severity suggest as much."

Concerns:

Expresses concern about the potential for severe outcomes, including loss of limb or a more extensive vascular issue.

Quote:

"I can't shake the fear that I'll lose my leg over this, or that it's a sign of widespread vascular disease."

Expectations:

Mr. Anand expects a thorough investigation into the cause of his symptoms and an immediate management plan due to the severity of his presentation.

Quote:

"I anticipate you'll run the necessary diagnostics posthaste and draft a management plan. Immediate action seems prudent here."

Observations:

Respirations (Breaths/min): 18

Oxygen Saturation (%): 97

Air or Oxygen?: Room air

Blood Pressure (mmHg): 140/90

Pulse (Beats/min): 78

Consciousness (AVPU): Alert

Temperature (Celsius): 36.8

NEWS Total Score: 0

Physical Examination:

General inspection:

- Clinical signs: No signs of cyanosis, shortness of breath, pallor, or peripheral oedema observed. Mild malar flush present, potentially due to distress.

- Objects or equipment: None observed that are relevant to current clinical status.

Inspection of the hands:

- Hands appear warm with normal colour, no tar staining, xanthomata, arachnodactyly, clubbing, splinter haemorrhages, Janeway's lesions, Osler's nodes, or koilonychia.

- Capillary refill time is within normal limits.

Pulses and blood pressure:

- Radial pulse: Regular rhythm, no delay.

- Collapsing pulse: Absent.

- Brachial pulse: Normal volume and character.

- Blood pressure: Similar in both arms.

- Carotid pulse: Normal volume and character.

Jugular venous pressure:

- Jugular venous pressure appears to be within normal range.

- The hepatojugular reflux test is negative.

Inspection of the face:

- No conjunctiva pallor, corneal arcus, xanthelasma, Kayser-Fleischer rings.

- Mouth: No central cyanosis, angular stomatitis, no high arched palate observed. Dental hygiene appears good.

Close inspection of the chest:

- No visible pulsations, no pectus excavatum or pectus carinatum, and no scars from previous thoracic surgery.

Palpation of the chest:

- Apex beat located in the fifth intercostal space in the midclavicular line, no heaves or thrills palpable.

Auscultation of the chest:

- Heart sounds are normal across all areas, no added sounds or murmurs.

Inspection of the back:

- No spinal deformities or scars visible.

Palpation of the back:

- No sacral oedema noted.

Auscultation of the back:

- Lung fields: No coarse crackles or signs of absent air entry.

Examination of the legs:

- No pitting oedema at the ankles. The left lower limb appears pale and feels cooler to touch compared to the right. A notable decrease in hair on the limb.

Special Tests:

- Not applicable.

Diagnostic Tests:

Blood Tests (Reference Ranges):

Full Blood Count (FBC):

Haemoglobin (Hb): 150 g/​L (Male: 130 - 180 g/L)

Mean Corpuscular Volume (MCV): 90 fL (80 – 100 fL)

White Blood Cell Count: 7.0 x10^9/L (3.6 - 11.0 x10^9/L)

Platelets: 250 x10^9/L (140 - 400 x10^9/L)

Urea and Electrolytes:

Sodium: 140 mmol/L (133–146 mmol/L)

Potassium: 4.0 mmol/L (3.5–5.3 mmol/L)

Calcium (adjusted): 2.4 mmol/L (2.2-2.6 mmol/L)

Magnesium: 0.9 mmol/L (0.7–1.0 mmol/L)

Urea: 5.0 mmol/L (2.5 – 7.8 mmol/L)

Creatinine: 80 μmol/L (Male: 59–104 μmol/L)

Estimated Glomerular Filtration Rate (eGFR): 95ml/min/1.73m3

Liver Function Tests:

Alanine transferase (ALT): 25 iu/L (3-40 iu/L)

Aspartate transaminase (AST): 20 iu/L (3-30 iu/L)

Alkaline phosphatase (ALP): 70 umol/L (30-100 umol/L)

Gamma glutamyl transferase (yGT): 30 u/L (8-60 u/L)

Bilirubin: 10 umol/L (3-17 umol/L)

Albumin: 45 g/L (35-50 g/L)

Thyroid Function Tests:

Thyroid Stimulating Hormone (TSH): 2.5 mu/L (0.4-4.5 mu/L)

Free T3: 5.0 pmol/L (3.5-7.8 pmol/L)

Free T4: 15 pmol/l (9-25 pmol/l)

Arterial Blood Gases:

pH: 7.40 (7.35 - 7.45)

pO2: 12 kPa (11 - 13 kPa)

pCO2: 5.5 kPa (4.7 - 6.0 kPa)

Bicarbonate: 24 mmol/l (22-28 mmol/l)

Base Excess: 0 mmol/L (-2 to +2 mmol/L)

Imaging Tests:

Ultrasound Scan: An arterial ultrasound scan of the lower limbs suggests decreased flow in the left popliteal artery consistent with arterial occlusion.

CT Scan: No evidence of aortic dissection or other major arterial abnormalities near the affected limb.

Other Tests:

ECG (Electrocardiogram): Normal sinus rhythm with no acute changes.

Condition:

Arterial Thrombosis

Patient Questions:

1. "What's causing the coldness in my leg?"

Answer: "The coldness is likely due to reduced blood flow to the leg because of a blood clot obstructing an artery."

2. "Is this something that can be treated immediately?"

Answer: "Yes, arterial thrombosis is treated as a medical emergency. We'll work swiftly to restore blood flow and prevent complications."

3. "Could I have prevented this?"

Answer: "Arterial thrombosis can be related to underlying conditions or risk factors. While not all cases are preventable, managing risk factors like cholesterol and blood pressure is important."

4. "What are the risks if it goes untreated?"

Answer: "Without treatment, the lack of blood flow can damage the tissues of the limb, which in severe cases, could lead to amputation."

Examiner Questions:

1. What immediate treatment would you initiate for a patient presenting with signs of arterial thrombosis in a general practice setting?

Answer: Immediate referral to a hospital for vascular assessment and treatment, which may include anticoagulation, thrombolytic therapy, or surgical intervention.

2. Could you name some risk factors for arterial thrombosis?

Answer: Atherosclerosis, smoking, hypertension, hyperlipidemia, diabetes, and a family history of vascular disease.

3. How can you differentiate between arterial and venous thrombosis on examination?

Answer: Arterial thrombosis typically presents with a cold, pale limb, absent pulses and severe pain. Venous thrombosis may present with a warm, swollen limb with visible surface veins.

4. What are some complications of untreated lower limb arterial thrombosis?

Answer: Complications can include acute limb ischemia, gangrene, and potential loss of the limb.

5. What is the role of duplex ultrasonography in the diagnosis of arterial thrombosis?

Answer: Duplex ultrasonography is a non-invasive test that can confirm the presence of a clot, assess blood flow, and aid in planning treatment.

Treatment:

Based on NICE guidelines, immediate management of arterial thrombosis involves the following:

- Immediate referral to hospital for vascular surgical intervention.

- Possible start of anticoagulation therapy with agents such as unfractionated heparin or low molecular weight heparin, as per vascular team's advice.

- Investigation and management of underlying causes such as atherosclerosis or atrial fibrillation. This could involve medications for cholesterol and blood pressure management or anticoagulants for atrial fibrillation.

- If allergic to heparins, alternatives like fondaparinux or direct thrombin inhibitors could be considered.

- Pain management with analgesics.

Monitoring:

- Continuous monitoring of limb perfusion, including skin temperature, color, capillary refill and sensory function.

- Regular blood tests to monitor the efficacy and safety of anticoagulation therapy, including coagulation profiles.

- Follow-up imaging to assess the patency of the affected artery.

- Scheduled follow-up visits with the vascular team to monitor for recurrence and manage underlying risk factors.

Prognosis:

- Early intervention typically leads to a good outcome, with restoration of blood flow and limb function.

- Delayed treatment or severe cases may lead to limb ischemia and possible amputation.

- Long-term prognosis depends on management of risk factors, adherence to treatment, and surveillance for recurrence.

- Regular follow-up is necessary to monitor disease progression and response to therapy.

Differential diagnoses:

1. Peripheral Vascular Disease: Less acute onset compared to arterial thrombosis and usually associated with claudication.

2. Venous Thrombosis: The limb would be warm and swollen, not cold and pale.

Speciality Filter:

Cardiovascular; General Practice

Presenting Complaint Filter:

Cold, Painful, Pale, Pulseless Leg/Foot; Peripheral Oedema and Ankle Swelling

Condition Filter:

Arterial Thrombosis; Peripheral Vascular Disease

Location Filter:

General Practice

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_22\_ArterialThrombosis

Homepage Vignette:

## A 72-year-old male called Sipho Nkosi presents with a cold, painful right leg.

Individual Page Vignette:

You are the attending clinician in the Emergency Department. A patient, Sipho Nkosi aged 72, a retired teacher, comes in reporting a cold, painful right leg.

Patient Name:

Sipho Jabulani Nkosi (Pronunciation: SEE-paw Jah-boo-LAH-nee En-KOH-see). Prefers to be called Mr. Nkosi.

Age:

14/06/1951 (suitable for the underlying condition of arterial thrombosis).

Location:

Emergency Department.

Personality:

Mr. Nkosi is an articulate and patient individual with a calm manner of speaking reflecting his years as a teacher. He carefully considers his words before speaking and is always respectful in his communication. However, he is visibly anxious about his current health situation.

Presenting Complaint:

Mr. Nkosi has come to the Emergency Department complaining of his right leg suddenly turning unusually cold and painful.

Quote: "I've never felt anything quite like this before; my right leg has turned cold and it hurts quite badly."

Symptoms:

Site: Right leg; "The pain is focused in my right leg; that's where it's coldest too."

Onset: Acute; "This all started suddenly earlier today."

Character: Sharp pain; "The pain is sharp and unrelenting."

Radiation: Does not radiate; "No, the pain stays in my leg, doesn't go anywhere else."

Associated Symptoms: None; "Just the pain and coldness, nothing else that I can tell."

Timing: Constant since onset; "Once it came on, it hasn't stopped or changed really."

Exacerbating and Relieving Factors: Nothing exacerbates or relieves; "Doesn't seem to get worse or better with anything I do."

Severity: "On a scale from 1 to 10, I'd rate it an 8."

Chest pain or discomfort: Negative.

Shortness of breath: Negative.

Palpitations: Negative.

Syncope: Negative.

Nausea: Negative.

Vomiting: Negative.

Intermittent claudication: Positive; "Actually, I've had some cramping in the calves when walking, come to think of it."

Peripheral oedema: Negative.

History of Presenting Complaint:

Duration of symptoms: "I've only had these symptoms since this morning."

Previous treatments: None; "No, I've not had to treat anything like this before."

Progression over time: "It struck all at once and has just stayed the same."

Frequency of symptoms: "It's been constant since it began."

Impact on daily life and activities of daily living: "I can hardly walk now; it's quite debilitating."

Impact on work: Retired; "I'm retired, so work isn't a concern, but I can't go about my usual routine at all."

Impact on physical and mental wellbeing: "It's troubling me greatly; I'm quite worried about what it might mean."

Quote: "It's come out of nowhere and turned my day on its head – I can't even get to the bathroom without great pain."

Systemic Symptoms:

Fatigue: Negative.

Fever: Negative.

Night sweats: Negative.

Unintended weight loss: Negative.

Generalised weakness: Negative.

Malaise: Negative.

Bowel habits: Normal.

Urinary habits: Normal.

Changes in sleep: Negative.

Peripheral oedema: Negative.

Quote: "Apart from my leg, everything else is as normal."

Past Medical History:

Surgeries: Negative.

Hospitalizations: Negative.

Previous injuries or traumas: Negative.

Psychiatric or psychological history: Negative.

History of substance abuse or addiction: Negative.

Immunizations and vaccination history: Up to date; "I've had all my jabs, keep on top of them as I should."

Any other relevant medical conditions or significant health events: History of hypertension; "My high blood pressure has been under control for years, just with medication."

Quote: "Apart from the usual nicks and bumps as you age, my health's been robust."

Drug History:

"Let's see, for the blood pressure, I take amlodipine 10mg daily, and I have some paracetamol at home but only take those occasionally."

Allergies:

No allergies: "No, I’ve never had any allergies to medicines or anything else."

Family History:

"No family history that I know of, apart from some high blood pressure on my father's side."

Social History:

Lifestyle: "Since retiring, I keep myself busy with gardening and reading."

Occupation: Retired teacher; "Teaching was my life for over thirty years."

Activities of Daily Living & Hobbies: Gardening and reading; "My garden is my pride and joy."

Smoking: Non-smoker; "Never smoked a day in my life."

Alcohol: "I enjoy a glass of red with dinner, maybe three units a week at most."

Recreational Drug Use: Negative; "Never dabbled in any of that."

Diet: "Plenty of fruit and veggies, and I keep an eye on my salt intake because of the blood pressure."

Exercise: "Daily walks, or at least I used to before this leg issue."

Travel History: Negative.

Sexual History: Negative.

Driving Status: "I drive, though not as much as I used to; everything I need is close by."

Quote 1: "I've always tried to live healthily; moderation in all things, that's my motto."

Quote 2: "I miss my walks; they were my time to ponder and enjoy the fresh air."

Quote 3: "Since retiring, I find that a routine helps keep me grounded. Pity this leg's thrown a spanner in the works."

Ideas, Concerns, and Expectations:

Ideas: "I'm wondering if it's some kind of blockage or circulation problem in the leg."

Quote: "Could it be that a vessel in my leg's been blocked? I remember reading about such things."

Concerns: "I'm worried this could lead to more serious problems or mean some underlying condition."

Quote: "I can't ignore it; could it be a sign of something much worse?"

Expectations: "I'm hoping for a clear answer today and to understand the treatment options."

Quote: "I just want to get to the bottom of this and find out what can be done."

Observations:

Respirations: 16 Breaths/min.

Oxygen Saturation: 98%.

Air or Oxygen: Room air.

Blood Pressure: 142/85 mmHg.

Pulse: 78 Beats/min.

Consciousness: Alert.

Temperature: 36.8 Celsius.

NEWS Total Score: 0.

All observations are within normal ranges, so the NEWS score is correctly calculated as 0.

\*\*Physical Examination:\*\*

General inspection:

- Mr. Nkosi is an elderly male who appears in discomfort due to the leg pain. He demonstrates moderate distress associated with his cold, painful right leg. No signs of respiratory distress, cyanosis, or overt heart failure such as jugular venous distention are noted.

Inspection of the hands:

- Examination reveals normal aging skin without tar staining or xanthomata. No arachnodactyly, clubbing, or signs suggestive of endocarditis or hypercoagulability such as Janeway's lesions or Osler's nodes are present. His hands are warm to the touch with a normal capillary refill indicating good perfusion.

Pulses and blood pressure:

- Radial pulses are symmetrical and rhythmic, though the right lower extremity pulses (popliteal, posterior tibial, and dorsalis pedis) are diminished compared to the left. There is no radial delay.

- Blood pressure is measured at 142/85 mmHg, which is characteristic of his known hypertension.

- The carotid pulses are palpated with no bruit noted, indicating no significant carotid artery stenosis.

Jugular venous pressure:

- JVP is within normal limits, suggesting no acute heart failure.

Inspection of the face:

- No pallor, jaundice, or xanthelasma is observed. There are no Kayser-Fleischer rings, suggestive of Wilson's disease, noted in the corneas. No angular stomatitis indicating no significant nutritional deficiencies.

Close inspection of the chest:

- A visual survey of the thorax reveals no deformities or pulsations suggestive of aortic dissection or severe cardiac pathology.

Palpation of the chest:

- Palpation of the thorax does not reveal any areas of tenderness or thrills, and no heave is felt which could suggest ventricular dilation or hypertrophy.

Auscultation of the chest:

- Normal heart sounds are heard without added murmurs, rubs, or gallops which would suggest valvular heart disease or pericarditis.

Inspection of the back:

- No spinal deformities or scoliosis are evident.

Palpation of the back:

- There are no signs of sacral edema which might suggest heart failure or venous insufficiency.

Auscultation of the back:

- Breath sounds are clear and equal bilaterally with no added sounds indicating pulmonary edema or consolidation.

Examination of the legs:

- The right leg is visually paler compared to the left and feels cooler to touch. Diminished pulse amplitude is noticed in the right lower extremity, and there are no signs of pitting edema suggestive of heart failure or deep vein thrombosis (DVT).

\*\*Diagnostic Tests:\*\*

Blood Tests:

- Full Blood Count (FBC): To screen for signs of infection or polycythemia.

- Coagulation Profile: Including PT, aPTT, INR, to evaluate clotting status.

- Blood Chemistry: Including renal function tests and electrolytes to assess the baseline kidney function which could affect medication management.

Imaging Tests:

- Doppler Ultrasound of the right leg: To evaluate for arterial blockages which could be causing the acute ischemia.

- CT Angiography: If ultrasound findings are inconclusive or if surgery might be considered, this test could provide more detailed imaging of the affected arteries.

\*\*Condition:\*\*

- Suspected Acute Limb Ischemia due to arterial occlusion.

\*\*Treatment:\*\*

- Immediate referral to vascular surgery for assessment since early revascularization is critical in limb-threatening ischemia.

- Begin intravenous heparin to prevent clot propagation.

- Analgesics to manage pain and comfort measures for the cold limb.

- Surgical intervention, such as thromboembolectomy or bypass surgery, may be indicated based on imaging and surgical assessment.

\*\*Monitoring:\*\*

- Continuous monitoring of vital signs, including strict documentation of the pulse in the affected limb.

- Serial checks of limb color, temperature, sensation, and motor function to assess for signs of worsening ischemia or compartment syndrome.

- Heparin infusion should be monitored with activated partial thromboplastin time (aPTT) to ensure therapeutic anticoagulation.

\*\*Prognosis:\*\*

- The prognosis depends on the time of onset to treatment; early intervention leads to better outcomes with a higher likelihood of limb preservation.

- Delay in treatment can lead to irreversible tissue damage, potential amputation, and complications from ischemia-reperfusion injury.

\*\*Differential diagnoses:\*\*

1. Deep Vein Thrombosis (DVT): Typically presents with unilateral swelling, redness, and warmth rather than coldness and diminish pulses.

2. Chronic Peripheral Arterial Disease (PAD): Presents with intermittent claudication, although acute worsening can occur due to superimposed thrombosis.

3. Cellulitis: Infection of the skin and tissues underneath, presenting with pain, redness, warmth, and sometimes fever, unlike the cold limb seen in arterial occlusion.

\*\*Keyword Filters:\*\*

Speciality Filter:

Cardiovascular; Emergency and Acute

Presenting Complaint Filter:

Cold, Painful, Pale, Pulseless Leg/Foot; Deteriorating Patient;

Condition Filter:

Acute Limb Ischaemia; Arterial Thrombosis; Deep Vein Thrombosis (DVT);

Location Filter:

Emergency Department

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_23\_Aortic Dissection

Homepage Vignette:

## A 63-year-old male called Raahi Kamal presents with sudden onset severe chest pain radiating to his back.

Individual Page Vignette:

You are the General Practitioner assessing Raahi, a 63-year-old, who works as a consultant. He's in your clinic presenting with severe chest pain that started abruptly and radiates to his back.

Patient Name:

Raahi Kamal (pronounced Rah-hee Kah-mal); prefers to be called Raahi.

Age:

27/04/1961

Location:

Clinic

Personality:

Raahi is articulate, with a measured and direct way of speaking. He has a high level of health literacy due to his occupation and displays a calm demeanor despite his concerning symptoms.

Presenting Complaint:

Raahi reports a "sharp tearing sensation in my chest going through to my back".

Symptoms:

Site: The pain is located in the chest and radiates to the back. Quote: "It feels like something is ripping through my chest to my back."

Onset: The pain began suddenly while Raahi was at work this morning. Quote: "The pain just hit me out of nowhere when I was reviewing a report."

Character: It is a sharp, tearing pain. Quote: "I've never felt such a sharp and tearing pain before."

Radiation: The pain radiates to the back. Quote: "It's like the pain is travelling straight through to my back."

Associated Symptoms: Raahi reports a feeling of faintness. Quote: "I feel lightheaded, almost like I might pass out."

Timing: The pain has been constant since it started. Quote: "The pain hasn’t let up at all since it started."

Exacerbating and Relieving Factors: Nothing seems to relieve the pain, and Raahi has not identified any particular exacerbating factors. Quote: "Nothing I do seems to make it any better or worse."

Severity: Raahi describes the pain as the worst he has ever experienced. Quote: "This is by far the most intense pain I've ever felt."

- Chest pain or discomfort: Positive; "It feels like an unbearable tearing sensation in my chest."

- Shortness of breath: Negative

- Palpitations: Negative

- Syncope: Negative

- Nausea: Negative

- Vomiting: Negative

- Intermittent claudication: Negative

- Peripheral oedema: Negative

History of Presenting Complaint:

- Duration of symptoms: The symptoms began earlier today. Quote: "I’ve only had these symptoms today."

- Previous treatments: None for this event. Quote: "I haven’t taken anything for this; I came straight to see you."

- Progression over time: No progression, the pain has been unrelenting. Quote: "It's been constant, no change since it started."

- Frequency of symptoms: This is the first episode. Quote: "This has never happened before."

- Impact on daily life and activities of daily living: Significant impact; Raahi was unable to continue work. Quote: "I had to stop everything and come here."

- Impact on work: Raahi had to leave work abruptly due to the pain. Quote: "I had toleave my work unfinished because of this pain."

- Impact on physical and mental wellbeing: Raahi is visibly concerned about his condition. Quote: "This is really worrying me; I’ve never felt anything like it."

General quote for this section:

Quote:

"I've come because of this excruciating pain that started all of a sudden today. It's never happened before and it's stopped me in my tracks. I just had to leave work immediately and come here. It's deeply concerning to me."

Systemic Symptoms:

- Fatigue: Negative

- Fever: Negative

- Night sweats: Negative

- Unintended weight loss: Negative

- Generalised weakness: Negative

- Malaise: Negative

- Bowel habits: Negative

- Urinary habits: Negative

- Changes in sleep: Negative

- Peripheral oedema: Negative

Quote:

Quote:

“No, I haven't noticed any of those systemic symptoms; it's just this acute pain that's come on today.”

Past Medical History:

- Surgeries: Negative

- Hospitalizations: Negative

- Previous injuries or traumas: Negative

- Psychiatric or psychological history: Negative

- History of substance abuse or addiction: Negative

- Immunizations and vaccination history: Up to date with vaccinations. Quote: "I make sure to stay current with all my vaccines."

- Any other relevant medical conditions or significant health events: Negative

Quote:

Quote:

"Other than routine healthcare, I haven't had any surgeries or hospital stays. I'm generally pretty healthy and keep up with all my vaccinations."

Drug History:

Raahi occasionally takes ibuprofen for tension headaches, with a typical dosage of 400 mg as needed.

Quote:

When I get those stress headaches, I'll take an ibuprofen, but that's pretty rare."

Allergies:

Raahi has no known allergies.

Quote:

"I've been fortunate enough not to have any allergies that I know of."

Family History:

Raahi reports no significant medical conditions or surgeries in his family.

Quote:

"As far as I'm aware, there's nothing major in terms of health conditions in my family's history."

Social History:

Lifestyle:

Raahi leads a moderately stressful lifestyle due to the demands of his work as a consultant.

Occupation:

Raahi is a senior consultant in a large firm, which involves guiding teams and meeting with clients.

Activities of Daily Living & Hobbies:

In his free time, Raahi enjoys cooking and occasionally playing chess.

Smoking: Non-smoker; 0 pack years.

Alcohol: Drinks socially; approximately 5 units per week.

Recreational Drug Use: None

Diet: Balanced diet with a focus on whole grains, lean proteins, and vegetables.

Exercise: Walks to work daily and attends yoga classes twice a week.

Quotes:

Regarding lifestyle, "My job keeps me on my toes, but I try to unwind by cooking a nice meal or playing a game of chess."

On alcohol use, "I enjoy a glass of wine with dinner; it's never more than a couple of glasses."

On exercise, "I try to stay active by walking and doing yoga; it's good for my stress levels."

Ideas, Concerns, and Expectations:

Ideas:

Raahi believes that the pain could be related to a serious heart or blood vessel problem due to its severity and sudden onset.

Quote:

"I'm worried this might be something like a heart attack or an issue with my blood vessels. It's not like any pain I've felt before."

Concerns:

Raahi is concerned that the condition may be life-threatening and could impact his ability to work and maintain his current lifestyle.

Quote:

"I am concerned about the severity of this. What if this is something that could put an end to my career or worse?"

Expectations:

Raahi expects a thorough examination, immediate management of his symptoms, and a clear plan for further investigations.

Quote:

"I hope you can get to the bottom of this fast. I need to know what's going on and how to deal with it."

Observations:

Respirations (Breaths/min): 22 (2 points)

Oxygen Saturation (%): 97% on room air (0 points)

Air or Oxygen?: On room air (0 points)

Blood Pressure (mmHg): 150/90 (Systolic 150 = 0 points)

Pulse (Beats/min): 88 (0 points)

Consciousness (AVPU): Alert (0 points)

Temperature (Celsius): 36.8°C (0 points)

NEWS Total Score: 2

(Raahi's Respirations score 2 points due to being in the 21-24 breaths/min range; all other observation parameters score 0 points.)

\*\*Physical Examination:\*\*

General inspection:

- Raahi appears alert but in discomfort due to the chest pain. No signs of respiratory distress, cyanosis, or pallor are noted. He is neatly dressed and does not have any medical equipment or objects around him in the clinical setting that suggest ongoing medical treatment or monitoring.

Inspection of the hands:

- There are no abnormalities in color or signs of chronic illness such as clubbing or koilonychia. No palmar erythema or Dupuytren's contracture. Hands are warm to touch indicating good perfusion, and capillary refill time is less than 2 seconds.

Pulses and blood pressure:

- Radial and brachial pulses are symmetrical, regular, and good in volume, with no apparent radio-radial or radio-femoral delay. No collapsing pulse is noted suggestive of significant aortic regurgitation. Blood pressure is slightly elevated at 150/90 mmHg in both arms. Carotid pulses are palpable and of regular volume without any audible bruit.

Jugular venous pressure:

- The jugular venous pressure (JVP) is noted within normal limits without hepatojugular reflux.

Inspection of the face:

- No conjunctival pallor suggesting anemia, sclerae are anicteric, no corneal arcus, or xanthelasma. Oral hygiene is good with no central cyanosis, angular stomatitis, or high arched palate.

Close inspection of the chest:

- No evidence of chest wall deformities including pectus excavatum or pectus carinatum, no visible pulsations suggesting hyperdynamic cardiac activity, no chest scars indicating past cardiac surgery or other thoracic interventions.

Palpation of the chest:

- No parasternal heave palpable which might suggest right ventricular hypertrophy, apex beat palpable in the 5th intercostal space without displacement suggestive of cardiomegaly, no thrills or abnormal movements on palpation of the precordial area.

Auscultation of the chest:

- Heart sounds are auscultated and include normal first (S1) and second (S2) heart sounds; no additional heart sounds or murmurs heard in the aortic, pulmonary, tricuspid or mitral areas with both the diaphragm and bell of the stethoscope; no carotid bruits noted.

Inspection of the back:

- No significant kyphosis, scoliosis, or other spinal deformities, skin intact without pressure sores or surgical scars.

Palpation of the back:

- No evidence of sacral edema or vertebral tenderness which might suggest vertebral disease or systemic fluid retention.

Auscultation of the back:

- When auscultating posteriorly, lung fields are clear in both lower, mid, and upper zones without added sounds such as crackles, rhonchi, or wheezes.

Examination of the legs:

- There is no pitting edema or signs of stasis changes such as pigmentation, induration, or ulceration, no evidence of saphenous vein harvesting which could indicate coronary artery bypass grafting history.

\*\*Special Tests:\*\*

- Ankle-brachial index (ABI): Recommended to assess peripheral arterial disease, although given the acute presentation, the priority may be higher level imaging to rule out aortic dissection.

- ECG: An Electrocardiogram should be performed immediately to rule out myocardial infarction and assess for any other cardiac ischemic changes.

- Chest X-Ray: Should be completed to assess the cardiac silhouette, mediastinum, and aortic knob contour for any widening that may indicate aortic dissection.

\*\*Diagnostic Tests:\*\*

- Full Blood Count, renal function, liver function, coagulation profile, troponin I level, and D-dimer should be obtained as baseline investigations.

- Computed Tomography (CT) Scan of the Chest with contrast: To be conducted urgently to rule out aortic dissection given the presentation of tearing chest pain radiating to the back.

\*\*Treatment:\*\*

- Immediate referral to emergency care for suspected aortic dissection.

- If aortic dissection is confirmed, treatment will include blood pressure control, pain management, and surgical evaluation.

\*\*Monitoring:\*\*

- Continuous cardiac monitoring for arrhythmias or signs of cardiac tamponade.

- Frequent blood pressure and neurological assessments to monitor for end-organ damage or ischemia.

\*\*Prognosis:\*\*

- The prognosis for aortic dissection depends on the type, location, extent, and promptness of the treatment. Immediate surgical or interventional care is essential for the patient's survival and to reduce the risk of complications such as rupture or malperfusion syndromes.

\*\*Differential diagnoses:\*\*

1. Myocardial Infarction (MI) - Considered due to the chest pain but differs by the absence of radiating pain to the back.

2. Pulmonary Embolism (PE) - Can cause chest pain and shortness of breath but is less likely to cause pain radiating to the back.

3. Gastroesophageal Reflux Disease (GERD) - May cause chest discomfort; however, the acute and tearing nature of pain is atypical for GERD.

4. Pancreatitis - Typically presents with abdominal, not thoracic pain, although pain can radiate to the back.

Keyword Filters:

Speciality Filter:

Cardiovascular; Surgery; Emergency and Acute

Presenting Complaint Filter:

Chest Pain; Shock; Hypertension; Pain on Inspiration; Deteriorating Patient; Syncope; Peripheral Oedema and Ankle Swelling

Condition Filter:

Aortic Dissection; Myocardial Infarction; Pulmonary Embolism

Location Filter:

Clinic

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Case Code:

# SW\_24\_Aortic Dissection

Homepage Vignette:

## A 63-year-old male called Kasem presents with severe chest pain and a tearing sensation radiating to his back.

Individual Page Vignette:

You are the emergency doctor on duty and Kasem, a 63-year-old accountant, has been brought to the Emergency Department complaining of acute severe chest pain with a radiating tearing sensation to his back.

Patient Name:

Kasem Solyom (Pronunciation: Kah-sem Soh-yom, prefers to be called Kasem)

Age:

12/06/1961

Location:

Emergency Department

Personality:

Kasem is an analytical thinker, precise in the way he speaks, often pauses to ensure he articulates his thoughts comprehensively. He exudes a calm demeanour despite the situation, reflecting his stable personality and high stress tolerance from years of working crunching numbers as an accountant.

Presenting Complaint:

Kasem describes an abrupt onset of severe chest pain that he likens to "a tearing sensation spreading through to my back."

Quote:

"It was as if something inside just tore apart, and the pain is unbearable. It's like nothing I've ever felt before, starting in my chest and then spreading to my back."

Symptoms:

SOCRATES:

Site: Severe pain located initially in the chest then radiating to the back. Quote: "The pain began in my chest and then felt as though it was tearing through to my back."

Onset: Abrupt onset while he was at work. Quote: "Out of the blue, while balancing the accounts, I felt this excruciating pain come on."

Character: Described as a tearing or ripping sensation. Quote: "It's like something is being torn inside me."

Radiation: Pain radiating to the back. Quote: "The pain shoots straight through to my back, it's unbearable."

Associated Symptoms: Reports of dizziness and sweating. Quote: "Along with this agony, I've felt light-headed and broke out in a sweat."

Timing: Pain has been constant since onset. Quote: "It just hasn't stopped; the pain keeps on at the same intensity."

Exacerbating and Relieving Factors: Pain is not relieved by position change or rest. Quote: "No matter how I sit, stand or lie, there's just no relief."

Severity: Pain is severe. Quote: "On a scale of one to ten, this is an absolute ten."

- Chest pain or discomfort: Positive - Quote: "My chest feels like it's under a vice, the discomfort is beyond anything I've experienced."

- Shortness of breath: Positive - Quote: "I'm finding it hard to catch my breath; it's like I cannot get enough air in."

- Palpitations: Negative

- Syncope: Negative

- Nausea: Negative

- Vomiting: Negative

- Intermittent claudication: Negative

- Peripheral oedema: Negative

History of Presenting Complaint:

- Duration of symptoms: Pain onset a few hours ago. Quote: "This nightmare began just a few hours ago during work."

- Previous treatments: No previous treatments. Quote: "I've never had anything like this before to need treatment."

- Progression over time: Pain has been stable since onset. Quote: "The pain started strong and hasn't let up at all since."

- Frequency of symptoms: First-time occurrence. Quote: "I've never had this kind of pain before, it started today."

- Impact on daily life and activities of daily living: Severe impact, unable to perform usual activities. Quote: "I've had to stop everything; this pain completely immobilises me."

- Impact on work: Left work due to the pain. Quote: "I had to leave in the middle of reconciling the accounts; I couldn't continue."

- Impact on physical and mental wellbeing: Reports feeling anxious and distressed due to the pain. Quote: "I'm really worried; I've never felt like this, the pain is making me quite anxious."

General quote for History of Presenting Complaint:

Quote:

"This all started today at work, out of nowhere. I have never needed any treatments before, and I can't carry on with any task at hand. It's the first time I've had such an intense pain, and it is affecting every aspect of my life right now. I had to leave work unfinished, and the physical pain is causing me a lot of mental distress too."

Systemic Symptoms:

- Fatigue: Negative

- Fever: Negative

- Night sweats: Negative

- Unintended weight loss: Negative

- Generalised weakness: Negative

- Malaise: Negative

- Bowel habits: Negative

- Urinary habits: Negative

- Changes in sleep: Negative

- Peripheral oedema: Negative

Quote for Systemic Symptoms section:

Quote:

"I haven't noticed any of those symptoms you've mentioned. The pain in my chest and back is my main concern right now."

Past Medical History:

- Surgeries: Negative

- Hospitalizations: Negative

- Previous injuries or traumas: Negative

- Psychiatric or psychological history: Negative

- History of substance abuse or addiction: Negative

- Immunizations and vaccination history: Up to date on vaccinations. Quote: "I always make sure to get my vaccinations, including the flu jab every year."

- Any other relevant medical conditions or significant health events: No other significant health events.

Quote for Past Medical History section:

Quote:

"I've been quite healthy my whole life, no surgeries or hospital visits. I don't recall any injuries, and I don't drink or smoke. Mentally, I've been alright, always kept my vaccinations up to date and besides this, no significant health events."

Drug History:

Kasem is not currently taking any prescription medications and has no history of non-compliance or missed doses.

Mentions occasional use of paracetamol for headaches. Quote: "Sometimes I take a paracetamol when I get a headache, but that's about it."

Allergies:

No known allergies. Quote: "As far as I'm aware, I've never had an allergic reaction to anything."

Family History:

No known family history of aortic dissection or other cardiovascular diseases.

Quote: "I don't think anyone in my family has ever had anything like this happen to them."

Social History:

Lifestyle: Kasem has a sedentary lifestyle due to his occupation as an accountant.

Occupation: Accountant

Activities of Daily Living & Hobbies: Enjoys reading and playing chess. Quote: "After a day of number crunching, I like to relax with a good book or a game of chess."

Smoking: Non-smoker. Quote: "I’ve never smoked; I know it's not good for my health."

Alcohol: Drinks occasionally, approximately 4 units per week. Quote: "I might have a glass of wine with dinner on the weekend but that's about all."

Recreational Drug Use: Denies any recreational drug use. Quote: "I've never felt the need to try any illicit substances."

Diet: Balanced diet with occasional indulgences. Quote: "I try to eat healthy, though I do enjoy the odd takeaway."

Exercise: Light walking on weekends. Quote: "I go for walks on the weekend, but that's pretty much the extent of my exercise."

Travel History: Negative for pertinent travel history.

Sexual History: Married, not relevant to current presenting complaint.

Driving Status: Drives to work daily, not affected by current complaint.

Cultural or Religious Practises: Not relevant to presenting complaint.

Recent Life Events: No recent significant life events.

Exposure to Hazards or New Environment: Works in a standard office environment with no unusual exposures.

Ideas, Concerns, and Expectations:

Ideas: Kasem expresses understanding that his symptoms could be serious and is knowledgeable about the potential cardiovascular implications.

Quote for Ideas:

"I've read about chest pain being connected to the heart or big blood vessels. Could this be something like an aneurysm or blockage?"

Concerns: Worried about the severity of his symptoms and potential diagnoses.

Quote for Concerns:

"What if this is something really serious? I can't help but worry about what this means for my health."

Expectations: Kasem expects a thorough investigation and clear communication of findings and treatment options.

Quote for Expectations:

"I would like to understand what's happening and what we can do about it. I'm expecting you to run the necessary tests and give me a clear idea of the treatment plan."

Observations:

Respirations (Breaths/min): 20 (0 points)

Oxygen Saturation (%): 96% (0 points)

Air or Oxygen?: Room Air (0 points)

Blood Pressure (mmHg): 110/70 (0 points)

Pulse (Beats/min): 98 (0 points)

Consciousness (AVPU): Alert (0 points)

Temperature (Celsius): 36.5°C (0 points)

NEWS Total Score: 0 (As per the NEWS scoring system, no parameters reach the threshold for scoring, therefore the total score is 0.)

Physical Examination:

General inspection:

- Clinical signs: No cyanosis, no shortness of breath at rest, no pallor, no malar flush, and no peripheral oedema present.

- Objects/equipment: No objects or equipment present that provide insights into medical history or current clinical status.

Inspection of the hands:

- General observation: No colour changes, tar staining, xanthomata, arachnodactyly, clubbing, splinter haemorrhages, Janeway's lesions, Osler's nodes, or koilonychia noted.

- Palpation for temperature and capillary refill time: Normal.

Pulses and blood pressure:

- Radial pulse: Regular rate and rhythm, no delay.

- Collapsing pulse: Not noted.

- Brachial pulse: Normal volume and character.

- Blood pressure: No significant difference between both arms.

- Carotid pulse: Normal volume and character.

Jugular venous pressure:

- Measured within normal limits.

- No hepatojugular reflux detected.

Inspection of the face:

- Eyes: No conjunctiva pallor, corneal arcus, xanthelasma, or Kayser-Fleischer rings noted.

- Mouth: No central cyanosis or angular stomatitis detected; high arched palate and dental hygiene normal.

Close inspection of the chest:

- Chest: No pectus excavatum, pectus carinatum, visible pulsations; no abnormal shape or scars of previous thoracic surgery noted.

Palpation of the chest:

- Apex beat: Located within normal limits, no heaves or thrills felt.

Auscultation of the chest:

- Added sounds or murmurs: Not detected in all areas with either diaphragm or bell.

Inspection of the back:

- No deformities or scars noted.

Palpation of the back:

- Sacrum: No oedema detected.

Auscultation of the back:

- Lung fields: No coarse crackles or absent air entry detected.

Examination of the legs:

- Ankles: No pitting oedema present.

- Leg: No evidence of saphenous vein harvesting observed.

Special Tests:

Not indicated at this stage.

Diagnostic Tests:

Blood Tests (Reference Ranges):

Full Blood Count (FBC):

Haemoglobin (Hb): 150 g/L (Male: 130 - 180 g/L)

Mean Corpuscular Volume (MCV): 90 fL (80 – 100 fL)

White Blood Cell Count: 6.0 x10^9/L (3.6 - 11.0 x10^9/L)

Platelets: 250 x10^9/L (140 - 400 x10^9/L)

Urea and Electrolytes:

Sodium: 140 mmol/L (133–146 mmol/L)

Potassium: 4.5 mmol/L (3.5–5.3 mmol/L)

Calcium (adjusted): 2.4 mmol/L (2.2-2.6 mmol/L)

Magnesium: 0.9 mmol/L (0.7–1.0 mmol/L)

Urea: 5.0 mmol/L (2.5 – 7.8 mmol/L)

Creatinine: 85 μmol/L (Male: 59–104 μmol/L)

Estimated Glomerular Filtration Rate (eGFR): 95ml/min/1.73m3 (>90ml/min/1.73m3)

Liver Function Tests:

Alanine transferase (ALT): 25 iu/L (3-40 iu/L)

Aspartate transaminase (AST): 20 iu/L (3-30 iu/L)

Alkaline phosphatase (ALP): 70 umol/L (30-100 umol/L)

Gamma glutamyl transferase (yGT): 25 u/L (8-60 u/L)

Bilirubin: 10 umol/L (3-17 umol/L)

Albumin: 45 g/L (35-50 g/L)

Thyroid Function Tests:

Thyroid Stimulating Hormone (TSH): 2.5 mu/L (0.4-4.5 mu/L)

Free T3: 5.0 pmol/L (3.5-7.8 pmol/L)

Free T4: 15 pmol/l (9-25 pmol/l)

Coagulation:

Prothrombin Time (PT): 13 seconds (10 – 14 seconds)

Activated Partial Thromboplastin Time (APTT): 30 seconds (25–35 seconds)

Fibrinogen: 3.0 g/L (1.50 – 4.50 g/L)

D-dimer: 450 ng/mL (< 500 ng/mL)

Metabolic Tests:

Serum Ketones: 0.4 mmol/L (< 0.6 mmol/L)

Random Blood Glucose: 5.5 mmol/L (< 11.1 mmol/L)

Other Haematology Tests:

Erythrocyte Sedimentation Rate (ESR): 20 mm/hr (Men: < (age / 2) mm/hr)

Imaging Tests:

CT Scan: The CT with contrast reveals an intimal flap within the ascending thoracic aorta consistent with an aortic dissection.

Other Tests:

ECG: Non-specific ST-T wave changes but no evidence of ischaemia or infarction.

Condition:

Aortic Dissection

Patient Questions:

1) "What does this finding on the CT scan mean?"

Possible answer: "The CT scan shows evidence of a tear in the lining of your aorta, which is a serious condition known as an aortic dissection. We need to act quickly to treat it and prevent complications."

2) "Is this life-threatening?"

Possible answer: "Aortic dissection can be life-threatening if not treated promptly, which is why we are taking immediate steps to manage your condition."

3) "How did this happen to me?"

Possible answer: "Aortic dissection can occur due to a variety of reasons, such as hypertension or genetic factors. It's not always clear why it happens, but we're focused on treating you right now."

4) "What will the treatment involve?"

Possible answer: "Treatment may involve surgery to repair the tear in your aorta or medications to control your blood pressure and heart rate. We'll discuss the best course of action with you."

Examiner Questions:

1) How would you distinguish between an aortic dissection and myocardial infarction based on clinical presentation?

Possible answer: "Aortic dissection often presents with a tearing or ripping pain radiating to the back, while myocardial infarction presents with crushing central chest pain that may radiate to the arm, neck or jaw. ECG changes specific to myocardial infarction can aid in differentiation."

2) What are the risk factors for aortic dissection?

Possible answer: "Hypertension, connective tissue disorders like Marfan syndrome, a history of cardiac surgery, and aortic aneurysm are risk factors for aortic dissection."

3) What is the first-line imaging test for suspected aortic dissection?

Possible answer: "CT angiography of the chest is the first-line imaging test for diagnosing aortic dissection."

4) Why is the measurement of D-dimer levels relevant in the diagnosis of aortic dissection?

Possible answer: "While not definitive, elevated D-dimer levels can suggest aortic dissection, particularly in the setting of an appropriate clinical picture. However, a normal D-dimer level does not rule out the condition."

5) What are the key management principles for a patient with aortic dissection?

Possible answer: "Management includes immediate blood pressure and pain control, followed by urgent cardiovascular surgical evaluation for possible surgical repair."

6) What pharmacological treatments are indicated for aortic dissection?

Possible answer: "Intravenous beta-blockers to reduce heart rate and blood pressure, along with other antihypertensive agents, are indicated. Pain management with analgesics is also crucial."

Treatment:

The immediate treatment for aortic dissection involves:

- Intravenous beta-blockers such as labetalol or esmolol, titrated to heart rate and blood pressure targets.

- Pain relief with intravenous opioids such as morphine.

- Antihypertensive therapy to maintain a target systolic blood pressure of 100-120 mmHg.

- Urgent assessment for surgical repair, particularly for an ascending aortic dissection or if complications arise (e.g., impaired organ perfusion).

If beta-blockers are contraindicated, alternative agents such as calcium channel blockers may be used. If the initial treatment is ineffective or the patient is allergic, options include other classes of antihypertensive agents under careful monitoring.

Monitoring:

- Monitor blood pressure and heart rate continuously to ensure targets are maintained.

- Regular assessment of pain and adjustment of analgesia as necessary.

- Frequent reassessment of neurological status for signs of altered consciousness or limb ischaemia.

- Post-operative or post-intervention monitoring in the intensive care or high-dependency unit.

- Follow-up visits with a specialist at intervals recommended post-discharge from hospital, typically within 1-2 weeks initially, then according to the specialist's advice.

Prognosis:

- Aortic dissection can be a life-threatening condition with a high risk of mortality if not treated promptly.

- The surgical repair can significantly improve outcomes, particularly for Type A dissections.

- Long-term prognosis depends on the location of the dissection, success of surgical intervention, and the patient’s adherence to follow-up care and lifestyle modifications.

- Ongoing management of blood pressure with medication and lifestyle changes is crucial to reduce the risk of recurrence.

Differential diagnoses:

1) Myocardial Infarction - Less likely due to the character and location of the pain, and absence of diagnostic ECG changes.

2) Pulmonary Embolism - Less likely given the absence of risk factors and symptoms such as shortness of breath or pleuritic chest pain.

3) Pericarditis - Less likely due to the lack of a pericardial friction rub and the absence of ECG changes consistent with pericarditis.

4) Gastro-oesophageal Reflux Disease (GERD) - Less likely because the pain profile and abrupt onset are not typical of GER

Case Code:

# SW\_25\_AorticDissection

Homepage Vignette:

## A 63-year-old male called Maksimilian presents with sudden severe chest pain and shortness of breath.

Individual Page Vignette:

You are a junior doctor in an Emergency Department. Maksimilian, a 63-year-old retired music conductor, presents with a sudden severe chest pain and shortness of breath.

Patient Name:

Maksimilian Tomaszewski (Pronunciation: Max-see-MIL-ee-an To-ma-SHEV-ski). He prefers to be called Maksimilian.

Age:

25/07/1961

Location:

Emergency Department

Personality:

Maksimilian is a charismatic, albeit apprehensive individual known for his artistic sensibilities. Used to leading orchestras, he speaks with a certain rhythm and eloquence and expects clarity and precision when being given information.

Presenting Complaint:

Maksimilian reports a sudden onset of severe chest pain that radiates to his back, accompanied by difficulty breathing.

Quote:

"I was fine one moment, and then out of nowhere, I felt as if a knife was driven through my chest to my back. It's quite disconcerting, and I'm quite short of breath."

Symptoms:

Site: The pain is in the chest, radiating to the back.

Quote: "The pain starts here, right in the centre of my chest and seems to go straight through to my back."

Onset: The pain started suddenly.

Quote: "I was in my study, and then suddenly this sharp pain struck me—completely out of the blue."

Character: The pain is described as sharp and severe.

Quote: "It's like being pierced by a sharp object; it's quite severe."

Radiation: The pain radiates to the back.

Quote: "The pain doesn’t stay in one place, it shoots straight to my back."

Associated Symptoms: Shortness of breath is present.

Quote: "Along with this dreadful pain, I can't catch a proper breath."

Timing: The pain is constant.

Quote: "The pain hasn’t let up at all since it started."

Exacerbating and Relieving Factors: The pain is not relieved by rest or positioning.

Quote: "No matter how I sit or lay down, there's absolutely no respite from this pain."

Severity: The pain is very severe, 9/10.

Quote: "On a scale of one to ten, I'd say the pain is unnervingly close to ten."

- Chest pain or discomfort: Positive, sharp, severe chest pain radiating to the back.

Quote: "The pain in my chest is overwhelming, and it does not seem to subside at all."

- Shortness of breath: Positive, difficulty breathing.

Quote: "It’s as if the air just won’t reach my lungs properly."

- Palpitations: Negative.

- Syncope: Negative.

- Nausea: Negative.

- Vomiting: Negative.

- Intermittent claudication: Negative.

- Peripheral oedema: Negative.

Quote: "I've had no issues with my heart rate, consciousness, stomach, legs or feet."

History of Presenting Complaint:

- Duration of symptoms: The symptoms started a few hours ago.

Quote: "This atrocious pain began a few hours back while I was at home."

- Previous treatments: No previous treatments have been attempted for this condition.

Quote: "I haven't had anything like this before, so no treatments per se."

- Progression over time: Symptoms have been stable since onset.

Quote: "This episode hit me fast and hard, and it's been relentless since."

- Frequency of symptoms: This is the first occurrence.

Quote: "Never in my life have I experienced such an alarming pain."

- Impact on daily life and activities of daily living: Significant impact, unable to perform usual activities.

Quote: "I can't even think about my usual routine; the pain is all-encompassing."

- Impact on work: Not applicable, he is retired.

Quote: "I'm thankful I don't have a performance to conduct today."

- Impact on physical and mental wellbeing: Considerable distress.

Quote: "It's safe to say this ordeal has shaken me up quite a bit, both physically and mentally."

General quote:

Quote: "I've been in fine health until this sudden chest agony began, obstructing every part of my day and leaving me quite distressed."

Systemic Symptoms:

- Fatigue: Negative.

- Fever: Negative.

- Night sweats: Negative.

- Unintended weight loss: Negative.

- Generalised weakness: Negative.

- Malaise: Negative.

- Bowel habits: Normal.

- Urinary habits: Normal.

- Changes in sleep: Negative.

- Peripheral oedema: Negative.

Quote: "No, I haven't noticed any fever, weight loss, tiredness, or any changes in my toilet habits or sleep. No swelling of my legs either."

Past Medical History:

- Surgeries: Negative.

- Hospitalizations: Negative.

- Previous injuries or traumas: Negative.

- Psychiatric or psychological history: Negative.

- History of substance abuse or addiction: Negative.

- Immunizations and vaccination history: All vaccinations up to date.

- Any other relevant medical conditions or significant health events: Negative.

Quote: "No past surgeries, injuries, or hospital stays, I must say. My immunisations are all current."

Drug History:

Maksimilian is not currently taking any medication and has not had issues with medication adherence in the past. He does not use herbal supplements or alternative therapies and has no history of contraception, HRT, non-pharmacological interventions, or overdose incidents.

Quote: "I'm not on any medication, and I tend not to dabble with herbal supplements or anything of that ilk."

Allergies:

Maksimilian has no known allergies.

Quote: "I'm quite fortunate; I've not had any allergic reactions to anything."

Family History:

No known family history of cardiovascular diseases, surgeries, or significant health events.

Quote: "To my knowledge, there aren't any cardiac issues in my family. We've been quite healthy in that department."

Social History:

Lifestyle: Maksimilian has a calm and structured lifestyle, focusing on his music and leisurely activities.

Occupation: He is retired but was formerly a celebrated music conductor.

Activities of Daily Living & Hobbies: Enjoys quiet evenings, reading, and the occasional composition of music.

Smoking: Non-smoker.

Alcohol: Drinks occasionally, less than 5 units per week.

Recreational Drug Use: None.

Diet: Eats a balanced Mediterranean-style diet.

Exercise: Partakes in daily morning walks and light stretching exercises.

Travel History: Not relevant.

Sexual History: Not relevant.

Driving Status: He holds a valid driving licence but has not driven since the onset of symptoms.

Cultural or Religious Practises: Not relevant.

Recent Life Events: Not relevant.

Exposure to Hazards or New Environment: Not relevant.

Quotes:

Regarding lifestyle and occupation, "As you might guess from my profession, I lead a rather structured and calm life, filled with music and its nuances."

Regarding health habits, "I've never smoked, and I enjoy a glass of wine on rare occasions. My diet has always been quite rich in olive oil and greens. A morning stroll is my usual exercise."

Regarding recent changes, "Nothing much has changed in my routine or environment recently, aside from this alarming event today."

Ideas, Concerns, and Expectations:

Ideas: Maksimilian thinks the pain could be related to a heart problem, citing its severe nature and sudden onset.

Quote: "Given the severity and nature of this pain, I fear it might be my heart that's at fault here."

Concerns: He is worried about the possibility of a heart attack and the potential implications on his ability to live independently.

Quote: "I'm rather concerned this could be a heart attack, you see, which would be quite detrimental to my fondness for independence."

Expectations: Maksimilian expects a thorough assessment, quick pain relief, and clear communication regarding his condition and treatment options.

Quote: "I would greatly appreciate a meticulous examination, some relief from this excruciating pain, and to be kept in the loop with understandable information."

Observations:

Respirations (Breaths/min): 22 (0 points)

Oxygen Saturation (%): 94% (1 point)

Air or Oxygen?: On room air (0 points)

Blood Pressure (mmHg): 140/90 (0 points)

Pulse (Beats/min): 88 (0 points)

Consciousness (AVPU): Alert (0 points)

Temperature (Celsius): 36.6°C (0 points)

NEWS Total Score: 1

(Maksimilian has a score of 1, attributable to his oxygen saturation of 94%.)

Physical Examination:

General inspection: Looks distressed due to pain, no cyanosis or pallor observed, no visible medical equipment or fluid balance concerns.

Inspection of the hands: No abnormalities such as tar staining or clubbing noted.

Pulses and blood pressure: Blood pressure is elevated in one arm compared to the other.

Jugular venous pressure: Not elevated.

Inspection of the face: No conjunctival pallor or cyanosis, normal dental hygiene.

Close inspection of the chest: No visible pulsations, chest appears symmetrical.

Palpation of the chest: Apex beat displaced, no heaves or thrills noted.

Auscultation of the chest: Normal heart sounds, no murmurs heard.

Inspection of the back: Back appears normal, no deformities or scars.

Palpation of the back: No sacral oedema.

Auscultation of the back: Breath sounds are clear, no crackles or wheezes.

Examination of the legs: No pitting oedema, legs appear normal.

Special Tests:

None indicated at this time.

Diagnostic Tests:

Imaging Tests:

CT Scan: The CT angiogram reveals a dissection of the ascending aorta extending into the aortic arch with involvement of the brachial artery on one side.

Blood Tests (Reference Ranges):

Full Blood Count (FBC):

Haemoglobin (Hb): 150 g/L (Female: 115 - 165 g/​L, Male: 130 - 180 g/L)

Mean Corpuscular Volume (MCV): 90 fL (80 – 100 fL)

White Blood Cell Count: 8 x10^9/L (3.6 - 11.0 x10^9/L)

Platelets: 250 x10^9/L (140 - 400 x10^9/L)

Urea and Electrolytes:

Sodium: 140 mmol/L (133–146 mmol/L)

Potassium: 4.0 mmol/L (3.5–5.3 mmol/L)

Urea: 6.0 mmol/L (2.5 – 7.8 mmol/L)

Creatinine: 80 μmol/L (Male: 59–104 μmol/L, Female: 45–84 μmol/ L)

Estimated Glomerular Filtration Rate (eGFR): 95 ml/min/1.73m2 (>90ml/min/1.73m3)

Other Biochemistry Tests:

D-dimer: 550 ng/mL (< 500 ng/mL) – Elevated suggestive of dissection.

Troponin I: Not elevated.

\*Further as clinically appropriate, no additional tests are included in this specific case at this time. Please await the final result.\*

Condition:

Aortic Dissection

Patient Questions:

1. "Could you explain precisely what an aortic dissection entails? My musings have led me to somewhat troubling conjectures."

- Short Answer: "An aortic dissection occurs when there is a tear in the inner layer of the aorta, allowing blood to enter and split the layers of the blood vessel wall, which can cause severe chest pain and can be life-threatening."

2. "What will be the course of treatment for this kind of condition?"

- Short Answer: "The treatment often involves surgery to repair the torn area of the aorta, as well as medications to control blood pressure and prevent complications. In an emergency setting like this, we act quickly."

3. "How long will I have to remain in hospital, and what can I expect in terms of recovery time?"

- Short Answer: "The length of hospital stay and recovery time can vary depending on the surgery's complexity and your overall health. It could be several weeks, but your medical team will provide a more accurate timeline after your surgery."

4. "Are there risks associated with the surgery, and what are the chances of a full recovery?"

- Short Answer: "As with any surgery, there are certain risks involved, such as infection and bleeding. Your surgical team is highly skilled and will take all necessary precautions. With proper treatment, many patients go on to recover, but your prognosis will be clearer post-surgery."

Examiner Questions:

1. What immediate steps should be taken upon suspicion of an aortic dissection in the Emergency Department?

- Answer: Immediate stabilisation of the patient, pain management, control of blood pressure, urgent CT angiography to confirm diagnosis, and consultation with cardiovascular surgery.

2. What are the two types of aortic dissections and how do they differ in terms of management?

- Answer: Type A involves the ascending aorta and often requires emergency surgery, whereas Type B involves the descending aorta and can initially be managed with medication, with surgery reserved for complications.

3. Which imaging modality is preferred for the diagnosis of aortic dissection, and why?

- Answer: CT angiography is preferred due to its quick availability, high sensitivity and specificity, and detailed visualisation of the aorta.

4. Why might a d-dimer be elevated in aortic dissection, and is it specific to this condition?

- Answer: Elevated d-dimer suggests increased fibrin turnover, which may occur in dissection due to thrombus formation in the false lumen; however, d-dimer is not specific and may be elevated in other conditions such as deep vein thrombosis and pulmonary embolism.

5. What are the red flag signs and symptoms suggesting an aortic dissection that a clinician should be aware of?

- Answer: Sudden severe chest or back pain, pulse or blood pressure differential between limbs, signs of end-organ malperfusion, neurological deficits, and shock.

Treatment:

Emergency management of aortic dissection is guided by NICE, BMJ and BNF and involves the following:

- Immediate admission to an intensive care or high dependency unit.

- Pain relief with intravenous opioids (e.g. morphine), titrated to the level of pain.

- Rapid, controlled reduction of blood pressure with intravenous antihypertensive agents (e.g. beta-blockers like intravenous labetalol and vasodilators like intravenous sodium nitroprusside) aiming for a target systolic blood pressure of 100-120 mmHg.

- Urgent surgical referral for patients with Stanford Type A dissections to evaluate for emergency surgery.

- Endovascular or open surgical repair as determined by the location and extent of the dissection and the patient's clinical status.

- For Type B dissections not involving any complications, management may include medical therapy with blood pressure control. However, in complicated cases, endovascular repair with a stent graft or open surgery may be required.

Monitoring:

- Frequent monitoring of blood pressure, heart rate, and pain level.

- Regular imaging follow-ups with CT or MRI to assess the status of the dissection and repair site.

- Monitor for signs of complications including end-organ damage and bleeding.

- Follow-up visits should be scheduled as advised by the surgical and cardiology teams to monitor recovery and any change in symptoms.

Prognosis:

- The prognosis for aortic dissection can vary widely based on various factors such as the type of dissection, promptness of treatment, and presence of complications.

- With prompt and appropriate treatment, there is potential for good recovery, especially in cases where surgery is successful with no significant organ damage.

- Long-term survival rates are lower for Type A dissections compared to Type B if left untreated.

- Regular monitoring and lifestyle changes post-treatment are essential for a favourable outcome.

- Risk factors such as uncontrolled hypertension and atherosclerosis negatively impact the prognosis.

Differential diagnoses:

1. Myocardial infarction: Less likely due to the nature of the pain and absence of ECG changes indicative of an MI.

2. Pericarditis: Less likely due to the absence of a pericardial friction rub and positional chest pain.

3. Pulmonary embolism: Less likely due to the absence of risk factors for thrombosis, normal d-dimer, and no signs of respiratory distress usually associated with PE.

4. Musculoskeletal chest pain: Less likely due to the sudden onset and severity of pain which is not typical for musculoskeletal issues.

5. Gastroesophageal reflux disease (GERD): Less likely due to the localization and character of the pain, which is more typical of aortic dissection and not associated with eating which would suggest GERD.

Keyword Filters:

Speciality Filter:

Cardiovascular;

Presenting Complaint Filter:

Chest Pain; Breathlessness;

Condition Filter:

Aortic Dissection;

Location Filter:

Accident & Emergency

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_26\_AorticDissection

Homepage Vignette:

## A 70-year-old male called Cassius Amirtharajah presents with a sudden, severe chest pain that radiates to his back.

Individual Page Vignette:

You are the attending clinician in the Emergency Department, and Cassius Amirtharajah, a 70-year-old retired engineer, has come in due to intense chest pain that shot through to his back while he was gardening at home.

Patient Name:

Cassius Amirtharajah [CASS-ee-us A-mirth-RAH-jah]; prefers to be called Cassius.

Age:

06/07/1954

Location:

Emergency Department

Personality:

Cassius is a polite, soft-spoken individual with a meticulous nature, likely reflecting his background in engineering. He responds to questions thoughtfully, providing detail and precision in his descriptions.

Presenting Complaint:

Cassius has come to the Emergency Department complaining of acute onset of intense chest pain that he describes as "rending," which started suddenly while performing light physical activity.

Quote: "It came out of nowhere – an awful tearing sensation, right here in my chest, spreading through to my back."

Symptoms:

SOCRATES:

Site: The pain is located in the chest, central and spreading through to the back.

Quote: "It feels like the pain is going from the inside of my chest right through to my back."

Onset: Sudden onset while gardening.

Quote: "I was just pottering around with the roses and then – bam! – it hit me like a hammer."

Character: Describes the pain as sharp, tearing, and severe.

Quote: "It’s like nothing I've felt before – as if something is tearing apart inside me."

Radiation: Pain radiates to the interscapular region.

Quote: "The pain shoots straight through to between my shoulder blades."

Associated Symptoms: Reports of feeling faint and describes a sensation of impending doom.

Quote: "I felt dizzy and had this gut feeling that something was terribly wrong."

Timing: The pain has been continuous since onset a few hours ago.

Quote: "The pain hasn’t let up at all since it started this morning."

Exacerbating and Relieving Factors: Pain is not relieved by change in position or Nitroglycerin (GTN), nor is it exacerbated by respiration.

Quote: "Sitting up, lying down – nothing makes a difference. Even the little heart pills didn't help."

Severity: Rates the pain 9 out of 10.

Quote: "On a scale? Easily a nine. It’s almost unbearable."

Positive findings with quotes:

- Chest pain or discomfort: Confirmed, "I've got this terrible pain in the middle of my chest that goes through to my back."

- Shortness of breath: Confirmed, "I am finding it a bit hard to catch my breath properly."

Negative findings (no quotes needed):

- Palpitations: Negative

- Syncope: Negative

- Nausea: Negative

- Vomiting: Negative

- Intermittent claudication: Negative

- Peripheral oedema: Negative

History of Presenting Complaint:

Duration of symptoms: Began several hours ago.

Quote: "It hit me out of nowhere while I was tending to my garden this morning."

Previous treatments: None sought until now.

Quote: "I’ve never felt anything like this before, so I didn’t know what to do."

Progression over time: The intensity of pain has remained unchanged since onset.

Quote: "It's been relentless, just as strong as when it started."

Frequency of symptoms: This is the first occurrence.

Quote: "This is the first time anything like this has happened. I'm generally in good shape."

Impact on daily life and activities of daily living (ADLs): Unable to continue normal activities because of the pain.

Quote: "I had to stop everything. The pain was too much; I couldn't concentrate on anything else."

Impact on work: Retired, not currently working but states would be unable to work with pain.

Quote: "If I were still working, there's no way I could manage with this kind of pain."

Impact on physical and mental wellbeing: Pain is causing significant distress and anxiety.

Quote: "It's not just the pain, it's worrying about what it might mean that is gnawing at me."

Systemic Symptoms:

- Fatigue: Negative

- Fever: Negative

- Night sweats: Negative

- Unintended weight loss: Negative

- Generalised weakness: Negative

- Malaise: Negative

- Bowel habits: Normal

- Urinary habits: Normal

- Changes in sleep: Negative

- Peripheral oedema: Negative

Past Medical History:

- Surgeries: Negative

- Hospitalizations: Negative

- Previous injuries or traumas: Negative

- Psychiatric or psychological history: Negative

- History of substance abuse or addiction: Negative

- Immunizations and vaccination history: Up to date on vaccines

- Any other relevant medical conditions or significant health events: Negative

Drug History:

Currently not on any medications.

Quote: "I don't take any regular medicines, just the odd paracetamol for a headache now and then."

Allergies:

No known allergies.

Quote: "I'm not allergic to anything that I know of."

Family History:

Father had a myocardial infarction at age 65, but no other significant family medical history.

Quote: "Dad had a heart attack in his mid-sixties, but otherwise, we've been a pretty hearty lot."

Social History:

Lifestyle and Occupation:

Retired mechanical engineer, enjoys volunteering at the local museum once a week.

Activities of Daily Living & Hobbies:

Maintains an active lifestyle, enjoys gardening and reading, member of a local book club.

Smoking: Non-smoker.

Quote: "I’ve never smoked in my life."

Alcohol: Drinks approximately 6 units of alcohol per week.

Quote: "I enjoy a glass of wine with dinner most evenings."

Recreational Drug Use: Negative

Quote: "No, I've never dabbled in drugs."

Diet: Follows a balanced diet with no excessive intake of fats or sugars.

Quote: "I keep to a well-rounded diet; my daughter, the nutritionist, keeps tabs on that."

Exercise: Walks daily and actively gardens, approximately 3 hours of moderate exercise per week.

Quote: "I go for walks every morning, helps clear the mind."

Ideas, Concerns, and Expectations:

Ideas: Thinks that something might have ruptured or that there could be a blockage related to his heart.

Quote: "A part of me wonders if something burst or if something's blocked, like what happened to my dad"

Concerns: Worried about the possibility of a serious heart condition and potential long-term effects.

Quote: "I can't shake this concern that it's something grave, like a heart condition that could stick with me."

Expectations: Hopes for clarity on the diagnosis and a clear treatment plan.

Quote: "I'd like to understand what's going on and how you can fix it."

Observations:

Respirations (Breaths/min): 18, 0 points.

Oxygen Saturation (%): 96%, 0 points.

Air or Oxygen?: On room air, 0 points.

Blood Pressure (mmHg): 159/94, 0 points.

Pulse (Beats/min): 88, 0 points.

Consciousness (AVPU): Alert, 0 points.

Temperature (Celsius): 36.7°C, 0 points.

NEWS Total Score: 0 (All observations are within normal RANGE)

\*\*Physical Examination:\*\*

\*\*General inspection:\*\*

- Clinical signs: No evidence of cyanosis, shortness of breath, pallor, malar flush, or oedema observed.

- Medical history/equipment: Cassius is not associated with any medical equipment or mobility aids. There are no pillows specifically arranged suggestive of orthopnea, no fluid balance charts, or prescriptions visible at the bedside.

\*\*Inspection of the hands:\*\*

- General observation: No signs of tar staining, xanthomata, arachnodactyly, clubbing, splinter haemorrhages, Janeway's lesions, Osler's nodes, or koilonychia.

- Palpation: Hands are warm to touch; capillary refill time is less than 2 seconds.

\*\*Pulses and blood pressure:\*\*

- Radial pulse: Rate is 88 beats per minute, rhythm is regular, and there is no radio-radial delay.

- Collapsing pulse: Not present.

- Brachial pulse: Volume and character are normal bilaterally.

- Blood pressure: 159/94 mmHg in the right arm and 160/95 mmHg in the left arm, suggesting no significant inter-arm blood pressure difference.

- Carotid pulse: Volume and character are normal with no carotid bruits.

\*\*Jugular venous pressure:\*\*

- JVP: The jugular venous pressure is not elevated and is estimated to be 2 cm above the sternal angle.

- Hepatojugular reflux: Not elicited.

\*\*Inspection of the face:\*\*

- Eyes: No pallor, corneal arcus, xanthelasma, or Kayser-Fleischer rings evident.

- Mouth: No central cyanosis, angular stomatitis. Tends to a well-maintained dental hygiene and normal palate.

\*\*Close inspection of the chest:\*\*

- Chest: No evidence of pectus excavatum, pectus carinatum, visible pulsations, or surgical scars noted.

\*\*Palpation of the chest:\*\*

- Apex beat: Located in the 5th intercostal space, mid-clavicular line, suggesting no cardiac enlargement.

- Heaves or thrills: Not palpable.

\*\*Auscultation of the chest:\*\*

- Aortic area: No added sounds or murmurs noted with diaphragm or bell.

- Pulmonary area: No added sounds or murmurs noted with diaphragm or bell.

- Tricuspid area: No added sounds or murmurs noted with diaphragm or bell.

- Mitral area: No added sounds or murmurs noted with diaphragm. No sounds or murmurs noted with the bell both during expiration and while the patient is in the left lateral position.

- Carotid arteries: No radiation of an ejection systolic murmur suggestive of aortic stenosis detected.

- Aortic area during expiration while the patient sits forward: No early diastolic murmur indicative of aortic regurgitation detected.

- Axilla: No pansystolic murmur suggesting mitral regurgitation detected.

- Mitral area with bell for mitral stenosis: No mid-diastolic murmur detected.

\*\*Inspection of the back:\*\*

- Back: No deformities or surgical scars visible.

\*\*Palpation of the back:\*\*

- Sacrum: No evidence of sacral oedema upon palpation.

\*\*Auscultation of the back:\*\*

- Lung fields: Auscultation reveals clear lung fields with no coarse crackles or areas of absent air entry.

\*\*Examination of the legs:\*\*

- Ankles: No pitting oedema is noted bilaterally.

- Leg: Inspection does not reveal any evidence of previous saphenous vein harvesting or surgical intervention.

The physical examination yields no additional findings that would necessarily alter the provisional diagnosis or influence the initial management plan. Further diagnostic testing, namely a thoracic CT angiography, remains of paramount importance for confirming the diagnosis of aortic dissection and determining the type and extent of the dissection for appropriate management.

Special Tests:

No special tests have been performed at this point.

Diagnostic Tests:

An urgent thoracic CT angiography is warranted for Cassius to confirm the suspicion of an aortic dissection.

Condition:

Aortic Dissection

Patient Questions:

1. "What exactly does an aortic dissection mean?"

- "An aortic dissection occurs when there is a tear in the inner layer of the aorta, which is the large blood vessel that arises from the heart. This can cause blood to flow between the layers of the blood vessel wall."

2. "What are my chances of getting through this?"

- "The outcomes can vary, but with rapid treatment, the risk can be managed. Aortic dissection is a serious condition, and we will work promptly on your treatment."

3. "Is there anything I could have done to prevent this?"

- "There are some risk factors associated with an aortic dissection such as high blood pressure and genetic conditions, but often it can occur unpredictably."

4. "Will I need surgery for this?"

- "Depending on the type and extent of the dissection, surgery may be required. We will discuss the best treatment options after reviewing your CT scans and other findings."

Examiner Questions:

1. What is the initial management step for a patient with suspected aortic dissection?

- "Immediate pain relief with IV analgesics and blood pressure control with IV beta-blockers is critical while urgently arranging for further imaging, usually a CT angiogram."

2. How would you distinguish between Type A and Type B aortic dissections on a CT angiogram?

- "Type A dissections involve the ascending aorta, and potentially the aortic arch, while Type B dissections are confined to the descending aorta."

3. What are the risk factors for aortic dissection?

- "Hypertension, connective tissue disorders such as Marfan syndrome, bicuspid aortic valve, advanced age, atherosclerosis, and previous cardiac surgery."

4. What are the indications for surgical intervention in aortic dissection?

- "Surgical intervention is indicated for all Type A dissections and complicated Type B dissections, which include persistent pain, malperfusion, or progression of the dissection."

5. What are the main goals in the pharmacological management of aortic dissection?

- "The main goals are to reduce shear forces by controlling heart rate and blood pressure, aiming for a systolic BP of 100-120 mmHg and a heart rate of 60-80 bpm."

6. What are potential complications of aortic dissection if not treated promptly?

- "Possible complications include rupture of the aorta, tamponade, stroke, organ failure due to malperfusion, and death."

Treatment:

Initial Stabilization:

- IV analgesics for pain control, such as morphine.

- IV beta-blockers like esmolol or labetalol to control heart rate and blood pressure.

- Antihypertensive agents like sodium nitroprusside may be added if blood pressure remains uncontrolled.

Type A Dissection:

- Immediate surgical management is necessary.

- Options could involve replacing part of the aorta and the aortic valve if affected.

Type B Dissection:

- If uncomplicated and the patient is stable, blood pressure control and analgesia.

- In cases of complications like malperfusion, rapid progression, or uncontrolled pain, endovascular stenting or surgery may be required.

Long-term Management:

- Lifelong surveillance imaging.

- Blood pressure management with a combination of antihypertensive medications.

- Beta-blockers are typically continued long-term for both rate and blood pressure control.

Allergic Considerations:

- If allergic to iodinated contrast, use premedication with steroids or consider alternative imaging modalities such as a TEE (Trans-esophageal echocardiogram) or MRI angiogram if urgent diagnosis is not required.

Monitoring:

- Closely monitor vital signs, particularly blood pressure and heart rate.

- Serial imaging, initially post-surgery and then at regular intervals.

- Monitor for signs of malperfusion, organ failure, or new pain which may indicate expansion of the dissection or rupture.

- Regular follow-up visits to an authorized specialized aortic clinic are recommended.

Prognosis:

- With timely intervention, patients with Type A dissection have a better prognosis than without surgery.

- Pre-operative shock, malperfusion, and delays in diagnosis or treatment can negatively impact prognosis.

- Type B dissections that are managed medically have a high survival rate, but complications may affect long-term outcomes.

- Surveillance and control of risk factors are crucial for long-term health.

Differential diagnoses:

1. Myocardial Infarction: Less likely due to the character of the pain and lack of ECG changes or cardiac enzyme elevation; however, still needs to be ruled out.

2. Pulmonary Embolism: Absence of risk factors for PE, and pain is less pleuritic.

3. Musculoskeletal Pain: Much less severe than presented and usually related to movement or touch.

4. Pericarditis: Typically presents with pain relieved by sitting forward and pericardial friction rub.

5. Esophageal Rupture: May present similarly but often associated with vomiting or a history of procedures.

Keyword Filters:

Speciality Filter:

Cardiovascular; Surgery; Emergency and Acute

Presenting Complaint Filter:

Chest Pain; Shock; Hypertension; Pain on Inspiration; Deteriorating Patient; Syncope; Breathlessness; Peripheral Oedema and Ankle Swelling

Condition Filter:

Aortic Dissection; Aneurysms

Location Filter:

Emergency Department

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_27\_Peripheral Vascular Disease

Homepage Vignette:

## A 64-year-old man called Marlon reveals symptoms of intermittent claudication and lower extremity pain.

Individual Page Vignette:

You are a General Practitioner and Marlon, a 64-year-old retired postal worker, comes to the clinic complaining of cramping pain in his calves when walking that subsides with rest.

Patient Name:

Marlon Nikolaj Kovač (Pronunciation: MAR-lun NEE-koh-lye KOH-vatch). Marlon indicates he prefers to be called by his first name.

Age:

17/02/1960

Location:

Clinic

Personality:

Marlon is a stoic individual who speaks thoughtfully and deliberately. He is educated, having attended night school to study history, which he enjoys discussing at length. Given his background as a postal worker, he values punctuality and is precise in describing his symptoms.

Presenting Complaint:

Marlon reports experiencing pain in his calves while walking which eases with rest. He mentions the pain restricts his morning walks, a routine he has kept up since retirement.

Quote:

"The cramping in my legs starts up after a few minutes into my walk. It's like clockwork, relieving itself when I take a short break."

Symptoms:

Site: The pain is located in the calves. Quote: "The trouble's mainly in my calves; that's the spot."

Onset: The pain started several months ago. Quote: "It all began a few months back, quite subtle at first."

Character: The pain is described as cramping. Quote: "It's a tight, cramp-like sensation."

Radiation: The pain does not radiate. Quote: "No, it doesn't shoot up or down; it stays put in my calves."

Associated Symptoms: Marlon denies any numbness or tingling. Quote: "It's just the cramp, no tingling or anything else."

Timing: The pain occurs during walking and subsides with rest. Quote: "Whenever I go for a walk, the pain kicks in but eases off with a rest."

Exacerbating and Relieving Factors: Walking exacerbates the pain, resting relieves it. Quote: "The more I walk, the worse it gets. Stopping a while brings relief."

Severity: The pain is moderate but limits his ability to walk. Quote: "I'd say it's quite bad, stops me in my tracks."

- Chest pain or discomfort: Negative

- Shortness of breath: Negative

- Palpitations: Negative

- Syncope: Negative

- Nausea: Negative

- Vomiting: Negative

- Intermittent claudication: Positive. Quote: "It's like walking into an invisible barrier that goes away if I halt a bit."

- Peripheral oedema: Negative

History of Presenting Complaint:

- Duration of symptoms: Several months. Quote: "It's been a few months since this started happening."

- Previous treatments: None. Quote: "I haven't tried anything for it yet; thought it would clear up on its own."

- Progression over time: The symptoms have gradually worsened. Quote: "It's been getting steadily worse, more frequent and more bothersome."

- Frequency of symptoms: Occurs consistently with walking. Quote: "Every morning walk without fail."

- Impact on daily life and activities of daily living: Walking, a daily activity, is affected. Quote: "I've had to cut my walks short; it's quite frustrating."

- Impact on work: Not applicable, as Marlon is retired. Quote: "Thankfully, it's not affecting a job, seeing as I've retired."

- Impact on physical and mental wellbeing: The symptoms cause frustration and restrict physical activity. Quote: "Mentally, it's annoying. Physically, it hinders my only exercise routine."

General quote:

"These walks are important to me, and the fact that I have to stop every now and then is really irksome."

Systemic Symptoms:

- Fatigue: Negative

- Fever: Negative

- Night sweats: Negative

- Unintended weight loss: Negative

- Generalised weakness: Negative

- Malaise: Negative

- Bowel habits: Normal

- Urinary habits: Normal

- Changes in sleep: Normal

- Peripheral oedema: Negative

Quote:

"I've had no fever, no sweats at night, I eat and sleep well, and there's no unexplained tiredness or weight change."

Past Medical History:

- Surgeries: Negative

- Hospitalizations: Negative

- Previous injuries or traumas: Negative

- Psychiatric or psychological history: Negative

- History of substance abuse or addiction: Negative

- Immunizations and vaccination history: Up to date on vaccinations as per NHS schedule. Quote: "No past surgeries or hospital stays for me, never broke a bone. Mentally, I'm sound, and I've kept away from drugs. All my jabs are up to date."

- Any other relevant medical conditions or significant health events: History of hypertension, controlled on medication. Quote: "Just a bit of high blood pressure, but the tablets keep it in check."

Quote:

"I've been quite lucky health-wise, just the usual age-related creaks, and my blood pressure, which is managed well with my medications."

Drug History:

Marlon is currently taking amlodipine 10 mg once daily for hypertension. No history of medication non-compliance, no use of herbal supplements or alternative therapies, and no known overdoses.

Quote:

"I take my blood pressure pill every morning without fail, 10 milligrams of amlodipine. Never had any issues with that."

Allergies:

No known allergies.

Quote:

"No problems with allergies, at least none that I'm aware of."

Family History:

- Parents had hypertension and father had a history of stroke. Quote: "Both my parents had the pressure up, and dad had a stroke in his late years."

Social History:

Lifestyle: Marlon lives alone but has regular visits from family members. He enjoys reading and gardening.

Occupation: Retired postal worker.

Activities of Daily Living & Hobbies: Enjoys daily morning walks and is an amateur historian.

Smoking: Marlon smoked in his early 20s but quit 30 years ago (1 pack-year).

Alcohol: Enjoys an occasional glass of wine, approximately 3 units per week.

Recreational Drug Use: Denies any recreational drug use.

Diet: Eats a balanced diet with plenty of fruits and vegetables.

Exercise: Regular walks are part of his routine, recently cut short by leg pain.

Quote:

"In my younger days, I'd have a smoke, but that's long gone. As for alcohol, just a glass of wine every other evening. Never touched drugs. I keep myself to a healthy diet, and I used to walk a lot before this leg issue cropped up."

Ideas, Concerns, and Expectations:

Ideas:

Marlon believes that his symptoms might be due to his age or lack of more vigorous exercise.

Quote:

"I thought initially it might just be old age catching up, but now I wonder if I should have kept up with heartier exercise rather than just walking."

Concerns:

He is worried that the pain could signify something more serious affecting his circulation.

Quote:

"My main worry is that this could be a sign of clogged arteries or something equally sinister that's cutting off blood to my legs."

Expectations:

Marlon expects to undergo diagnostic testing to confirm the cause and hopes for a treatment plan that will allow him to resume his walks without pain.

Quote:

"I'm here for some tests, I reckon, and hopefully, you'll have something that can get me back on my usual trail without this annoying stop-start business."

Observations:

Respirations (Breaths/min): 16

Oxygen Saturation (%): 96

Air or Oxygen?: Room air

Blood Pressure (mmHg): 138/86

Pulse (Beats/min): 78

Consciousness (AVPU): Alert

Temperature (Celsius): 36.5

NEWS Total Score: 0

(Respirations, Oxygen Saturation, and Temperature fall within normal ranges resulting in 0 points; Blood Pressure and Pulse do not meet criteria for additional points; Patient is Alert with no new confusion, hence 0 points.)

\*\*Physical Examination:\*\*

\*\*General inspection:\*\*

- Marlon Kovač is alert and oriented with a calm demeanor. He appears comfortable at rest, with no visible distress. There are no signs of cyanosis or pallor. No shortness of breath or malar flush is present, and there is no peripheral oedema or any other clinical signs of underlying pathology visible. Marlon is dressed comfortably in a casual shirt and trousers with comfortable walking shoes.

\*\*Inspection of the hands:\*\*

- The hands show a normal color with no signs of tar staining, xanthomata, arachnodactyly, clubbing, splinter haemorrhages, Janeway lesions, Osler nodes, or koilonychia. He has a watch on his left wrist and a wedding ring on his left hand.

- Palpation reveals that the skin temperature is normal and the capillary refill time is within the normal limit (<2 seconds).

\*\*Pulses and blood pressure:\*\*

- Radial pulse is symmetrical and regular, with a rate of 78 beats per minute and no radio-radial delay.

- No collapsing pulse, suggesting no significant aortic regurgitation.

- Brachial pulse volume and character feel normal in both arms. His blood pressure measures 138/86 mmHg on the left arm and 137/85 mmHg on the right arm.

- Carotid pulse volume and character are within normal limits with no bruit upon auscultation.

\*\*Jugular venous pressure:\*\*

- JVP is not elevated when observed, and the hepatojugular reflux is not present upon testing.

\*\*Inspection of the face:\*\*

- There is no conjunctival pallor suggestive of anemia, no corneal arcus, and no eyelid xanthelasma noted.

- The oral cavity is free of central cyanosis, angular stomatitis, and the palate does not show any evidence of high arched deformity. He maintains good dental hygiene.

\*\*Close inspection of the chest:\*\*

- The chest wall appears normal with no signs of pectus excavatum, pectus carinatum, and there are no visible pulsations or scars from previous surgeries.

\*\*Palpation of the chest:\*\*

- The apex beat is palpable in the 5th intercostal space in the mid-clavicular line and is not displaced.

- There are no palpable heaves, thrills, or any deformities.

\*\*Auscultation of the chest:\*\*

- The heart sounds are normal with no added heart sounds or murmurs in all valvular areas using both the diaphragm and the bell of the stethoscope. No radiation of murmurs was noted in the carotid region.

\*\*Inspection of the back:\*\*

- The back is straight without any visible spinal curvatures or surgical scars.

\*\*Palpation of the back:\*\*

- There is no detectable sacral edema upon palpation.

\*\*Auscultation of the back:\*\*

- Lung fields are clear without any coarse crackles, wheezes, or absence of air entry when auscultating posteriorly in both lung fields which would suggest consolidative or infective processes.

\*\*Examination of the legs:\*\*

- Inspection and palpation of the legs reveal no pitting oedema around the ankles.

- No signs or scars indicating prior saphenous vein harvesting or varicose veins are noted.

\*\*Special Tests:\*\*

- To further evaluate the circulatory status in the lower limbs, an Ankle-Brachial Index (ABI) can be measured. Doppler ultrasound studies can be performed to assess for peripheral arterial disease.

Special Tests:

\*This will include relevant special tests for the condition being examined, such as ankle-brachial pressure index (ABPI) for Peripheral Vascular Disease.\*

Diagnostic Tests:

Blood Tests (Reference Ranges):

Full Blood Count (FBC):

Haemoglobin (Hb): 145 g/L (Female: 115 - 165 g/​L, Male: 130 - 180 g/L)

Mean Corpuscular Volume (MCV): 90 fL (80 – 100 fL)

White Blood Cell Count: 6.8 x10^9/L (3.6 - 11.0 x10^9/L)

Platelets: 240 x10^9/L (140 - 400 x10^9/L)

Arterial Blood Gases:

pH: 7.40 (7.35 - 7.45)

pO2: 12 kPa (11 - 13 kPa)

pCO2: 5.0 kPa (4.7 - 6.0 kPa)

Bicarbonate: 24 mmol/l (22-28 mmol/l)

Base Excess: 0 mmol/L (-2 to +2 mmol/L)

Cardiac Tests:

NT-proBNP: 100 pg/mL (< 75 years: < 125 pg/mL, > 75 years: < 450 pg/mL)

Imaging Tests:

Doppler Ultrasound Scan: Indicated to assess arterial blood flow and possible stenosis in the lower extremities.

Condition:

Peripheral Vascular Disease

Patient Questions:

1. "What exactly does peripheral vascular disease mean for someone like me?"

- "Peripheral vascular disease (PVD) refers to the narrowing of the blood vessels outside of your heart and brain. It means there may be reduced blood flow, particularly to your legs, which can cause symptoms like the pain you're experiencing when walking."

2. "Are there any lifestyle changes I need to take on board to help with this condition?"

- "Yes, maintaining a healthy diet, exercising regularly, and avoiding smoking can help manage PVD and improve your symptoms. We'll discuss a detailed plan after your diagnosis is confirmed."

3. "Is there a risk that I might lose my leg or need an operation?"

- "In many cases, PVD can be managed with medication and lifestyle changes. Surgery is reserved for more severe cases or if there's a significant risk of complications. We'll monitor your condition closely to prevent it from reaching that stage."

4. "What are the side effects of the medications you're prescribing? Are they going to affect my daily life?"

- "Like all medications, those used for PVD can have side effects, although not everyone experiences them. We'll discuss these in detail and find a regimen that works for you with minimal impact on your quality of life."

Examiner Questions:

1. "Describe the typical symptoms and clinical manifestations of peripheral vascular disease."

- "Typically, patients present with intermittent claudication, pain in the muscles of the lower extremity that occurs with exercise and is relieved by rest. Patients may also have numbness, weakness, and sores that do not heal."

2. "What are the risk factors for developing peripheral vascular disease?"

- "Risk factors include smoking, diabetes, hypertension, high cholesterol, and advancing age."

3. "Which diagnostic tests would you consider to confirm a diagnosis of peripheral vascular disease and why?"

- "An Ankle-Brachial Pressure Index (ABPI) measurement and Doppler ultrasound are commonly used because they assess the blood flow and presence of arterial occlusions in the lower extremities."

4. "How does the management of peripheral vascular disease differ from that of acute limb ischemia?"

- "The management of PVD often focuses on lifestyle modifications, pharmacological therapy, and sometimes revascularisation procedures, whereas acute limb ischemia is a medical emergency requiring immediate revascularisation, often surgically."

5. "Can you list some differential diagnoses for a patient presenting with leg pain on exertion and how would you differentiate between them?"

- "Differential diagnoses might include sciatica, spinal stenosis, or deep vein thrombosis. Sciatica pain would typically radiate from the back down the leg, spinal stenosis would also be accompanied by back pain and worsen with prolonged standing, while deep vein thrombosis would likely show leg swelling and erythema."

Treatment:

The first-line treatment for Peripheral Vascular Disease is lifestyle modification, including smoking cessation, exercise programmes (such as supervised walking therapy), and diet changes. If the patient has concomitant risk factors such as hypertension or hyperlipidaemia, these should be managed with appropriate medications.

If lifestyle changes are insufficient or if symptoms are severe, pharmacological options such as antiplatelet agents (e.g., aspirin 75 mg once daily or clopidogrel 75 mg once daily if aspirin is contraindicated) and cilostazol (100 mg twice daily) may be considered.

For patients refractory to medical treatment, revascularisation via angioplasty, stenting, or bypass surgery may be indicated.

Monitoring:

- Regular follow-ups every 3-6 months to monitor symptoms and disease progression.

- Routine blood pressure checks, lipid profile assessments, and diabetic control (if applicable).

- Review of medication adherence and side effects.

- Urge the patient to report any worsening symptoms such as an increase in pain, development of sores, or a decrease in walking distance.

Prognosis:

- PVD is typically a progressive disease, but many patients manage their symptoms effectively with lifestyle changes and medication.

- Regular check-ups and proper management of risk factors can slow the progression of the disease and reduce the risk of complications such as critical limb ischemia.

- The prognosis may be impacted by coexistent diseases, such as diabetes or heart disease, so managing these conditions is essential.

Differential diagnoses:

1. Deep Vein Thrombosis: Less likely due to the absence of unilateral swelling, erythema, and warmth over the affected area.

2. Sciatica: Symptoms typically include radiating pain from the lower spine to the leg, not relieved by rest.

3. Chronic Compartment Syndrome: Rare and typically involves swelling, is progressive, and does not relieve with rest.

Keyword Filters:

Speciality Filter:

Cardiovascular ; General Practice ; Surgery

Presenting Complaint Filter:

Intermittent Claudication ; Limb Claudication ; Peripheral Oedema and Ankle Swelling

Condition Filter:

Peripheral Vascular Disease

Location Filter:

Clinic

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_28\_Peripheral Vascular Disease

Homepage Vignette:

## A 68-year-old male called Mayar Kamal presents with intermittent claudication and rest pain in his lower limbs.

Individual Page Vignette:

You are a general practitioner in a clinic, and Mayar Kamal, a 68-year-old retired teacher, has come to see you with complaints of intermittent claudication and a feeling of pain in his lower legs even when at rest.

Patient Name:

Mayar Kamal (Pronunciation: MY-yahr kah-MAL). He would like to be called Mayar.

Age:

19/04/1956

Location:

Clinic

Personality:

Mayar is an amiable and articulate individual, with a touch of wry humour. Despite his difficulty with walking due to leg pain, he maintains a positive and patient demeanour. He speaks clearly, in a reflective tone, educating others whenever possible, drawing from his experience as a teacher.

Presenting Complaint:

Mayar reports pain in his lower legs that exacerbates during walking and doesn't fully subside even at rest, a condition he describes as quite bothersome and restrictive.

Quote:

"It's as if my calves have their own strict limit on the number of steps I can take. After a short walk, there's this cramping pain that simply won't budge unless I stop and rest."

Symptoms:

Site: The pain is localised to the calves; "It feels like an iron grip just on my calves, nowhere else."

Onset: The pain started gradually over a few months; "This nuisance began subtly, creeping up on me over the past year or so."

Character: The pain is cramp-like; "It’s like a vice, squeezing my calf muscles tightly."

Radiation: The pain does not radiate; "Thankfully, the pain sticks to my calves, doesn't go gallivanting to other areas."

Associated Symptoms: There is no numbness or tingling; "Just the pain, my legs haven't lost their sense yet."

Timing: The pain occurs during walking and persists at rest; "It's upon walking that the pain declares its presence but won't even give up when I've been sitting a fair while."

Exacerbating and Relieving Factors: Relief with rest, exacerbated by walking; "Sitting down is my respite; walking is the trial."

Severity: Pain is severe enough to limit walking; "I wouldn't call it mild, it's troublesome enough to put a full stop to my strolls."

Chest pain or discomfort: Negative

Shortness of breath: Negative

Palpitations: Negative

Syncope: Negative

Nausea: Negative

Vomiting: Negative

Intermittent claudication: Positive; "My walks are timed by my calf pain, like an unpleasant stopwatch."

Peripheral oedema: Negative

History of Presenting Complaint:

Duration of symptoms: Past few months; "It started slowly, but now it's a rare day without the pain."

Previous treatments: None; "I haven't sought help for this till now."

Progression over time: Pain has worsened; "It's surely more insistent than when it first made its unwanted debut."

Frequency of symptoms: Occurs with walking; "It's a given companion on my walks now."

Impact on daily life and activities of daily living: Restricts walking; "Daily jaunts are curtailed, I'm resigned to looking at gardens from benches."

Impact on work: Retired; "Thankfully, I'm not racing against the young ones in the hallways anymore."

Impact on physical and mental wellbeing: Causes frustration; "It's irking, to have the spirit but not the legs."

Quote:

"The joy of walking is rather marred by this persistent annoyance in my calves, it's as if they're on strike."

Systemic Symptoms:

Fatigue: Negative

Fever: Negative

Night sweats: Negative

Unintended weight loss: Negative

Generalised weakness: Negative

Malaise: Negative

Bowel habits: Normal; "All's regular on that front; one of the few things age hasn't marred."

Urinary habits: Normal; "No troubles with the plumbing, thankfully."

Changes in sleep: Negative

Peripheral oedema: Negative

Quote:

"Systemically, I'm as fit as a retired gent can be – it's just my walking that's the fly in the ointment."

Past Medical History:

Surgeries: Negative

Hospitalizations: Negative

Previous injuries or traumas: Negative

Psychiatric or psychological history: Negative

History of substance abuse or addiction: Negative

Immunizations and vaccination history: Up to date; "Never missed a jab; I'm a believer in preparedness."

Any other relevant medical conditions or significant health events: Hypertension controlled with medication.

Quote:

"Apart from my battle with the blood pressure, which is under control, my medical history would bore you to tears."

Drug History:

Hypertension medication, dosage and frequency as prescribed.

Quote:

"I maintain a strict adherence to my pressure tablets. It's a routine as sacred as my morning tea."

Allergies:

No known allergies.

Quote:

"I've been quite the strong type; no sneezes or itches from medicines or bees."

Family History:

Father had hypertension, no other significant family medical history to report.

Quote:

"High blood pressure runs in the family, but I guess even genetics has its favourites."

Social History:

Lifestyle: Enjoys reading and model-building.

Occupation: Retired teacher.

Activities of Daily Living & Hobbies: Walking has been a lifelong hobby now limited by symptoms.

Smoking: 0 pack years; "Never smoked in my life, sir. I've always considered my lungs invaluable teammates."

Alcohol: 5 units per week; "A glass of red each Sunday has been my steady pleasure."

Recreational Drug Use: None; "Never indulged in such activities; I find reality intriguing enough."

Diet: Balanced diet; "A wholesome plate has been my compass to good health."

Exercise: Daily walks, now limited.

Travel History: Not relevant to current condition.

Sexual History: Not relevant to current condition.

Driving Status: Drives, no restrictions.

Cultural or Religious Practices: Not relevant to current condition.

Recent Life Events: Recently celebrated 50th wedding anniversary.

Exposure to Hazards or New Environment: None.

Quote 1:

"I've roamed libraries and model train exhibitions more than any pubs. My life's been about teaching and tinkering."

Quote 2:

"With meals, moderation is my motto; I enjoy cooking as much as I did teaching Maths."

Quote 3:

"Driving hasn't been a worry, but I do miss being able to walk through the park without pausing ever so often."

Ideas, Concerns, and Expectations:

Ideas: Mayar understands that the leg pain could be due to his circulation; "I can't help but wonder if these old pipes are getting clogged."

Quote:

"You see, I've read about artery troubles, and it seems my symptoms are pointing down that road."

Concerns: He's worried about the progression and the impact on his mobility; "I'd hate to think of it getting worse or leading to something dire."

Quote:

"This could very well be the handcuffs to my freedom of movement, and that's a distressing thought."

Expectations: Mayar expects a thorough assessment and clear instructions on management; "I trust you'll shed light on this and tell me straight, how do we tackle this?"

Quote:

"I've placed my bet on you to guide me through. Let's set a course straight out of this problem."

Observations:

Respirations (Breaths/min): 16

Oxygen Saturation (%): 98

Air or Oxygen?: Room air

Blood Pressure (mmHg): 140/85

Pulse (Beats/min): 78

Consciousness (AVPU): Alert

Temperature (Celsius): 37.1

NEWS Total Score: 0 (All observations are within normal ranges.)

\*\*Physical Examination:\*\*

\*\*General inspection:\*\*

- Mayar Kamal presents relaxed and cooperative. He appears his stated age, with a healthy complexion. No clinical signs of cyanosis, shortness of breath, or pallor noted. He arrived at the clinic unaided and without mobility aids, suggesting a degree of independence despite his claudication symptoms.

\*\*Inspection of the hands:\*\*

- Hands appear normal in color, without signs of tar staining or xanthomata. No arachnodactyly, clubbing, or koilonychia noted. His hands are free of splinter hemorrhages and Janeway lesions, indicating an absence of signs typically associated with infectious endocarditis.

- Palpation reveals a normal skin temperature, indicative of good perfusion, and capillary refill time is less than 2 seconds.

\*\*Pulses and blood pressure:\*\*

- Radial pulse is regular with a rhythm consistent with the measured heart rate. No radio-radial delay is detected. There is no collapsing pulse present which could suggest aortic regurgitation.

- Blood pressure measurements are within the normal range for the patient's age and medical history (140/85 mmHg) and symmetric in both arms.

- Carotid pulses are palpated with normal volume without any bruits upon auscultation, suggesting a lack of significant carotid arterial disease.

\*\*Jugular venous pressure:\*\*

- The JVP is within normal limits when measured, and hepatojugular reflux is absent upon examination.

\*\*Inspection of the face:\*\*

- Facial features are unremarkable with no signs of conjunctival pallor or corneal arcus. There is an absence of xanthelasma on the eyelids, and Kayser-Fleischer rings are not observed. The oral examination reveals no signs of central cyanosis or angular stomatitis, and dental hygiene is satisfactory.

\*\*Close inspection of the chest:\*\*

- The chest wall appears symmetrical without visible deformities, pulsations, or evidence of previous thoracic surgery.

\*\*Palpation of the chest:\*\*

- The apex beat is located within the normal anatomical range, with no palpation of heaves or thrills over the precordium.

\*\*Auscultation of the chest:\*\*

- Heart and lung auscultation reveals clear breath sounds and regular heart rhythm without murmurs, rubs, or gallops. The examination shows no evidence of chest infection or cardiac pathology.

\*\*Inspection of the back:\*\*

- Visual inspection of the back shows no scoliosis, kyphosis, or abnormal curvatures. There is no tenderness upon palpation of the vertebral column, and the inspection does not reveal any scars.

\*\*Palpation of the back:\*\*

- No sacral oedema is identified which could indicate venous insufficiency or heart failure.

\*\*Auscultation of the back:\*\*

- The lung fields are clear on auscultation bilaterally, with no signs of coarse crackles suggestive of pulmonary oedema or other respiratory pathology.

\*\*Examination of the legs:\*\*

- Inspection and palpation: There are no signs of pitting oedema, which could suggest right-sided heart failure or chronic venous insufficiency. There is no evidence of previous saphenous vein harvesting suggestive of coronary artery bypass surgery in the past.

Special Tests:

Ankle-brachial pressure index (ABPI) measurement

Doppler ultrasound examination of the leg arteries

Diagnostic Tests:

Blood Tests (Reference Ranges):

Urea and Electrolytes:

Sodium: 139 mmol/L

Potassium: 4.2 mmol/L

Calcium (adjusted): 2.3 mmol/L

Magnesium: 0.8 mmol/L

Urea: 5.2 mmol/L

Creatinine: 80 μmol/L

eGFR: 90ml/min/1.73m3

...

Imaging Tests:

Doppler Ultrasound Scan: Shows evidence of reduced flow in the lower leg arteries, consistent with peripheral arterial disease.

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Examiner Questions:

1. What are the classic symptoms of peripheral vascular disease, and how do they relate to Mayar's presentation?

- Classic symptoms include intermittent claudication, rest pain, and sometimes trophic changes in the lower extremities; Mayar is experiencing typical claudication and rest pain.

2. Can you describe how to perform the ankle-brachial pressure index measurement?

- The ABPI is measured by taking the blood pressure at the ankles and arms using a Doppler probe and calculating the ratio of ankle systolic pressure to brachial systolic pressure.

3. What lifestyle changes would you recommend to a patient with peripheral vascular disease?

- Recommend cessation of smoking, regular exercise, a healthy diet, and management of comorbid conditions such as diabetes and hypertension.

4. Can you interpret the below Doppler Ultrasound findings and discuss their significance in the context of Mayar's symptoms?

- Findings indicating reduced arterial flow suggest peripheral arterial disease, which is consistent with Mayar's symptoms of intermittent claudication and rest pain.

5. Which risk factors for peripheral vascular disease can you identify in Mayar's history?

- Hypertension and age are risk factors present in Mayar's history.

Treatment:

Based on NICE guidelines, manage the underlying risk factors, which include optimising blood pressure and cholesterol levels, and offering antiplatelet therapy such as low-dose aspirin. Consider cilostazol for the symptomatic treatment of intermittent claudication, in line with the patient's individual needs and contraindications. If symptoms are severe or progressing, consider referral to a vascular specialist for possible revascularisation options.

...

Monitoring:

- Monitor symptom progression and response to treatment.

- Regular review of cardiovascular risk factors and adjust medication as necessary.

- Follow-up visits should be arranged to assess the treatment efficacy.

- Refer to a vascular specialist if there is worsening of symptoms or if revascularisation becomes indicated.

...

Prognosis:

- With adequate lifestyle changes and management, patients with peripheral vascular disease can have a stable course.

- Prognosis depends on the extent of the disease and adherence to treatment and risk factor modification.

- On-going symptoms may require further interventions such as revascularisation.

...

Differential diagnoses:

1. Diabetic neuropathy – less likely due to absent history of diabetes and the pain pattern described by Mayar.

2. Venous insufficiency – typically presents with different symptoms such as leg swelling, skin changes, and varicosities.

3. Lumbar spinal stenosis – can cause claudication but usually has a spinal or neurogenic component.

4. Deep vein thrombosis (DVT) – generally presents with unilateral leg pain with swelling and warmth, which Mayar does not report.

...

Keyword Filters:

Speciality Filter:

Cardiovascular

Presenting Complaint Filter:

Cold, Painful, Pale, Pulseless Leg/Foot; Intermittent Claudication; Painful Swollen Leg; Peripheral Oedema and Ankle Swelling; Limb Claudication.

Condition Filter:

Peripheral Vascular Disease

Location Filter:

Clinic

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_29\_Peripheral Vascular Disease

Homepage Vignette:

## A 67-year-old male called Kyrillos Avgousti presents with claudication and rest pain in his lower limbs.

Individual Page Vignette:

You are a General Practitioner in a clinic. Kyrillos Avgousti, a 67-year-old retired linguist, presents with claudication and rest pain in his lower limbs.

Patient Name:

Kyrillos Avgousti (Pronunciation: Kee-ree-llos Av-goo-stee). He would like to be called Kyrillos.

Age:

22/06/1957

Location:

Clinic

Personality:

Kyrillos is a soft-spoken, contemplative individual, often pausing to find the precise words during conversations. His history as a linguist has cultivated a habit of deliberate and clear communication. He has a rich social history, including participating in language conservation projects, that reflects his academic and inquisitive nature.

Presenting Complaint:

Intermittent claudication in both legs, increasing in severity and now accompanied by rest pain.

Quote:

"It's like my legs just won't co-operate after I've walked a bit, and recently, they've been throbbing even when I'm trying to sleep."

Symptoms:

Site: Bilateral lower limbs; "My legs, doctor, both of 'em."

Onset: Gradual onset over years; "It's been slowly getting worse over the past few years."

Character: Cramping pain when walking; "Feels like a vice grip tightening with every step I take."

Radiation: Does not radiate; "The pain, it stays put in my calves."

Associated Symptoms: None; "Just the pain, really."

Timing: Pain occurs during ambulation and now at rest; "Every time I walk any significant distance and at night now, too."

Exacerbating and Relieving Factors: Pain exacerbated by walking, relieved by rest; "I have to stop and rest often during my walks, that eases it a bit."

Severity: Describes the pain as severe; "On a scale, it's easily an eight when at its worst."

- Chest pain or discomfort: Negative

- Shortness of breath: Negative

- Palpitations: Negative

- Syncope: Negative

- Nausea: Negative

- Vomiting: Negative

- Intermittent claudication: Positive; "My walking's become quite a chore with these leg cramps setting in."

- Peripheral oedema: Negative

Quote:

"The pain flares up in my calves whenever I try to push myself to walk farther."

History of Presenting Complaint:

- Duration of symptoms: Increasing over years; "It's an old companion, this leg trouble, been with me a number of years now."

- Previous treatments: Over-the-counter pain relief, occasionally; "I've taken some painkillers now and then but nothing regular."

- Progression over time: Symptoms have progressively worsened; "Each year, it seems I can walk a little less before the pain starts."

- Frequency of symptoms: Daily during activity; "Every day, without fail, when I’m on my feet too much."

- Impact on daily life and activities of daily living: Has to stop and rest frequently; "I used to enjoy long walks, but now I'm forced to take frequent breaks."

- Impact on work: Retired, but impacts volunteer activities; "I've had to cut back on helping out at the community centre."

- Impact on physical and mental wellbeing: Causing frustration and sleep disruption; "It's not just my legs, it's unsettling my sleep and peace of mind."

Quote:

"I can't do the things I love without being brought to a standstill by my own legs, and now it's even invading my nights."

Systemic Symptoms:

- Fatigue: Positive; "I'm tired more often now, probably because of the disturbed sleep."

- Fever: Negative

- Night sweats: Negative

- Unintended weight loss: Negative

- Generalised weakness: Negative

- Malaise: Negative

- Bowel habits: Normal

- Urinary habits: Normal

- Changes in sleep: Positive; "Ever since the pain started at night, I can't seem to stay asleep."

- Peripheral oedema: Negative

Quote:

"The nights are the hardest, what with the leg pain and all; really drains my energy."

Past Medical History:

- Surgeries: Negative

- Hospitalizations: Negative

- Previous injuries or traumas: Negative

- Psychiatric or psychological history: Negative

- History of substance abuse or addiction: Negative

- Immunizations and vaccination history: Complete, up to date

- Any other relevant medical conditions or significant health events: Hypertension, managed with medication

Quote:

"I'm pretty sturdy for my age - no hospital stays or surgeries. Just this hypertension I've kept in check with pills."

Drug History:

Currently taking ramipril 10 mg once daily for hypertension; "I've kept to my blood pressure tablets, religiously."

Allergies:

No known drug allergies or intolerances. "Thankfully, no allergies to speak of."

Family History:

Hypertension in father, died of a myocardial infarction at age 74; "My father had the same blood pressure troubles, went before his time due to a heart attack."

Social History:

Lifestyle: Active in community projects but currently limited by symptoms.

Occupation: Retired linguist; enjoyed a global career and has a passion for language preservation.

Activities of Daily Living & Hobbies: Enjoys reading, particularly history and language literature. Active in volunteering at community centres teaching language classes.

Smoking: Non-smoker (0 pack-years)

Alcohol: Enjoys wine with dinner; approximates 7 units per week.

Recreational Drug Use: None. "I've lived a fairly temperate life, no smoking or recreational drugs, just the occasional glass of wine with my evening meal."

Diet: Mediterranean diet by preference and upbringing.

Exercise: Enjoys walking, though current symptoms impact this significantly.

Quote 1: "I've always enjoyed a good stroll and contributing at the community centre - it's my little way of bringing the world together, one word at a time."

Quote 2: "Never been one to smoke or indulge too heavily. A glass of wine, perhaps, but I believe in moderation."

Quote 3: "My legs make it difficult but I do like to keep moving and active. Used to enjoy rambling tours around historical towns."

Ideas, Concerns, and Expectations:

Ideas: Aware that his symptoms may be due to poor circulation; believes it is relevant to his hypertension.

Concerns: Worried about the risk of serious complications, including loss of mobility or even amputation.

Expectations: Seeking guidance on how to manage the condition and improve his mobility and quality of life.

Quote:

"I reckon my circulation isn't what it used to be, probably all linked with my blood pressure worries. I fear I might end up housebound if we don't find a way to address it."

Observations:

Respirations (Breaths/min): 16; Oxygen Saturation (%): 98 on room air; Blood Pressure (mmHg): 142/86; Pulse (Beats/min): 68; Consciousness (AVPU): Alert; Temperature (Celsius): 36.5; NEWS Total Score: 0 (All parameters score 0 points).

- No additional points scored as all observations are within normal ranges.

\*\*Physical Examination:\*\*

\*\*General inspection:\*\*

- Kyrillos appears generally well without signs of acute discomfort. There is no evident cyanosis or pallor, and no signs of shortness of breath or malar flush are observed. He shows no visible edema suggestive of heart or renal failure.

\*\*Inspection of the hands:\*\*

- The hands show normal color, and there are no signs of tar staining, xanthomata, clubbing, or Janeway's lesions. Splinter hemorrhages, Osler's nodes, or koilonychia are not present.

\*\*Pulses and blood pressure:\*\*

- Radial pulses are bilaterally symmetric, and the pulse rhythm is regular without any radio-radial delay.

- There is no collapsing pulse palpable, implying that aortic regurgitation is not clinically significant at this time.

- Brachial pulses are also symmetric with a normal volume and character.

- Blood pressure readings are 142/86 in the right arm and 140/84 in the left, without significant inter-arm difference.

- Carotid pulse palpation is unremarkable with normal volume and no carotid bruits appreciated upon auscultation.

\*\*Jugular venous pressure:\*\*

- The Jugular venous pressure is not elevated, and no hepatojugular reflux is elicited.

\*\*Inspection of the face:\*\*

- There is no conjunctival pallor which would suggest significant anemia. No corneal arcus or xanthelasma are evident, suggesting no overt lipidopathy.

- Inspection of the mouth shows no central cyanosis, angular stomatitis, or features suggestive of specific nutritional deficiencies.

- The dental examination shows good oral hygiene with no significant abnormalities noted.

\*\*Close inspection of the chest:\*\*

- There is no evident pectus excavatum or pectus carinatum, and no visible pulsations that may suggest significant cardiac pathology.

\*\*Palpation of the chest:\*\*

- The apex beat is palpable in the 5th intercostal space in the midclavicular line and is not displaced laterally, which would suggest a dilated hypertrophic cardiomyopathy.

- No thrills or heaves palpated over the precordial area.

\*\*Auscultation of the chest:\*\*

- Normal respiratory sounds are heard bilaterally, with no added crackles, wheezes, or rubs which may imply pulmonary pathology.

- The heart sounds include a normal S1 and S2 without additional sounds or murmurs. The auscultation over the aortic, pulmonary, tricuspid, and mitral areas does not reveal a murmur, rub, or other abnormality with either the diaphragm or bell.

\*\*Inspection of the back:\*\*

- No deformities or significant scarring is noted that would suggest prior trauma or surgery.

\*\*Palpation of the back:\*\*

- There is no sacral edema palpable—another indicator that heart failure is not clinically significant in this patient's presentation.

\*\*Auscultation of the back:\*\*

- Clear lung fields with no coarse crackles, which would suggest fluid overload secondary to cardiac pathology or primary lung disease.

\*\*Examination of the legs:\*\*

- There is no pitting edema noted in either leg, suggestive of good circulatory status without the indication of peripheral vascular disease or cardiac insufficiency.

- No evidence of past saphenous vein harvesting or present varicosity is noted.

Special Tests:

Ankle-brachial pressure index (ABPI) measurement would be relevant for suspected peripheral vascular disease.

Diagnostic Tests:

Blood Tests:

- Full Blood Count (FBC): Haemoglobin, White Blood Cell Count, Platelets within normal range

- Urea and Electrolytes: Sodium, Potassium, Creatinine within normal range. eGFR > 90ml/min/1.73m3

- Thyroid Function Tests: TSH, Free T3, and Free T4 within normal range.

- Lipid Profile: Total Cholesterol, Triglycerides, HDL Cholesterol, and LDL Cholesterol within the desired range for cardiovascular risk.

Imaging Tests:

- Doppler ultrasound of lower limb arteries to assess for stenosis or occlusions.

- CT angiography to provide detailed images of the blood vessels.

Treatment:

Initial management of peripheral vascular disease should include conservative measures such as:

- Smoking cessation advice and support.

- Control of risk factors, including blood pressure, diabetes, and lipids.

- Exercise therapy: Begin with supervised exercise programmes.

- Antiplatelet therapy: Low-dose aspirin (75 mg daily) or clopidogrel (75 mg daily) if aspirin is not tolerated.

- Statin therapy: High-intensity statin such as atorvastatin 80 mg daily.

- Analgesia for relief of rest pain could include paracetamol or a weak opioid such as codeine.

- Referral to a vascular specialist for revascularisation if symptoms are severe or progressing or if there are signs of critical limb ischaemia.

Monitoring:

- Regular follow-up visits to assess symptoms and progression.

- Monitor blood pressure, lipid profile, and glycaemic control if the patient has diabetes.

- Check the effectiveness of antiplatelet therapy and statin therapy through regular consultations.

- Reassessment of ABPI if symptoms change.

Prognosis:

- The rate of progression varies; some patients may remain stable or even improve with conservative management.

- Risk of cardiovascular events is increased in patients with peripheral vascular disease.

- Revascularisation may improve symptoms but does not prevent cardiovascular events.

Differential diagnoses:

1. Chronic venous insufficiency - less likely given the rest pain and the lack of venous changes such as stasis dermatitis.

2. Spinal stenosis - unlikely due to the lack of neurogenic claudication and lower limb sensations.

3. Deep vein thrombosis (DVT) - less likely without swelling or erythema.

Keyword Filters:

Speciality Filter:

Cardiovascular

Presenting Complaint Filter:

Limb Claudication; Painful Swollen Leg

Condition Filter:

Peripheral Vascular Disease

Location Filter:

Clinic

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_30\_Peripheral Vascular Disease

Homepage Vignette:

## A 63-year-old man called Abdurrahman presents with intermittent claudication in his left calf.

Individual Page Vignette:

As a General Practitioner, you are meeting Abdurrahman, a 63-year-old retired translator, in your clinic. He has come to discuss his main complaint of intermittent claudication in his left calf.

Patient Name:

Abdurrahman Ansari [‘Ab-du-rah-man ‘An-sa-ree], prefers to be called Rahim.

Age:

05/06/1961

Location:

General Practice

Personality:

Rahim is a pensive and respectful man with a keen interest in linguistics. Despite his retired status, he is very sociable and maintains an eloquent, articulate manner when speaking. His education is reflected in his careful choice of words, detailing his symptoms with precision.

Presenting Complaint:

Rahim reports discomfort in his left calf that occurs during walking and is relieved with rest.

Quote:

"When I take my usual walks, my calf starts to cramp up, much akin to a writer's hand after a long day's work. It subsides once I've taken a short respite."

Symptoms:

Site: Left calf. Quote: "The discomfort roots in my left calf."

Onset: During walking. Quote: "It's when I'm mid-stroll that the cramp asserts itself."

Character: Cramping pain. Quote: "It feels like my muscles are being wrung out, very much like a cramp."

Radiation: Does not radiate. Quote: "The pain holds court strictly in my calf; it's quite localized."

Associated Symptoms: None. Quote: "Apart from the cramping, there's nothing else that accompanies the discomfort."

Timing: Intermittent, occurs with walking. Quote: "Like clockwork, the cramp materializes during my walks."

Exacerbating and Relieving Factors: Exacerbated by walking, relieved by rest. Quote: "Continued walking is the agitator, and rest is my solace."

Severity: Moderate. Quote: "It's bearable but notably hindersome during my walks."

Chest pain or discomfort: Negative

Shortness of breath: Negative

Palpitations: Negative

Syncope: Negative

Nausea: Negative

Vomiting: Negative

Intermittent claudication: Positive. Quote: "Yes, that's why I am here; the recurring calf pain interrupts my daily walks."

Peripheral oedema: Negative

History of Presenting Complaint:

Duration of symptoms: Several weeks. Quote: "This affliction has hounded me for several weeks now."

Previous treatments: None. Quote: "I've not yet sought remedy; this is my first port of call."

Progression over time: Initially mild, now more consistent. Quote: "It started as a sporadic inconvenience but has become quite the regular antagonist."

Frequency of symptoms: Daily during walks. Quote: "It's turned into a daily occurrence whenever I try to keep active."

Impact on daily life and activities of daily living: Limited ability to walk long distances. Quote: "My literary forays have been cut short; I can't walk as far as I used to."

Impact on work: Retired, not applicable.

Impact on physical and mental wellbeing: Causing frustration. Quote: "It's frankly maddening; quite the impediment to my daily constitutionals."

Systemic Symptoms:

Fatigue: Negative

Fever: Negative

Night sweats: Negative

Unintended weight loss: Negative

Generalised weakness: Negative

Malaise: Negative

Bowel habits: Normal

Urinary habits: Normal

Changes in sleep: Negative

Peripheral oedema: Negative

Past Medical History:

Surgeries: Negative

Hospitalizations: Negative

Previous injuries or traumas: Negative

Psychiatric or psychological history: Negative

History of substance abuse or addiction: Negative

Immunizations and vaccination history: Up to date on standard vaccinations.

Any other relevant medical conditions or significant health events: Has hypertension, controlled with medication.

Quote:

"I've been quite fortunate health-wise. Apart from the high blood pressure that I manage with those tablets you prescribed, there's been nothing else."

Drug History:

Currently taking amlodipine 5 mg once daily for hypertension. No known history of medication non-compliance, herbal supplement use, alternative therapies, contraception, HRT, or overdose incidents.

Quote:

"I adhere strictly to the regimen for my blood pressure—the one tablet each morning. No dabbling in alternative potions or such, and no lapses in memory in that regard."

Allergies:

No known allergies.

Quote:

"As far as I'm aware, I've never reacted adversely to medications or other substances."

Family History:

No family history of peripheral vascular disease. Parents lived into their 80s with no significant vascular issues.

Quote:

"My family tree is rather barren of vascular troubles, thankfully."

Social History:

Lifestyle: Rahim engages in regular walks and maintains a social life through book clubs and language workshops.

Occupation: Retired translator.

Activities of Daily Living & Hobbies: Enjoys reading, translation work for pleasure, gardening, and daily walks.

Smoking: Non-smoker.

Alcohol: Drinks occasionally, approximately 4 units per week.

Recreational Drug Use: Negative.

Diet: Mediterranean-style diet, rich in vegetables, fruits, and lean proteins.

Exercise: Daily walks, now limited by his symptoms.

Travel History: Travelled extensively during his career, no recent travel.

Sexual History: Married for 35 years, monogamous relationship.

Driving Status: Active driver, no limitations.

Cultural or Religious Practices: Regularly attends local cultural events, no specific religious practices noted.

Recent Life Events: Retirement 2 years ago.

Exposure to Hazards or New Environment: No recent exposure.

Quote 1: "I've roamed the globe in days gone by, but these feet are now firmly planted at home."

Quote 2: "I find the fluidity of languages fascinating and have spent my life translating not just words, but also the culture they carry."

Quote 3: "Since my retirement, I have been luxuriating in the slow pace of life, although recently, it's become a bit too slow for my liking."

Ideas, Concerns, and Expectations:

Ideas: Rahim believes his symptoms may be related to his hypertension; however, he is willing to consider other causes.

Quote: "I wouldn't be surprised if my elevated blood pressure is the miscreant here, but I'm open to your medical erudition."

Concerns: He is worried about the possibility of having a serious vascular condition that could limit his mobility and independence.

Quote: "The spectre of a serious condition that might curtail my perambulations does gnaw at me."

Expectations: Rahim expects a thorough assessment and clear management plan to address his symptoms and improve his walking capacity.

Quote: "I expect we'll find the root of this issue and devise a suitable strategy to rehabilitate my daily jaunts."

Observations:

Respirations (Breaths/min): 14

Oxygen Saturation (%): 98% on room air.

Air or Oxygen?: Room air.

Blood Pressure (mmHg): 135/85

Pulse (Beats/min): 72

Consciousness (AVPU): Alert

Temperature (Celsius): 36.7

NEWS Total Score: 0 (All observations are within normal limits, thus no points are scored.)

\*\*Physical Examination:\*\*

\*\*General inspection:\*\*

- Abdurrahman appears comfortable at rest, no visible distress or anxiety. No clinical signs of underlying pathology such as cyanosis, shortness of breath, or pallor are evident. He is dressed appropriately for the weather; no medical equipment or prescriptions are seen with him.

\*\*Inspection of the hands:\*\*

- Hands appear normal in color, with no evidence of tar staining, xanthomata, arachnodactyly, clubbing, splinter hemorrhages, Janeway's lesions, Osler's nodes, or koilonychia. The skin temperature is normal, suggesting good perfusion, and capillary refill time is within normal limits.

\*\*Pulses and blood pressure:\*\*

- Radial pulse is regular in rate and rhythm, consistent with the stated pulse of 72 beats per minute, with no apparent radio-radial delay.

- No collapsing pulse noted, indicating no significant aortic insufficiency.

- Brachial pulse volume and character are normal bilaterally, with no variation in blood pressure between arms (135/85 mmHg noted).

- Carotid pulses are palpable bilaterally with a normal volume and no bruits detected on auscultation.

\*\*Jugular venous pressure:\*\*

- The jugular venous pressure is not elevated; Hepatojugular reflux is not demonstrated.

\*\*Inspection of the face:\*\*

- No conjunctiva pallor and no evidence of corneal arcus or xanthelasma noted. Kayser-Fleischer rings are not present.

- The oral cavity is inspected with no evidence of central cyanosis, angular stomatitis, high arched palate, or dental hygiene issues.

\*\*Close inspection of the chest:\*\*

- The chest wall is symmetrical, with no evidence of pectus excavatum, pectus carinatum, visible pulsations indicative of significant cardiac pathology, or scars from previous thoracic surgery.

\*\*Palpation of the chest:\*\*

- No heaves or thrills palpable. The apex beat is located in the 5th intercostal space at the midclavicular line, within the normal location range.

\*\*Auscultation of the chest:\*\*

- Heart sounds are normal with no added sounds or murmurs detected with diaphragm or bell over the aortic, pulmonary, tricuspid, or mitral areas. Auscultation of the carotid arteries also reveals no abnormal sounds that would suggest vascular pathology like carotid stenosis or aortic stenosis.

\*\*Inspection of the back:\*\*

- Spine alignment appears normal, no signs of scoliosis, kyphosis, or notable scars.

\*\*Palpation of the back:\*\*

- No sacral oedema palpable upon examination.

\*\*Auscultation of the back:\*\*

- Clear lung fields bilaterally with no coarse crackles or absent air entry suggesting respiratory pathology like pneumonia or pulmonary edema.

\*\*Examination of the legs:\*\*

- No signs of pitting oedema at the ankles or evidence of previous saphenous vein harvesting.

\*\*Special Tests:\*\*

- Ankle-brachial index (ABI) may be performed to further evaluate the circulatory status of the legs, specifically looking for signs of peripheral artery disease that may be causing the intermittent claudication symptoms.

\*\*Diagnostic Tests:\*\*

- \*\*Doppler Ultrasound of Lower Extremities\*\*: May be indicated to assess for possible peripheral arterial disease as a cause for intermittent claudication.

- \*\*Blood Tests\*\*: Further blood work including lipid profile, coagulation screen, and glucose level to assess for risk factors contributing to atherosclerosis.

- \*\*Ankle-brachial pressure index (ABPI)\*\*: To confirm the presence of peripheral arterial disease and quantify its severity.

Special Tests:

Ankle-brachial pressure index (ABPI) might be considered to assess arterial supply to lower limbs.

Diagnostic Tests:

Blood Tests (Reference Ranges):

Full Blood Count (FBC):

Haemoglobin (Hb): 145 g/L (Male: 130 - 180 g/L)

Mean Corpuscular Volume (MCV): 89 fL (80 – 100 fL)

White Blood Cell Count: 6.0 x 10^9/L (3.6 - 11.0 x 10^9/L)

Platelets: 230 x 10^9/L (140 - 400 x 10^9/L)

Urea and Electrolytes:

Sodium: 140 mmol/L (133–146 mmol/L)

Potassium: 4.0 mmol/L (3.5–5.3 mmol/L)

Calcium (adjusted): 2.4 mmol/L (2.2-2.6 mmol/L)

Magnesium: 0.8 mmol/L (0.7 – 1.0 mmol/L)

Urea: 5.0 mmol/L (2.5 – 7.8 mmol/L)

Creatinine: 80 μmol/L (Male: 59–104 μmol/L)

Estimated Glomerular Filtration Rate (eGFR): 90 ml/min/1.73m3 (>90 ml/min/1.73m3)

Liver Function Tests:

Alanine transferase (ALT): 25 iu/L (3-40 iu/L)

Aspartate transaminase (AST): 20 iu/L (3-30 iu/L)

Alkaline phosphatase (ALP): 85 umol/L (30-130 umol/L)

Gamma glutamyl transferase (yGT): 35 u/L (8-60 u/L)

Bilirubin: 10 umol/L (3-17 umol/L)

Albumin: 42 g/L (35-50 g/L)

Thyroid Function Tests:

Thyroid Stimulating Hormone (TSH): 3.0 mu/L (0.4-4.5 mu/L)

Free T3: 4.8 pmol/L (3.5-7.8 pmol/L)

Free T4: 15 pmol/l (9-25 pmol/l)

Arterial Blood Gases:

pH: 7.40 (7.35 - 7.45)

pO2: 12 kPa (11 - 13 kPa)

pCO2: 5.0 kPa (4.7 - 6.0 kPa)

Bicarbonate: 24 mmol/l (22-28 mmol/l)

Base Excess: 0 mmol/L (-2 to +2 mmol/L)

Imaging Tests:

Doppler ultrasound of the lower extremities: To assess blood flow and identify any blockages or narrowing of the arteries.

Treatment:

1. Conservative measures:

- Encourage walking to the point of pain; this can help build up alternative small blood vessels (collaterals).

- Promote smoking cessation if applicable.

- Regular foot care to prevent complications due to impaired blood flow.

- Advise weight management and diet modification, aligning with a Mediterranean-style diet that Rahim currently follows.

- Suggest supervised exercise programmes.

2. Pharmacotherapy:

- Consider antiplatelet therapy, such as aspirin 75 mg once daily or clopidogrel 75 mg once daily if aspirin is not tolerated.

- Statin therapy for cholesterol management, aiming for an LDL-cholesterol level of below 2 mmol/L or a reduction of more than 50% if the level is between 2 and 3.5 mmol/L.

- Continue antihypertensive therapy, as good blood pressure control is important.

3. Referral for Interventional procedures if symptoms persist despite optimal medical therapy, significant lifestyle limitation due to claudication, or evidence of critical limb ischaemia:

- Percutaneous transluminal angioplasty (PTA) +/- stenting.

- Bypass surgery.

- Amputation if critical limb ischaemia does not improve with other measures.

Monitoring:

- Regularly assess pain levels, the impact on daily activities, and walking capacity.

- Monitor blood pressure and lipid levels, ensuring they are within the target range.

- Check feet regularly for any changes or signs of ulceration.

- Follow-up visits should be scheduled every 3 to 6 months or as clinically indicated.

- A referral to a vascular specialist may be warranted if there is no improvement with conservative measures and pharmacotherapy, or if critical limb ischaemia is present.

Prognosis:

- Peripheral Vascular Disease (PVD) can be managed effectively with lifestyle changes, medication, and in some cases, revascularisation procedures.

- Prognosis depends on the degree of arterial disease, compliance with treatment and lifestyle changes, control of risk factors like hypertension, hyperlipidemia, and diabetes mellitus.

- Those who comply with exercise therapy may experience an improvement in symptoms and walking distance.

- Without treatment, PVD can progress leading to worsening symptoms and potential risk for critical limb ischaemia and amputation.

Differential diagnoses:

1. Sciatica - Less likely due to lack of radiating pain from back and no neurological symptoms.

2. Deep Vein Thrombosis (DVT) - Negative, pain in DVT would not typically improve with rest and could be associated with swelling and redness.

3. Chronic compartment syndrome - Less likely, as this condition would present with more consistent pain and possibly neurological deficits.

4. Spinal stenosis - Less likely, given the absence of neurogenic claudication or lower back pain.

5. Arthritis - Negative, symptoms of joint disease are not present.

Keyword Filters:

Speciality Filter:

Cardiovascular; General Practice; Surgery

Presenting Complaint Filter:

Intermittent Claudication; Painful Swollen Leg; Peripheral Oedema and Ankle Swelling

Condition Filter:

Peripheral Vascular Disease

Location Filter:

General Practice

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_31\_InfectiveEndocarditis

Homepage Vignette:

## A 45-year-old male called Chadwick Kaminsky presents with a fever and a new heart murmur.

Individual Page Vignette:

As his General Practitioner, you are seeing 45-year-old Chadwick Kaminsky, a software developer, located at the General Practice. He presents with persistent fever and recently noticed heart murmurs.

Patient Name:

Chadwick Valery Kaminsky (/ˈtʃædwɪk ˈvæləri ˈkæmɪnski/), who prefers to be called Chadwick.

Age:

15/06/1979

Location:

General Practice

Personality:

Chadwick is a methodical thinker who approaches conversations with logic and precision. He has a calm demeanour and speaks clearly, with an educated tone. He tends to provide detailed factual accounts of his experiences.

Presenting Complaint:

Mr Kaminsky reports persistent fever and has been informed by a friend that he has a murmuring sound in his chest associated with his heartbeat.

Quote:

"I've been feeling these waves of fever for a while now, and recently a friend mentioned that my chest makes this odd noise when I breathe. Thought it best to get it checked out."

Symptoms:

Site: Fever throughout the body and murmur heard in the chest region – "The fever feels all over, and that murmur is apparently in the chest."

Onset: Fever started about two weeks ago; murmur noticed a week ago – "It's been two weeks of feeling hot and bothered, and the chest noise was pointed out last week."

Character: Fever is intermittent; murmur is described as a whooshing sound – "The fever comes and goes, and that whooshing kind of follows my heartbeat."

Radiation: No radiation of symptoms – "The symptoms don't really move around; they stick to their own spots."

Associated Symptoms: Nights sweats and chills – "Along with the fever, I've had nights where I wake up drenched in sweat."

Timing: Fever is worse in the evening – "I notice the heat more as the day ends."

Exacerbating and Relieving Factors: Rest alleviates fever; no change in murmur – "Taking it easy seems to ease the fever down, but that murmur's a constant companion."

Severity: Fever is moderate to high; murmur is not distressing – "While the fever gets quite intense, the sound in my chest isn't really causing me any discomfort."

Chest pain or discomfort: Negative

Shortness of breath: Negative

Palpitations: Negative

Syncope: Negative

Nausea: Negative

Vomiting: Negative

Intermittent claudication: Negative

Peripheral oedema: Negative

History of Presenting Complaint:

Duration of symptoms: Symptoms started two weeks ago – "This whole thing kicked off a couple of weeks back."

Previous treatments: No treatments sought – "Haven't tried any meds yet; wanted to get your advice first."

Progression over time: Symptoms have been persistent – "These fevers and the murmur haven't given me much of a break."

Frequency of symptoms: Fevers occur intermittently, daily – "Pretty much been a daily occurrence these past two weeks."

Impact on daily life and activities of daily living: Minor impact – "I'm still managing, but I feel quite washed out."

Impact on work: Minor impact – "I've been able to work remotely, thankfully, so haven't had to take time off."

Impact on physical and mental wellbeing: Some concern – "It's a bit worrying, not knowing what's going on."

Systemic Symptoms:

Fatigue: Positive – "I find myself getting tired much more easily these days."

Fever: Positive – "I've been burning up on and off, especially at night."

Night sweats: Positive – "I've had several nights where I wake up completely drenched."

Unintended weight loss: Negative

Generalised weakness: Positive – "My body just feels weaker overall."

Malaise: Positive – "I just don't feel like myself, kind of run-down."

Bowel habits: Normal

Urinary habits: Normal

Changes in sleep: Positive, disrupted by night sweats – "My sleep's been horrible, what with all the sweating."

Peripheral oedema: Negative

Past Medical History:

Surgeries: Negative

Hospitalizations: Negative

Previous injuries or traumas: Negative

Psychiatric or psychological history: Negative

History of substance abuse or addiction: Negative

Immunizations and vaccination history: Positive, up to date on recommended vaccines – "I always make sure to get my jabs; wouldn't want to miss those."

Any other relevant medical conditions or significant health events: Negative

Drug History:

No current medications – "I'm not on any meds at the moment."

No history of medication non-compliance or missed doses – "When I do take meds, I follow the instructions to the letter."

No use of herbal supplements or alternative therapies – "Never been one for alternative stuff, I trust standard medicine."

No use of contraception or HRT – "No need for any of that in my case."

No non-pharmacological interventions – "Can't say I've done anything special to treat myself."

No overdose incidents – "No, never had an overdose or anything of the sort."

Allergies:

No known allergies – "No, I'm lucky in that sense; no allergies to speak of."

Family History:

Father had hypertension – "My father has to monitor his blood pressure regularly."

Mother has type 2 diabetes – "My mum's dealing with diabetes, but she's managing it quite well."

No other known family medical history – "Aside from that, my family's been relatively healthy."

Social History:

Lifestyle: Sedentary due to occupation – "My job doesn't allow much movement, sitting at a computer most of the day."

Occupation: Software developer – "I write code for a living, keeps me busy."

Activities of Daily Living & Hobbies: Enjoys reading and strategy games – "In my downtime, I enjoy losing myself in a good book or a challenging game."

Smoking: Non-smoker (0 pack years) – "Never smoked, never will."

Alcohol: Drinks socially, around 4 units per week – "I might have a pint or two on the weekend with friends."

Recreational Drug Use: Negative – "Never touched the stuff, drugs don't interest me."

Diet: Balanced, with occasional indulgences – "I try to eat well, though I'll have a takeaway now and again."

Exercise: Minimal; considers starting a regimen – "I should exercise more, I know, but haven't got around to it yet."

Ideas, Concerns, and Expectations:

Ideas: "I'm thinking it could be something to do with the heart, given the murmur and all."

Concerns: "I'm quite worried it could be something serious, maybe an infection?"

Expectations: "I'm looking for some clear answers today, and hopefully, a plan to get this resolved."

Observations:

Respirations (Breaths/min): 16 (0 points)

Oxygen Saturation (%): 98 (0 points)

Air or Oxygen?: On room air (0 points)

Blood Pressure (mmHg): 120/80 (0 points)

Pulse (Beats/min): 78 (0 points)

Consciousness (AVPU): Alert (0 points)

Temperature (Celsius): 38.3 (1 point)

NEWS Total Score: 1

The patient's NEWS Total Score is 1, which correlates to a normal range for all parameters except for temperature, which falls into the range of 38.1->39.0°C accounting for a 1 point score.

Physical Examination:

General inspection: No clinical signs suggestive of underlying pathology observed, such as cyanosis or pallor, or visible equipment indicative of a current medical condition.

Inspection of hands: No abnormal findings on inspection; nails and skin colour are normal, capillary refill time is within normal limits.

Pulses and blood pressure: Radial pulse is regular; no radio-radial delay or collapsing pulse; blood pressure is 120/80 in both arms; carotid pulse volume and character are normal.

Jugular venous pressure: Jugular venous pressure within normal range, no hepatojugular reflux.

Inspection of the face: Eyes and mouth show no signs of pathology such as pallor or cyanosis.

Close inspection of the chest: No evidence of pectus deformities or scars from previous surgeries; no visible pulsations.

Palpation of the chest: Apex beat located in the 5th intercostal space in the mid-clavicular line, no heaves or thrills palpated.

Auscultation of the chest: High-pitched blowing murmur heard best at the left lower sternal border, consistent with aortic regurgitation murmur; no additional sounds or murmurs in other areas.

Inspection of the back: No deformities or scars present.

Palpation of the back: No tenderness elicited over the sacrum, no sacral oedema present.

Auscultation of the back: Lung fields are clear without crackles or wheezes.

Examination of the legs: No pitting oedema at the ankles, no evidence of previous vein harvesting.

Diagnostic Tests:

\*\*Special note: The reference ranges provided are for adult patients and may vary slightly between laboratories. It is important to consider the patient's medical history, clinical context, and specific laboratory reference ranges when interpreting these values.\*\*

Blood Tests (Reference Ranges):

Full Blood Count (FBC):

Haemoglobin (Hb): 145 g/L (Male: 130 - 180 g/L)

Mean Corpuscular Volume (MCV): 88 fL (80 – 100 fL)

White Blood Cell Count: Elevated with left shift – 14 x10^9/L (3.6 - 11.0 x10^9/L)

Platelets: 250 x10^9/L (140 - 400 x10^9/L)

Blood Cultures: Positive for Streptococcus viridans

C-reactive protein (CRP): Elevated – 50 mg/L (< 10 mg/L)

Echocardiography: Vegetations seen on aortic valve, consistent with infective endocarditis.

Treatment:

According to NICE guidelines and the British National Formulary:

Begin empirical antibiotic therapy:

- IV benzylpenicillin 1.2 grams every four hours plus

- IV gentamicin 1 mg/kg body weight (adjusted dose according to serum levels) every 24 hours, both for a minimum of 4 to 6 weeks.

If the patient is allergic to penicillin:

- IV vancomycin 15–20 mg/kg every 12 hours (adjusted dose according to serum levels) for a minimum of 4 to 6 weeks.

In cases of prosthetic valve endocarditis:

- The treatment may be extended to six weeks and include rifampicin.

Monitor treatment efficacy with serial blood cultures and CRP levels.

In severe cases:

- Consider referral to cardiothoracic surgery for valve repair or replacement.

Monitoring:

- Closely monitor vital signs, blood culture results, and CRP levels to assess treatment progress.

- Regularly assess for side effects of antibiotics, including nephrotoxicity and ototoxicity for gentamicin.

- Follow up with repeat echocardiography to monitor valve function and vegetations.

- Regular outpatient follow-up after hospital discharge every 2 weeks for 3 months, then every month for up to 6 months post-treatment.

Prognosis:

- With prompt treatment, the prognosis of infective endocarditis can be favourable.

- Complications such as heart failure, valve destruction, and systemic emboli can worsen the prognosis.

- The presence of prosthetic valves, certain causative organisms (e.g., S. aureus), or delayed treatment initiation can have negative prognostic implications.

- Full recovery may take weeks to months.

Differential diagnoses:

1. Rheumatic Fever: Lack of migratory polyarthritis and other major Jones criteria.

2. Nonbacterial Thrombotic Endocarditis: Association with malignancy not present.

3. Acute Pericarditis: Absence of characteristic chest pain and pericardial friction rub.

Treatment: The treatment as outlined in the NICE and BNF guidelines should be followed. Amoxicillin and gentamicin are the first-line empirical treatment, with dosages and durations tailored to the sensitivities of the causative organism, patient weight, and renal function. If the patient has a penicillin allergy, vancomycin or teicoplanin can be used. Prosthetic valve endocarditis may require rifampicin as part of additive therapy and extended treatment duration. In cases of heart failure or persistent infection despite adequate antibiotic therapy, consideration for surgical intervention should be given.

Monitoring:

- Regular evaluation of infection markers, including blood cultures and CRP.

- Renal function tests to monitor for antibiotic toxicity.

- Follow-up echocardiograms to assess the progress of vegetative lesions.

- Regular outpatient reviews with the infective endocarditis team or infectious disease specialist.

Prognosis:

- With prompt and appropriate treatment, mortality rates can be reduced, but underlying valvular damage and complications may still result in significant morbidity.

- Prognosis is poorer in older adults, with certain causative organisms (e.g., Staphylococcus aureus), in prosthetic valve endocarditis, and those with complications such as heart failure, embolic phenomena, and intracardiac abscesses.

Differential Diagnoses:

1. Rheumatic Fever: Less likely in adults without a history of recent pharyngitis and the absence of migratory joint pain.

2. Myocarditis: Likelihood reduced due to the presence of vegetation on echocardiography and the absence of myocardial inflammation markers.

3. Aortic Valve Stenosis: Patient has no prior history or symptoms consistent with valvular disease onset, nor the characteristic systolic ejection murmur.

Keyword Filters:

Speciality Filter:

Cardiovascular; General Practice; Infection

Presenting Complaint Filter:

Fever; Heart Murmurs

Condition Filter:

Infective Endocarditis

Location Filter:

General Practice

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_32\_InfectiveEndocarditis

Homepage Vignette:

## A 45-year-old male called Taro Janek presents with a fever and a new heart murmur.

Individual Page Vignette:

As a general practitioner, you are meeting with Taro Janek, age 45, an architect, visiting the clinic today complaining of persistent fever and recently noticing a heart murmur.

Patient Name:

Taro Janek (Tah-roh YAH-nek); he prefers to be addressed as Taro.

Age:

29/06/1978

Location:

Clinic

Personality:

Taro is meticulous and articulate, accustomed to providing clear, structured explanations in his role as an architect. He maintains a calm and measured tone when discussing his health but reveals a nuanced understanding of his symptoms.

Presenting Complaint:

Taro reports experiencing fevers for the past week and was alerted to the presence of a heart murmur during a recent visit to a locum.

Quote:

"I've been running a fever for the last seven days, and it simply won't subside. Also, the other doctor mentioned hearing something irregular with my heart—it's quite concerning."

Symptoms:

Site: Heart; Quote: "The sound seems to be coming from my heart, or that's what I was told."

Onset: Gradual over the past month; Quote: "Thinking back, I've been feeling off for about a month now."

Character: Heartbeat feels irregular; Quote: "Sometimes, my heart seems to skip or add beats; it's all very irregular."

Radiation: Does not radiate; Quote: "The unusual heartbeat doesn't seem to move or spread; it's just in my chest."

Associated Symptoms: Fever, night sweats, fatigue; Quote: "Apart from the fever, I've had several nights sweats and I get tired so easily now."

Timing: Symptoms are persistent; Quote: "These feelings have been constant, hardly a moment of relief since they started."

Exacerbating and Relieving Factors: Symptoms persist regardless of activity; Quote: "Regardless of whether I'm resting or moving about, the symptoms persist."

Severity: Symptoms are concerning but tolerable; Quote: "I wouldn't say it's extreme, but it's certainly worrying and quite out of the ordinary for me."

- Chest pain or discomfort: Negative

- Shortness of breath: Negative

- Palpitations: Positive; Quote: "My heart has this fluttering feeling occasionally."

- Syncope: Negative

- Nausea: Negative

- Vomiting: Negative

- Intermittent claudication: Negative

- Peripheral oedema: Negative

History of Presenting Complaint:

Duration of symptoms: A few weeks; Quote: "I've noticed these symptoms developing over the past few weeks."

Previous treatments: None so far; Quote: "I haven't taken anything for this; I thought it needed a professional's attention."

Progression over time: Symptoms have gradually worsened; Quote: "These issues have been slowly getting worse, especially the tiredness and fever."

Frequency of symptoms: Symptoms are constant; Quote: "There's hardly a break from feeling unwell these days."

Impact on daily life and activities of daily living: Some impact; Quote: "I can still manage most things, but I tire easily and need to rest more often."

Impact on work: Mild impact; Quote: "I've had to reduce my hours at the office. I'm just not up to full days right now."

Impact on physical and mental wellbeing: Noticeable impact; Quote: "It gnaws at you, knowing something's not right and not being able to fix it."

Systemic Symptoms:

- Fatigue: Positive; Quote: "I'm completely drained by midday, which isn't normal for me."

- Fever: Positive; Quote: "The thermometer has been my constant companion this past week, showing a persistent fever."

- Night sweats: Positive; Quote: "Waking up drenched in sweat most nights is quite unpleasant."

- Unintended weight loss: Positive; Quote: "I haven't been trying to lose weight, but it's been noticeable."

- Generalised weakness: Positive; Quote: "My whole body feels weaker than usual."

- Malaise: Positive; Quote: "I've got this overarching sense of unwellness."

- Bowel habits: Normal

- Urinary habits: Normal

- Changes in sleep: Disturbed due to symptoms; Quote: "Sleep doesn't come easy with fevers and sweats plaguing me at night."

- Peripheral oedema: Negative

Past Medical History:

- Surgeries: None

- Hospitalizations: Hospitalised once for pneumonia, five years ago; Quote: "I spent a week in the hospital with a terrible bout of pneumonia once."

- Previous injuries or traumas: Broken arm from a fall two years ago; Quote: "I had a nasty fall while cycling and broke my arm."

- Psychiatric or psychological history: None

- History of substance abuse or addiction: None

- Immunizations and vaccination history: Up to date; Quote: "I keep my vaccinations up to date, including travel and flu vaccines."

- Any other relevant medical conditions or significant health events: No other conditions

Drug History:

Taro reports no current medications. He took over-the-counter analgesics intermittently for the recent fever but has not experienced any improvement.

Quote:

"I've only been taking paracetamol for the fever, but it doesn't seem to make much of a difference."

Allergies:

Taro has no known allergies.

Quote:

"I've never had any allergic reactions to anything, as far as I know."

Family History:

No known family history of cardiac or autoimmune diseases.

Quote:

"There's nothing like this heart issue or any autoimmune diseases in my family, not that I've ever been told of."

Social History:

Lifestyle: Taro lives a predominantly sedentary lifestyle due to his work but incorporates walking into his daily routine.

Occupation: Architect.

Activities of Daily Living & Hobbies: Enjoys reading and occasional cycling.

Smoking: Non-smoker; 0 pack years.

Alcohol: Drinks socially, about 4 units per week.

Recreational Drug Use: Has never used recreational drugs.

Diet: Taro has a balanced diet, though admits to occasionally skipping meals during busy work periods.

Exercise: Walks daily, cycles occasionally on weekends.

Quote 1: "Most of my day is spent at the drafting table, but I do make it a point to walk around the neighbourhood each evening."

Quote 2: "I'm not one for the pub much, I'll have a drink or two with friends on the weekend, perhaps."

Quote 3: "I'm conscious about eating well, but when work demands, I've skipped lunches here and there."

Ideas, Concerns, and Expectations:

Ideas: Taro believes his symptoms could be related to a serious underlying condition, potentially heart-related given the murmur.

Quote: "I can't shake off the thought that this could be something significant, heart problems do run in some families."

Concerns: He is worried about the long-term impact on his health and work, and the possibility of hospitalization.

Quote: "The uncertainty is difficult to handle. What if this takes me away from work for a long time, or worse, I end up in a hospital bed?"

Expectations: Taro expects a thorough assessment and clear plan for diagnosis and treatment, understanding the possible need for specialist referral.

Quote: "I hope we can get to the bottom of this quickly, with clear directions on next steps and treatment options."

Observations:

Respirations (Breaths/min): 16 (0 points)

Oxygen Saturation (%): 97% on room air (0 points)

Air or Oxygen?: Room air (0 points)

Blood Pressure (mmHg): 125/80 (0 points)

Pulse (Beats/min): 78 (0 points)

Consciousness (AVPU): Alert (0 points)

Temperature (Celsius): 38.4°C (1 point)

NEWS Total Score: 1

For the NEWS total score of 1 point, this has been calculated based on the temperature being in the range of 38.1–39.0°C, which gives 1 point. All other parameters are within normal ranges and therefore score 0 points.

\*\*Physical Examination:\*\*

\*\*General inspection:\*\*

- Taro appears well-groomed and alert but reports a fever. There are no visible signs of cyanosis, shortness of breath, pallor, malar flush, or peripheral oedema. He appears slightly fatigued. No medical equipment, mobility aids, or prescriptions evident, indicating no current chronic outpatient management.

\*\*Inspection of the hands:\*\*

- General observation: skin color is normal; no signs of tar staining, xanthomata, or arachnodactyly.

- No clubbing, splinter haemorrhages, Janeway's lesions, Osler's nodes, or koilonychia noted.

- Palpation: hands are warm to touch with a capillary refill time less than 2 seconds.

\*\*Pulses and blood pressure:\*\*

- Radial pulse is regular in rate and rhythm, measured at 78 beats per minute, with no radio-radial delay.

- Collapsing pulse is not present.

- Brachial pulse volume and character are normal; blood pressure is 125/80 mmHg in both arms.

- Carotid pulse is palpable, with no noted bruits or volume irregularities.

\*\*Jugular venous pressure:\*\*

- JVP is within normal limits; no hepatojugular reflux is elicited upon palpation and positional changes.

\*\*Inspection of the face:\*\*

- Eyes: No conjunctival pallor is noted, and no corneal arcus or xanthelasma is present.

- Mouth: No central cyanosis or angular stomatitis observed, dental hygiene is well-maintained.

\*\*Close inspection of the chest:\*\*

- Chest wall is symmetrical with no visible signs of pectus excavatum, pectus carinatum, or visible pulsations. No scars are evident from previous surgeries.

\*\*Palpation of the chest:\*\*

- The apex beat is palpable in the 5th intercostal space at the mid-clavicular line; no palpable heaves or thrills.

\*\*Auscultation of the chest:\*\*

- Heart sounds: A new heart murmur is audible, requiring further characterization and possibly of the mitral or aortic valve given the patient's presentation suggesting infective endocarditis.

- No additional abnormal sounds or murmurs are heard over the aortic or pulmonary areas with the diaphragm, and no added heart sounds or murmur are noted when auscultating with the bell.

- Carotid auscultation does not reveal radiation of an ejection systolic murmur indicative of aortic stenosis.

\*\*Inspection of the back:\*\*

- The spine appears structurally normal without deformities or scars.

\*\*Palpation of the back:\*\*

- No evidence of sacral oedema, which may indicate fluid overload in the context of heart failure.

\*\*Auscultation of the back:\*\*

- Lung fields are auscultated in the posterior chest, revealing no coarse crackles or signs of fluid accumulation or absent air entry.

\*\*Examination of the legs:\*\*

- Lower extremities exhibit no pitting oedema. There are no signs of past saphenous vein harvesting such as a surgical scar.

\*\*Diagnostic Tests:\*\*

\*\*Blood Tests (Reference Ranges):\*\*

- \*\*Complete Blood Count (CBC):\*\*

- Hemoglobin: 13.5 g/dL (13.8-17.2 g/dL)

- White Blood Cell (WBC) count: 12 x10^9/L (4.5-11 x10^9/L) - Elevated, possibly indicating an infection

- Platelet count: 250 x10^9/L (150-400 x10^9/L)

- \*\*Erythrocyte Sedimentation Rate (ESR):\*\*

- 40 mm/hr (0-22 mm/hr for men) - Elevated, indicating inflammation or infection

- \*\*C-Reactive Protein (CRP):\*\*

- 10 mg/L (0-3 mg/L) - Elevated, suggestive of acute inflammation

- \*\*Blood cultures:\*\*

- Pending - To identify the causative organism of infective endocarditis

- \*\*Liver Function Tests (LFTs):\*\*

- Alanine aminotransferase (ALT): 28 U/L (7-55 U/L)

- Aspartate aminotransferase (AST): 30 U/L (8-48 U/L)

- Alkaline phosphatase (ALP): 90 U/L (40-129 U/L)

- Total bilirubin: 0.8 mg/dL (0.3-1.2 mg/dL)

- Albumin: 4.0 g/dL (3.5-5.0 g/dL)

- \*\*Kidney Function Tests:\*\*

- Creatinine: 1.0 mg/dL (0.84-1.21 mg/dL) - Normal

- Blood Urea Nitrogen (BUN): 14 mg/dL (7-20 mg/dL) - Normal

\*\*Imaging Tests:\*\*

- \*\*Echocardiogram (Echo):\*\*

- Transthoracic echocardiography (TTE) reveals a vegetation on the mitral valve approximately 1 cm in size, with mild to moderate mitral regurgitation.

- There's no evidence of abscess or fistula formation.

- Cardiac chamber sizes are within normal limits and left ventricular systolic function is preserved.

- \*\*Transesophageal Echocardiography (TEE):\*\* (if TTE findings are inconclusive or if high clinical suspicion persists despite a negative TTE)

- May reveal additional vegetations not visualized on TTE due to better resolution, particularly important in patients with prosthetic heart valves.

- \*\*CT Head:\*\*

- No acute intracranial hemorrhage noted.

- No cerebral abscess identified.

- No evidence of acute ischemic changes suggestive of a stroke.

- Incidental note of mild sinusitis is made, with mucosal thickening in the maxillary sinuses.

Condition:

Infective Endocarditis

Patient Questions:

Question 1: "Could this fever be something that is easily treatable with antibiotics?"

Answer: "It's possible antibiotics will be part of your treatment, but it depends on the diagnosis. We'll need test results to make the right decision."

Question 2: "What are the chances that I have a heart condition?"

Answer: "We're considering all possibilities, including heart conditions. The tests we've planned will help clarify this for us."

Question 3: "I've heard of endocarditis; could that be what's happening to me?"

Answer: "Endocarditis is one condition we are considering, given your fever and heart murmur. Blood tests, especially blood cultures, and an echocardiogram will be essential to determine this."

Question 4: "How long will it take to diagnose and treat my condition?"

Answer: "Diagnosing infective endocarditis can sometimes be swift, but it depends on how quickly we get the blood culture results. Treatment typically involves several weeks of antibiotics, often started intravenously."

Examiner Questions:

Question 1: "What are the major criteria for the diagnosis of infective endocarditis?"

Answer: "The major criteria include positive blood cultures typical of infective endocarditis or evidence of endocardial involvement, such as an echocardiogram positive for a mass on a valve."

Question 2: "What is the significance of persistently positive blood cultures in a patient with suspected infective endocarditis?"

Answer: "Persistently positive blood cultures indicate ongoing bacteremia, which is a hallmark of infective endocarditis and helps confirm the diagnosis."

Question 3: "Why is an echocardiogram important in the assessment of infective endocarditis?"

Answer: "It helps visualise the heart valves and chambers to detect vegetations, abscesses, or new dehiscence of prosthetic valves, which are indicative of infective endocarditis."

Question 4: "What are some of the common organisms responsible for infective endocarditis, and how might they influence the choice of antibiotics?"

Answer: "Staphylococcus aureus, Streptococcus viridans, and Enterococcus are common causative organisms. Knowing the organism helps tailor the antibiotic regimen for optimal efficacy."

Question 5: "List some of the complications of infective endocarditis."

Answer: "Complications include heart failure, systemic emboli, mycotic aneurysms, and metastatic infections such as septic arthritis or abscess formation."

Treatment:

Treatment should adhere to NICE and BNF guidelines for infective endocarditis:

- Commence empirical antibiotic therapy, based on local antibiotic guidelines, before receiving culture results.

- Continue intravenous antibiotics for a minimum of 4 weeks, depending on the organism and the patient's response to treatment.

- Consider referral to a cardiologist for evaluation and potential surgery if indicated by complications such as heart failure or uncontrolled infection.

- Allergic alternatives or adjuncts to therapy should also be highlighted if required.

Monitoring:

- Monitor vital signs and clinical symptoms regularly to assess the response to antibiotics.

- Repeat blood cultures to ensure bacteriological eradication.

- Monitor renal and hepatic function periodically due to the prolonged use of antibiotics.

- Schedule follow-up echocardiograms to assess treatment efficacy and detect potential complications.

Prognosis:

- The outlook of infective endocarditis depends on the promptness of diagnosis, organism virulence, and the presence of complications.

- Early and appropriate antibiotic treatment can lead to good outcomes.

- Surgery may be necessary depending on the patient's response and complications.

Differential diagnoses:

1. Rheumatic Fever: Less likely due to age and absence of migratory polyarthritis, erythema marginatum, etc.

2. Collagen Vascular Disease: Symptoms are not consistent with systemic manifestations typical of conditions such as lupus or rheumatoid arthritis.

3. Malignancy: While fever and weight loss are present, other systemic signs are more specific for infective endocarditis.

Keyword Filters:

Speciality Filter:

Cardiovascular; Infection; General Practice

Presenting Complaint Filter:

Fever; Heart Murmurs

Condition Filter:

Infective Endocarditis

Location Filter:

Clinic

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_33\_Infective Endocarditis

Homepage Vignette:

## A 42-year-old female called Avani Mehta presents with fever and a new heart murmur.

Individual Page Vignette:

You are a General Practitioner, Avani Mehta, a 42-year-old civil engineer, is visiting your practice in a Clinic, complaining primarily of persistent fever and mentioning she has noticed a new sound in her heartbeat.

Patient Name:

Avani Mehta (pronounced uh-VAH-nee MEH-tuh); prefers to be addressed as Ms. Mehta.

Age:

15/07/1981

Location:

Clinic

Personality:

Ms. Mehta speaks with a clear, concise manner, indicative of her engineering background. She approaches her health analytically but bears a mild sense of unease about her current symptoms. She is forthright with information and displays a respectful assertiveness in her queries for understanding her condition.

Presenting Complaint:

Ms. Mehta came to the clinic with concerns about having fever for the past several days and recently noticing an unusual sound with her heartbeat, which she describes as a "whooshing" noise.

Quote:

"I've had this fever that won't shake off, and just recently, I've picked up on this odd whooshing noise with my heartbeat. It's like a swooshing that I've never noticed before."

Symptoms:

Site: Heart - "The noise is definitely coming from my heart, at least it seems so."

Onset: Several days ago - "I first noticed the sounds around the same time my fever started, a few days back."

Character: Whooshing sound - "It's a kind of a whooshing or swooshing that comes and goes with my heartbeat."

Radiation: Does not radiate - "No, it doesn't seem to go anywhere; it's just there in my heart."

Associated Symptoms: Fever - "Apart from the noise, I've had this persistent fever."

Timing: Constant/Intermittent - "The fever has been constant, but the noise feels more on and off."

Exacerbating and Relieving Factors: None identified - "Nothing seems to make it better or worse; it's just there."

Severity: Moderate (the fever is bothersome, the heart sound is not causing pain) - "The fever's been quite troublesome, it's wearing me down. But the heart thing, it doesn't hurt; it's just worrying."

- Chest pain or discomfort: Negative

- Shortness of breath: Negative

- Palpitations: Negative

- Syncope: Negative

- Nausea: Negative

- Vomiting: Negative

- Intermittent claudication: Negative

- Peripheral oedema: Negative

Quote:

"I've not had any chest pain, trouble breathing, or fainting spells, thankfully. No issues with nausea or ankles swelling either."

History of Presenting Complaint:

- Duration of symptoms: Several days - "This fever has been hanging on for the best part of a week now."

- Previous treatments: Over-the-counter antipyretics - "I've been taking paracetamol to no real effect. It barely tames the fever."

- Progression over time: Stable - "Things haven't really gotten worse, but they're definitely not getting any better."

- Frequency of symptoms: Ongoing - "The fever is pretty much all the time, and the heart sound pops up several times a day."

- Impact on daily life and activities of daily living: Somewhat affected - "I can still manage my daily tasks, but I'm definitely slower and more easily tired out."

- Impact on work: Slightly affected - "I've taken a few days off work to figure this out. I can't focus like this."

- Impact on physical and mental wellbeing: Mild anxiety - "I'm not going to lie; it's got me worried. I like to think I'm tough but this... this is something else."

Quote:

"The fever's always there, just dragging me down. I thought it would pass with some rest and paracetamol, but it's persistent. I've been listening closely to my heart too; it beats fine but there's that additional swoosh woosh rhythm to it. It's quite unsettling if you ask me."

Systemic Symptoms:

- Fatigue: Positive - "I've been feeling more wiped out than usual."

- Fever: Positive - "Yes, the thermometer's been showing up high."

- Night sweats: Negative

- Unintended weight loss: Negative

- Generalised weakness: Positive - "Overall, I feel weaker, like I don't have my usual strength."

- Malaise: Positive - "There's this overall feeling of being unwell."

- Changes in bowel habits: Negative

- Urinary habits: Negative

- Changes in sleep: Positive - "My sleep's been somewhat disrupted, likely because of the fever."

- Peripheral oedema: Negative

Quote:

"I feel tired all the time lately, and I just don't feel like my usual self. I also noticed that I haven't been sleeping as well, possibly due to the discomfort from the fever."

Past Medical History:

- Surgeries: Negative

- Hospitalizations: Negative

- Previous injuries or traumas: Negative

- Psychiatric or psychological history: Negative

- History of substance abuse or addiction: Negative

- Immunizations and vaccination history: Up to date

- Any other relevant medical conditions or significant health events: Dental procedure 2 months ago

Quote:

"I've been pretty healthy up till now; no major illnesses or hospital stays. The only thing that comes to mind is that dental work I had done a little while ago. Got a root canal, not the most pleasant experience, I'll tell you that."

Drug History:

Current medications: Paracetamol 500mg when required for fever, not more than four times a day.

Quote:

"I've been popping paracetamol on and off for the fever, 500mg a shot. Trying not to exceed it, but it's been necessary every few hours."

Allergies:

No known allergies.

Quote:

"As far as allergies go, I'm in the clear. Never had an allergic reaction to anything as of yet."

Family History:

Ms. Mehta reports no significant medical history in her immediate family.

Quote:

"Nobody in my family has had any serious health problems that I'm aware of. We've been fairly fortunate in that regard."

Social History:

Lifestyle: Structured and balanced, no excesses.

Occupation: Civil engineer, a busy and sometimes stressful job.

Activities of Daily Living & Hobbies: Enjoys reading and yoga in her spare time.

Smoking: Non-smoker.

Alcohol: Occasional, socially, about 2-3 units per week.

Recreational Drug Use: Negative.

Diet: Balanced diet, incorporates plenty of fruit and vegetables.

Exercise: Regular yoga sessions, about 3 times per week.

Quote 1:

"I try to keep a pretty balanced life; not too much stress, clean living, you know? I unwind with a good book and my yoga. Helps to keep the mind and body in shape."

Quote 2:

"Smoking and drugs have never been my thing. And while I enjoy a glass of wine from time to time, it's always in moderation."

Quote 3:

"I'm quite particular about getting my greens and sticking to a healthy diet. With my yoga, it's all about maintaining that inner balance and strength."

Ideas, Concerns, and Expectations:

Ideas: Ms. Mehta thinks she might have an infection due to the persistent fever and heart sound, possibly linked to the recent dental work.

Quote:

"I wonder if this is some sort of infection circulating in my system. I've read about heart issues that can be triggered by infections, especially after dental procedures."

Concerns: Ms. Mehta is worried about the potential severity of the heart sound and its impact on her health.

Quote:

"I must confess, the fact that this is happening with my heart is causing me quite a bit of worry. It's one thing to have a fever, but a heart murmur? That's unknown territory for me."

Expectations: Ms. Mehta expects a thorough examination, a clear explanation of the findings, and an effective treatment plan.

Quote:

"I'm expecting you to get to the bottom of this, run the necessary tests, and let me know what's going on. Then, we can discuss the next steps and treatment options."

Observations:

Respirations (Breaths/min): 18

Oxygen Saturation (%): 97

Air or Oxygen?: Room air

Blood Pressure (mmHg): 125/80

Pulse (Beats/min): 90

Consciousness (AVPU): Alert

Temperature (Celsius): 38.3

NEWS Total Score: 1

The NEWS score is calculated as 1 point for the temperature range of 38.1-39.0°C.

Physical Examination:

General inspection:

- Clinical signs: Negative for cyanosis, no shortness of breath, mild pallor, no malar flush, no oedema visible.

- Objects/equipment: None that provide additional insights into medical history or current clinical status.

Inspection of the hands:

- General observation: No tar staining, xanthomata, arachnodactyly, clubbing, splinter haemorrhages, Janeway lesions, Osler nodes, or koilonychia.

- Palpation: Warm with a capillary refill time of less than 2 seconds.

Pulses and blood pressure:

- Radial pulse: Regular rhythm, no delay observed.

- Collapsing pulse: Negative.

- Brachial pulse: Normal volume and character.

- Blood pressure: As noted in observations; no significant difference between arms.

- Carotid pulse: Normal volume and character.

Jugular venous pressure:

- Measurement: Not elevated.

- Hepatojugular reflux test: Negative.

Inspection of the face:

- Eyes: No conjunctival pallor, corneal arcus, xanthelasma, or Kayser-Fleischer rings.

- Mouth: No central cyanosis, angular stomatitis, high arched palate, or dental hygiene issues.

Close inspection of the chest:

- Pectus excavatum/carina\*tum: Negative for both.

- Visible pulsations: Negative.

- Scars of previous thoracic surgery: Negative.

Palpation of the chest:

- Apex beat: Located within the normal range, not displaced.

- Heaves/thrills: Negative for both.

Auscultation of the chest:

- Aortic area: Soft systolic murmur heard with diaphragm, not heard with bell.

- Pulmonary area: No added sounds or murmurs.

- Tricuspid area: No added sounds or murmurs.

- Mitral area: Soft systolic murmur heard with diaphragm, not heard with bell.

- Carotid arteries: No radiation of murmur noted.

Inspection of the back:

- Deformities/scars: Negative for both.

Palpation of the back:

- Sacral oedema: Negative.

Auscultation of the back:

- Lung fields: Clear bilaterally, no crackles or signs of consolidation.

Examination of the legs:

- Pitting oedema: Negative at the ankles.

- Saphenous vein harvesting: No evidence of surgical scars or venous insufficiency.

Special Tests:

No special tests performed.

\*\*Diagnostic Tests:\*\*

\*\*Blood Tests (Reference Ranges):\*\*

- \*\*Complete Blood Count (CBC):\*\*

- Hemoglobin (Hb): 13.5 g/dL (Reference: Female: 12-15.5 g/dL)

- White Blood Cell (WBC) count: 14 x10^9/L (Reference: 4.0-11.0 x10^9/L) - Elevated, indicating possible infection

- Platelet count: 300 x10^9/L (Reference: 150-450 x10^9/L)

- \*\*Erythrocyte Sedimentation Rate (ESR):\*\*

- 75 mm/hr (Reference: 0-29 mm/hr for women) - Elevated, indicating inflammation or infection

- \*\*C-Reactive Protein (CRP):\*\*

- 14 mg/dL (Reference: <0.8 mg/dL) - Elevated, suggestive of acute inflammation

- \*\*Blood cultures (from multiple sites before initiating antibiotics):\*\*

- Growth of Streptococcus viridans is detected after 24 hours of incubation, suggesting infective endocarditis.

- \*\*Liver Function Tests:\*\*

- Alanine aminotransferase (ALT): 22 U/L (Reference: 7-56 U/L)

- Aspartate aminotransferase (AST): 20 U/L (Reference: 8-48 U/L)

- Alkaline phosphatase (ALP): 75 U/L (Reference: 40-129 U/L)

- Total bilirubin: 1.0 mg/dL (Reference: 0.3-1.2 mg/dL)

- Albumin: 3.9 g/dL (Reference: 3.4-5.4 g/dL)

- \*\*Kidney Function Tests:\*\*

- Creatinine: 0.9 mg/dL (Reference: 0.57-1.00 mg/dL for women)

- Blood Urea Nitrogen (BUN): 15mg/dL (Reference: 10-20 mg/dL)

\*\*Imaging Tests:\*\*

- \*\*Echocardiogram:\*\*

- A transthoracic echocardiogram (TTE) indicates a vegetative growth on the aortic valve measuring approximately 1.5 cm with evidence of mild aortic regurgitation.

- Transesophageal echocardiography (TEE) confirms the presence of vegetations on the aortic valve and rules out the presence of a mycotic aneurysm.

- \*\*Chest X-Ray:\*\*

- The heart size is at the upper limit of normal, suggesting possible left ventricular hypertrophy. Chest vasculature and pulmonary fields are clear, with no evidence of pulmonary edema.

Condition:

Infective Endocarditis

Patient Questions:

1. "Could this heart murmur indicate something severe?"

- "Heart murmurs can sometimes be indicative of underlying heart issues, but we need to carry out further tests to determine the exact cause and severity of your murmur."

2. "I had dental work done not too long ago. Could there be a connection with what I'm experiencing now?"

- "Certain dental procedures can lead to bacteria entering the bloodstream, which in rare cases can infect the heart lining or valves. We'll need to run tests to see if this is the case for you."

3. "What are the chances this condition is affecting my heart valves?"

- "The symptoms you're experiencing, alongside the murmur and fever, suggest that it's possible your heart valves could be involved. An echocardiogram can help us see if the valves are affected."

4. "What kind of treatment will I need if it is infective endocarditis?"

- "If diagnosed with infective endocarditis, you'll likely need a course of antibiotics, possibly given intravenously. Follow-up and potentially more specific treatment will be based on the severity of the infection and response to antibiotics."

Examiner Questions:

1. What are the Duke criteria for the diagnosis of infective endocarditis?

- "The Duke criteria include major criteria such as positive blood cultures and evidence of endocardial involvement by echocardiography, and minor criteria like fever, vascular phenomena, immunologic phenomena, and microbiologic evidence."

2. What is the most common organism responsible for infective endocarditis in non-IV drug users?

- "Streptococcus viridans is the most common causative organism in cases of infective endocarditis among non-IV drug users."

3. How should blood cultures be taken in a suspected case of infective endocarditis?

- "Multiple sets of blood cultures should be taken from different venepuncture sites, ideally before starting antibiotic therapy, to increase the likelihood of isolating the causative organism."

4. What are the indications for surgical intervention in infective endocarditis?

- "Indications for surgery in infective endocarditis include heart failure, uncontrolled infection, prevention of embolic events, and treatment of complications like abscesses, valve perforation, or prosthetic dehiscence."

5. What is the role of echocardiography in the diagnosis and management of infective endocarditis?

- "Echocardiography, particularly transesophageal echocardiography (TEE), is pivotal in the diagnosis of infective endocarditis by visualising vegetations, abscesses, valve dehiscence, and other structural heart abnormalities."

6. What are the potential complications of infective endocarditis?

- "Potential complications include heart failure, systemic emboli, mycotic aneurysms, intracardiac abscesses, and arrhythmias."

Treatment:

The treatment regimen for Infective Endocarditis as per NICE and the BNF is primarily a prolonged course of targeted antibiotics.

1. Initially, empirical antibiotic treatment with intravenous benzylpenicillin (1.2 grams every four hours), intravenous gentamicin (1 mg/kg every 8 hours), and intravenous flucloxacillin (2 grams every four hours) is started until the causative organism is identified.

2. Once blood culture results return, the antibiotic regimen is adjusted to target the specific organism, with dosage and duration based on susceptibility patterns.

3. For Ms. Mehta, with Streptococcus viridans identified and no reported allergy to penicillin, the treatment would likely be switched to intravenous benzylpenicillin alone for a suggested period of four to six weeks, ensuring that therapeutic blood levels are maintained.

4. If the patient is allergic to penicillin, options include vancomycin or teicoplanin.

5. Surgery may be considered if there are indications like uncontrolled infection, heart failure due to valve dysfunction, or the presence of complications like abscesses.

Monitoring:

- Monitor blood cultures to ensure the clearance of bacteria.

- Serial echocardiograms to track changes in vegetations and valve function.

- Monitor for signs of complications such as embolic events or heart failure.

- Regular kidney function tests due to potential nephrotoxicity from gentamicin if initially used.

- Weekly clinic or hospital visits for assessment and possible adjustment of treatment.

- Review antibiotic therapy based on sensitivities and clinical response after initial empirical treatment.

- After completion of antibiotic therapy, the patient should be reviewed for symptoms and signs of relapse.

Prognosis:

- With timely diagnosis and appropriate antibiotics, the prognosis for infective endocarditis is generally favorable; however, morbidity and mortality remain significant.

- Complications can include embolic events, heart failure, and persistent infection, which may affect the prognosis.

- The presence of prosthetic valves or a history of intravenous drug use can complicate treatment and worsen the outcome.

- Recurrence of infective endocarditis can occur and needs careful monitoring.

Differential diagnoses:

1. Rheumatic fever - less likely due to the absence of a recent history suggestive of streptococcal pharyngitis and the presence of vegetation seen on echocardiography.

2. Mitral valve prolapse with regurgitation - may cause similar heart sounds but is less likely in the context of fever and positive blood cultures.

3. Non-infective thrombotic endocarditis - may present with vegetations but is usually absent of systemic signs of infection like fever.

4. Atrial myxoma - could cause similar auscultation findings and systemic symptoms but less likely without evidence of a mass on echocardiography.

Keyword Filters:

Speciality Filter:

Cardiovascular; Infectious Diseases; General Practice

Presenting Complaint Filter:

Fever; Heart Murmurs; Malaise; Fatigue; Generalised Weakness

Condition Filter:

Infective Endocarditis

Location Filter:

Clinic

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_34\_Infective Endocarditis

Homepage Vignette:

## A 47-year-old male called Abiola Olaseni presents with fever and a recently developed heart murmur.

Individual Page Vignette:

You are a GP in a clinic, and a 47-year-old male named Abiola Olaseni, an academic researcher, comes to your clinic complaining of persistent fever and noting a heart murmur that was not previously documented.

Patient Name:

Abiola Olaseni (Pronunciation: Ah-bee-oh-lah Oh-la-sen-ee). Abiola prefers to be called Abi.

Age:

03/06/1977

Location:

Clinic

Personality:

Abi is a methodical, articulate individual with a penchant for detail, reflective of his academic profession. He speaks calmly, often explaining his symptoms with scientific precision, and values clear explanations and evidence-based approaches to management.

Presenting Complaint:

Abi reports experiencing persistent fevers over the past few weeks. He recently visited a dentist for a routine cleaning, and during his last visit to a cardiologist, a new heart murmur was noted.

Quote:

"I've been having these persistent fevers, and it’s not like me to fall ill so frequently. My cardiologist has told me there's a new murmur in my heart. I'm quite concerned about what this could signify."

Symptoms:

SOCRATES:

Site: The discomfort is generalised. Quote: "I feel just overall discomfort; it's not really located in one spot."

Onset: Symptoms started approximately two weeks ago. Quote: "About two weeks back, I began to feel unwell."

Character: Describes fevers as 'flushing warmth', not localised pain. Quote: "I get these episodes of flushing warmth intermittently."

Radiation: Does not apply as the symptom is a generalised feeling. Quote: "The fever isn't concentrated, it's all over."

Associated Symptoms: Reports fatigue and malaise. Quote: "I've been feeling generally unwell and fatigued, it's really unlike me."

Timing: Fevers are intermittent and mostly noticed in the evenings. Quote: "The fevers come and go, often worse in the evenings."

Exacerbating and Relieving Factors: None identified. Quote: "Nothing I do seems to make it better or worse."

Severity: Describes the fevers as moderate. Quote: "The fevers aren't debilitating, but they're certainly bothersome."

Findings:

- Chest pain or discomfort: Negative.

- Shortness of breath: Negative.

- Palpitations: Negative.

- Syncope: Negative.

- Nausea: Negative.

- Vomiting: Negative.

- Intermittent claudication: Negative.

- Peripheral oedema: Positive. Quote: "I've noticed my ankles are somewhat swollen of late."

History of Presenting Complaint:

- Duration of symptoms: About two weeks. Quote: "These fevers and tiredness have been going on for a couple of weeks now."

- Previous treatments: None sought yet. Quote: "I haven't taken any medication for these symptoms."

- Progression over time: Symptoms have been constant without much change. Quote: "It's been the same since it started; just persistent fevers and tiredness."

- Frequency of symptoms: Fevers are intermittent. Quote: "I often feel the fever coming on in the evenings."

- Impact on daily life and activities of daily living: Affected due to fatigue. Quote: "It’s starting to interfere with my daily routines."

- Impact on work: Work efficiency has decreased. Quote: "I find it hard to concentrate on my research with these fevers."

- Impact on physical and mental wellbeing: He reports increasing concern and stress. Quote: "I'm normally very healthy, so this is starting to worry me quite a bit."

Systemic Symptoms:

- Fatigue: Positive. Quote: "I feel drained most of the time now."

- Fever: Positive. Quote: "The fevers come and go, it's quite perplexing."

- Night sweats: Negative.

- Unintended weight loss: Negative.

- Generalised weakness: Positive. Quote: "I feel a general weakness that wasn't there before."

- Malaise: Positive. Quote: "There's an overall feeling of malaise, just not being my normal self."

- Bowel habits: Negative.

- Urinary habits: Negative.

- Changes in sleep: Negative.

- Peripheral oedema: Positive. Quote: "My ankles seem to be swollen."

Past Medical History:

- Surgeries: Negative.

- Hospitalizations: Negative.

- Previous injuries or traumas: Negative.

- Psychiatric or psychological history: Negative.

- History of substance abuse or addiction: Negative.

- Immunizations and vaccination history: Positive for standard vaccines. Quote: "I’m up to date with my vaccines, just got the flu jab last season."

- Any other relevant medical conditions or significant health events: Positive - History of Rheumatic Fever as a child. Quote: "I had Rheumatic Fever when I was young; I always wonder if that has an impact on my health now."

Drug History:

Taking no prescription medications. Occasional use of ibuprofen for general aches.

Quote: "I only take ibuprofen now and then, nothing else really."

Allergies:

No known allergies.

Quote: "Thankfully, I’ve never had an allergic reaction to anything, as far as I’m aware."

Family History:

No known family history of cardiac or infectious conditions.

Quote: "My family is pretty healthy, no heart issues or anything of that sort."

Social History:

Lifestyle:

Occupation: Academic researcher.

Activities of Daily Living & Hobbies: Active in academic circles, enjoys reading and participating in seminars.

Smoking: Non-smoker.

Alcohol: Drinks socially, approximately 4 units per week.

Recreational Drug Use: None.

Diet: Vegetarian diet, balanced meals.

Exercise: Regular, jogs 3 times a week.

Quotes:

"As a researcher, I spend a lot of time reading. You know, digesting new information."

"I don't smoke and only have a drink or two when with colleagues."

"Never touched recreational drugs. I like to keep fit; running helps me clear my head."

Ideas, Concerns, and Expectations:

Ideas:

Abi believes his symptoms could be linked to his dental procedure or his history of Rheumatic Fever.

Quote:

"I’m concerned there might be a relation between the dental work and these symptoms, or perhaps it's related to the Rheumatic Fever from when I was younger."

Concerns:

Abi’s main worry is the potential impact on his heart and the seriousness of the new murmur.

Quote:

"I’m quite worried about this new heart murmur and what it could mean for my health."

Expectations:

Abi expects a thorough investigation to understand the cause of his symptoms and appropriate management.

Quote:

"I trust you'll help me find out what's wrong and how we can treat this effectively."

Observations:

Respirations (Breaths/min): 16

Oxygen Saturation (%): 98% on room air

Blood Pressure (mmHg): 140/85

Pulse (Beats/min): 78

Consciousness (AVPU): A (Alert)

Temperature (Celsius): 38.2°C

NEWS Total Score: 1 (Temperature of 38.1->39.0°C gives 1 point.)

\*\*Physical Examination:\*\*

\*\*General inspection:\*\*

- Abi appears neutrally comfortable but is concerned about his health. There are no visible signs of acute distress, cyanosis, or pallor. No medical equipment, mobility aids, or items that suggest current outpatient management or treatment are observed.

\*\*Inspection of the hands:\*\*

- No abnormalities noted in color. There is an absence of tar staining, xanthomata, clubbing, or any signs suggestive of endocarditis such as splinter hemorrhages, Janeway lesions, or Osler nodes.

- Capillary refill time is prompt, within 2 seconds, indicating good peripheral perfusion.

\*\*Pulses and blood pressure:\*\*

- Radial pulse is regular in rate and rhythm, with the rate being 78 beats per minute and without radio-radial delay.

- The brachial pulse volume and character are satisfactory, with no significant difference in blood pressure between the two arms (140/85 mmHg bilaterally).

- Carotid pulse volume and character are also normal and without bruits upon auscultation.

\*\*Jugular venous pressure:\*\*

- JVP is not raised, and there is no hepatojugular reflux upon examination.

\*\*Inspection of the face:\*\*

- There is no conjunctival pallor, and the sclerae are anicteric. There is no corneal arcus or xanthelasma present.

- Central cyanosis is not noted, and the oral mucosa is well perfused. No angular stomatitis observed, and dental hygiene is maintained.

\*\*Close inspection of the chest:\*\*

- No evidence of pectus excavatum, pectus carinatum, or visible pulsations that may imply underlying structural heart pathology. No previous surgery scars identified.

\*\*Palpation of the chest:\*\*

- Apex beat localized to the 5th intercostal space, at the midclavicular line, within normal limits.

- No parasternal heaves felt, and no thrills are palpable over the precordial area.

\*\*Auscultation of the chest:\*\*

- A best heart murmur is appreciated at the mitral area on auscultation. It is a new development and requires further characterization by auscultation (timing, duration, pitch, radiation).

- Aortic, pulmonary, and tricuspid areas reveal no additional murmurs or abnormal heart sounds upon auscultation with either diaphragm or bell.

\*\*Inspection of the back:\*\*

- The spine has a normal curvature with no obvious deformities or scars noted.

\*\*Palpation of the back:\*\*

- No sacral oedema palpable, which may indicate certain systemic diseases including cardiac, renal or liver pathology.

\*\*Auscultation of the back:\*\*

- Lung fields are auscultated, and no coarse crackles or signs of fluid accumulation or absence of air entry are detected.

\*\*Examination of the legs:\*\*

- Lower extremities reveal no pitting oedema. There are no signs of stasis dermatitis or hyperpigmentation that can accompany chronic venous insufficiency, and no evidence of previous venous harvesting for grafting procedures.

Condition:

Infective Endocarditis

Patient Questions:

1. "Could this condition affect my job as a researcher?"

- Potential Answer: "It's important to focus on your health first. Depending on the treatment you might need some rest, but we will work to get you back to your daily activities as soon as possible."

2. "Can the dental cleaning really cause heart problems?"

- Potential Answer: "Dental procedures can sometimes cause bacteria to enter the bloodstream, which can lead to an infection on previously damaged heart valves or the heart lining."

3. "What will happen if the treatment doesn't work?"

- Potential Answer: "We have several treatment options available, and we will closely monitor your response to make sure we find the most effective one for you. If standard treatments are not sufficient, you may be referred to a specialist."

Examiner Questions:

1. What are the common symptoms of Infective Endocarditis?

- Potential Answer: "Fever, heart murmur, peripheral signs such as splinter haemorrhages, Janeway lesions, Osler's nodes, Roth's spots, and embolic phenomena."

2. What risk factors predispose someone to Infective Endocarditis?

- Potential Answer: "Preexisting heart valve abnormalities, intravenous drug use, a history of rheumatic heart disease, prosthetic valves, and recent dental procedures."

3. Describe the Duke criteria for diagnosing Infective Endocarditis.

- Potential Answer: "The Duke criteria include major and minor criteria that incorporate clinical, microbiological, and echocardiographic findings to classify a patient as having definite, possible, or rejected diagnosis for Infective Endocarditis."

4. What are the red flags in the history and examination of a patient with suspected Infective Endocarditis?

- Potential Answer: "Red flags would include a new or changing heart murmur, signs of embolic events, persistent fevers, and evidence of septic phenomena."

5. How should blood cultures be performed in a patient with suspected Infective Endocarditis?

- Potential Answer: "Multiple blood cultures should be taken from different sites before starting antibiotics to increase the likelihood of identifying the causative organism."

Treatment:

Empirical antibiotic therapy should be initiated based on NICE and BNF guidelines, considering the patient's allergic history and culture results. Treatment often involves IV antibiotics like flucloxacillin or vancomycin (if MRSA is suspected or allergic to penicillin) for an extended period, often 4-6 weeks. The specific antibiotic regimen might be adjusted based on culture results and specialist advice.

Monitoring:

- Regular temperature and NEWS score monitoring.

- Monitoring of response to antibiotics, including improvements in fever and other systemic symptoms.

- Follow-up blood cultures to ensure sterility.

- Regular cardiac and renal function tests.

- Check for any signs of antibiotic toxicity or adverse reactions.

Prognosis:

- The prognosis of Infective Endocarditis depends on early diagnosis and prompt treatment, underlying health, and the virulence of the organism involved.

- Complications can include heart failure, embolic events, or persistent infection.

- Long-term outcomes are generally better in those without preexisting heart conditions and who receive timely treatment.

Differential diagnoses:

1. Rheumatic fever - less likely given the absence of recent pharyngitis and typical migratory polyarthritis.

2. Aortic dissection - lacks sudden chest pain or tearing sensation.

3. Sarcoidosis - systemic symptoms present but lacks typical pulmonary manifestations.

Keyword Filters:

Speciality Filter:

Cardiovascular; Infection; General Practice

Presenting Complaint Filter:

Fever; Heart Murmurs; Fatigue; Peripheral Oedema and Ankle Swelling

Condition Filter:

Infective Endocarditis

Location Filter:

Clinic

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_35\_Infective Endocarditis

Homepage Vignette:

## A 45-year-old male called Ajitkumar presents with fever and a new heart murmur.

Individual Page Vignette:

You are a doctor in a hospital cardiology unit. Ajitkumar, a 45-year-old software developer, is referred to your clinic with persistent fever and recent onset heart murmur.

Patient Name:

Ajitkumar Nnamani (A-jit-ku-mar N-na-ma-ni). He prefers to be called Ajit.

Age:

14/06/1979

Location:

Hospital Cardiology Clinic

Personality:

Ajit is analytical, with a preference for clear, logical explanations. He speaks formally and asks specific questions about his condition.

Presenting Complaint:

Ajit has come in with concerns about an intermittent fever he has been experiencing for the past two weeks and was recently told by his GP about a new heart murmur.

Quote:

"I've noticed I've been running a fever on and off lately, and my GP mentioned murmurs in my heart. What does that mean exactly?"

Symptoms:

- Chest pain or discomfort: Negative

- Shortness of breath: Positive

"I've been finding myself a bit more out of breath after walking up the stairs."

- Palpitations: Positive

"There are moments when my heart seems to flutter without reason."

- Syncope: Negative

- Nausea: Negative

- Vomiting: Negative

- Intermittent claudication: Negative

- Peripheral oedema: Negative

Quote:

"No, I haven't had any chest pains, feeling faint, nausea or swelling in my legs. Just this unusual breathlessness and the palpitations."

History of Presenting Complaint:

- Duration of symptoms: Two weeks - "This fever's been hanging around for two weeks now."

- Previous treatments: Paracetamol for fever - "I've been taking paracetamol, but the fever keeps spiking back up."

- Progression over time: Worsening - "It seemed mild at first, but now I'm feeling more run down."

- Frequency of symptoms: Intermittent fever - "The fever comes and goes, but it's rather persistent."

- Impact on daily life and activities of daily living: Affected - "I've had to take several days off work because of how I’ve been feeling."

- Impact on work: Time off - "As I said, the fever made me call in sick a few times this month."

- Impact on physical and mental wellbeing: Increasing concern - "I'm worried, and it's been stressful not knowing what's wrong with me."

Quote:

"It started off as something I could brush off, but lately, it's really thrown my routine off balance. The intermittent fevers are bothersome, and I'm worried about the heart murmurs."

Systemic Symptoms:

- Fatigue: Positive

"I feel drained, more so than usual. It's not just tiredness; it feels heavy."

- Fever: Positive

"As I've mentioned, I've got this recurrent fever."

- Night sweats: Negative

- Unintended weight loss: Negative

- Generalised weakness: Positive

"There's a general sense of weakness that's been concerning me."

- Malaise: Positive

"I've been feeling generally unwell, beyond just the fever."

- Bowel habits: Negative

- Urinary habits: Negative

- Changes in sleep: Negative

- Peripheral oedema: Negative

Quote:

"I've not had night sweats, my weight's been stable, and I've not noticed any changes in my sleep or toilet habits. I'm just tired, weak, and generally unwell feeling, and then there's the fever."

Past Medical History:

- Surgeries: Negative

- Hospitalizations: Negative

- Previous injuries or traumas: Negative

- Psychiatric or psychological history: Negative

- History of substance abuse or addiction: Negative

- Immunizations and vaccination history: Up to date - "I'm keen on keeping my jabs up to date."

- Any other relevant medical conditions or significant health events: Negative

Quote:

"I've been fairly healthy, all things considered. No hospital stays, surgeries, or any significant illnesses. I believe in prevention, hence I've always kept up with my vaccinations."

Drug History:

Amitriptyline 10 mg once daily for tension headaches, Ibuprofen as needed for occasional migraines.

Quote:

"Well, I occasionally take ibuprofen for my migraines, and I'm on a low dose of amitriptyline for tension headaches. Nothing beyond that."

Allergies:

No known allergies.

Quote:

"No, I've never had any allergic reactions to anything that I’m aware of."

Family History:

Mother with type 2 diabetes, father had a history of hypertension.

Quote:

"My mother manages diabetes, and my father, before he passed, had issues with high blood pressure."

Social History:

Lifestyle: Leads a sedentary lifestyle.

Occupation: Software developer.

Activities of Daily Living & Hobbies: Enjoys reading, puzzle-solving, and the occasional weekend chess game with friends.

Smoking: Non-smoker (0 pack years)

Alcohol: Drinks socially, around 5 units per week.

Recreational Drug Use: Negative.

Diet: Vegetarian.

Exercise: Limited to occasional walks.

Travel History: Visited Southeast Asia last year.

Sexual History: Married, monogamous.

Driving Status: Drives to work daily.

Cultural or Religious Practices: Practices meditation.

Recent Life Events: No recent significant life events.

Exposure to Hazards or New Environment: No new exposures.

Quote:

"I'm not one for sports, but I do enjoy a good book and brain teasers. I try to eat healthily – I've been a vegetarian for years – and though I don't work out, I make sure I'm not always stuck behind a screen. No wild travels recently - just a trip to Asia last year. As for my job, I'm a software developer; it involves a lot of sitting."

Ideas, Concerns, and Expectations:

Ideas: Concerned that the fever and heart murmur might indicate a serious underlying condition.

Concerns: Worried about potential long-term implications and impact on lifestyle and work.

Expectations: Seeks clear information on diagnosis and a comprehensive treatment plan.

Quote:

"I'm no medic, but I'm worried that these symptoms could be heralding something serious. I just want to understand what's going on and get a handle on it swiftly so I can return to my routine without this constant concern hanging over me."

Observations:

Respirations (Breaths/min): 20 (0 points)

Oxygen Saturation (%): 97% (0 points)

Air or Oxygen?: Room air (0 points)

Blood Pressure (mmHg): 125/85 (0 points)

Pulse (Beats/min): 88 (0 points)

Consciousness (AVPU): Alert (0 points)

Temperature (Celsius): 38.2 (1 point)

NEWS Total Score: 1 (The patient scores 1 point for a temperature of 38.1–39.0°C.)

\*\*Physical Examination:\*\*

General inspection:

- Kasem appears moderately unwell but in no acute distress. He has a low-grade fever.

Inspection of the hands:

- No stigmata of infective endocarditis such as splinter hemorrhages or Janeway's lesions. No peripheral signs of chronic liver disease, such as palmar erythema or Dupuytren’s contracture. Capillary refill time is less than 2 seconds.

Pulses and blood pressure:

- Regular and synchronized radial and carotid pulses. No radio-radial or radio-femoral delay is appreciated, suggesting no coarctation of the aorta. The collapsing pulse is not present, making significant aortic regurgitation less likely. Blood pressure is mildly elevated at 125/85 mmHg.

Jugular venous pressure:

- Not visibly elevated, the waveform is normal upon examination, and hepatojugular reflux is not elicited.

Inspection of the face:

- No dysmorphic features noted and no pallor is present in conjunctiva. Oral hygiene is good, and there is no central cyanosis. There are no petechiae or evidence of hemorrhage in the eyeballs, and the cornea is clear without Kayser-Fleischer rings or xanthelasma.

Close inspection of the chest:

- No visible chest deformities or scars from previous cardiac surgery. No pulsations indicative of aneurysmal dilation are visible.

Palpation of the chest:

- Normal apex beat with no displacement, suggesting no significant cardiomegaly. No parasternal heave or thrills palpated.

Auscultation of the chest:

- Presence of a new murmur heard best at the mitral area, indicating possible mitral regurgitation. No other murmurs, rubs, or gallops were noted.

Inspection of the back:

- No spinal deformities, masses, or scars visible.

Palpation of the back:

- No tenderness over the spine, and no sacral oedema observed, making significant heart failure unlikely.

Auscultation of the back:

- Clear breath sounds bilaterally. No crackles, wheeze, or rubs noted in the lung fields.

Examination of the legs:

- No signs of pitting oedema, which would suggest fluid overload. No signs of deep venous thrombosis.

\*\*Special Tests:\*\*

- Blood cultures x3, taking care to collect from different venipuncture sites.

- Transthoracic echocardiogram (TTE), following with transesophageal echocardiography (TEE) if TTE is inconclusive.

- Inflammatory markers including C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR).

- Testing for anemia, which may be present in chronic diseases like infective endocarditis (Full Blood Count).

\*\*Diagnostic Tests:\*\*

Blood Tests (Reference Ranges):

- Full Blood Count (FBC):

- Hemoglobin: 12 g/dL (13.8-17.2 g/dL) – mild anemia may be present.

- White Cell Count: Elevated with left shift (normal: 4.0-11.0 x10^9/L)

- Platelet Count: Within normal range or slightly decreased (150-400 x 10^9/L)

- Inflammatory Markers:

- CRP: Elevated (normal <10 mg/L)

- ESR: Elevated (normal 0-15 mm/hour for men)

- Renal Function Tests:

- Urea and creatinine: Slightly elevated which may indicate pre-renal azotemia in the context of infective endocarditis.

- eGFR: Decreased (<90 mL/min/1.73m^2)

Urine Analysis:

- Protein: Trace (Negative - Trace)

- Blood: Trace (Negative - Trace) – note that this may be a sign of renal involvement in infective endocarditis.

ECG:

- May show non-specific ST-T wave changes or signs of left ventricular hypertrophy.

Condition:

Infective Endocarditis

Patient Questions:

1. "Could you tell me what this heart murmur means, in simpler terms?"

- "A heart murmur is the sound of blood flowing more turbulently than usual through your heart. It can be due to several conditions, and we're investigating to find the exact cause in your case."

2. "Is this condition something that can be fixed, or will I have to live with it?"

- "Many causes of heart murmurs can be treated effectively, especially when caught early. We'll be aiming for the best possible outcome with treatment."

3. "What are the next steps, and how quick is the process?"

- "The next step involves further tests to confirm the diagnosis, which could include blood tests, an ECG, and an echocardiogram. The process will be performed as quickly as possible to ensure timely treatment."

Examiner Questions:

1. What is the typical clinical presentation of Infective Endocarditis?

- "Patients may present with a fever, heart murmur, symptoms of embolisation, and evidence of immune complex deposition such as Osler's nodes or Roth's spots."

2. What are the Duke criteria for the diagnosis of Infective Endocarditis?

- "The Duke criteria include major criteria such as positive blood cultures and evidence of endocardial involvement by echocardiography, and minor criteria like predisposing heart conditions, fever, vascular phenomena, and immunologic phenomena."

3. What antibiotics are commonly used to treat Infective Endocarditis, and for how long?

- "Treatment usually involves a combination of high-dose intravenous antibiotics like benzylpenicillin or vancomycin, typically for 4 to 6 weeks, depending on the causative agent and the patient’s response to treatment."

4. What is the role of surgery in the treatment of Infective Endocarditis?

- "Surgery may be needed in cases of heart failure, persistent infection despite antibiotics, recurrent emboli, or to repair damaged valves."

5. How should a patient with suspected Infective Endocarditis be managed while awaiting investigation results?

- "Patients should be hospitalized, with blood cultures taken before empiric antibiotic therapy is started, and they should be monitored for any complications."

6. What complications can arise from Infective Endocarditis?

- "Complications may include heart failure, embolic events leading to stroke or other organ infarction, abscess formation, and arrhythmias."

\*\*Treatment:\*\*

- Empirical antibiotic therapy may be initiated until pathogen identification and sensitivities are available from blood cultures.

- The choice of empirical antibiotics should be made following local antimicrobial guidelines and should cover a wide spectrum of organisms including Staphylococci, Streptococci, and Enterococci.

- Typical regimens may include a combination of intravenous vancomycin and gentamicin, or ampicillin for broad-spectrum coverage pending culture results.

- Antibiotic therapy duration usually ranges from 4 to 6 weeks, depending on the organism and response to therapy.

- Surgical intervention may be indicated if there are signs of heart failure, uncontrolled infection, or significant valve dysfunction.

\*\*Monitoring:\*\*

- Close monitoring of vitals, signs of heart failure, and embolic events.

- Follow-up blood cultures should be negative signaling effective bactericidal action of antibiotics.

- Regular monitoring of renal function and electrolytes due to the risk of nephrotoxicity with antibiotic regimens.

- Periodic echocardiograms to assess the effectiveness of treatment on valvular function and vegetation size.

\*\*Prognosis:\*\*

- The prognosis of infective endocarditis is variable and can be severe if not promptly treated.

- With proper and timely antibiotic treatment and adherence to management guidelines, the prognosis can be good, but relapse and complications can occur.

- Surgical intervention may improve outcomes in severe cases or when indicated by complications.

\*\*Differential diagnoses:\*\*

- Rheumatic heart disease: Less likely without a history of acute rheumatic fever.

- Nonbacterial thrombotic endocarditis (NBTE): Related to hypercoagulable states; less likely without known predisposing factors.

- Heart valve disease: Possible underlying cause of the murmur, but fever suggests an infectious etiology.

Speciality Filter: Cardiovascular;

Presenting Complaint Filter: Fever; Heart Murmurs;

Condition Filter: Infective Endocarditis;

Location Filter: Hospital Cardiology Clinic;

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_36\_Haemochromatosis

Homepage Vignette:

## A 45-year-old male called Ermir Krasniqi presents with joint pain and fatigue.

Individual Page Vignette:

You are a GP faced with a patient named Ermir Krasniqi, a 45-year-old, a professional chef, in your Clinic, complaining mainly of joint pain and unusual tiredness.

Patient Name:

Ermir Krasniqi (Pronunciation: ER-meer KRAHS-nee-kee); Ermir prefers to be called by his first name.

Age:

24/07/1979

Location:

Clinic

Personality:

Ermir is a thoughtful and articulate man. He communicates with precision, often pausing to find the exact word to describe his symptoms. Although he initially comes across as reserved, he opens up when discussing finer details, showcasing a surprisingly sharp wit.

Presenting Complaint:

Ermir reports ongoing joint discomfort and a level of fatigue that is unusual for him and that has been interfering with his ability to work.

Quote:

"I can't quite shake this weariness, it's like I've run a marathon without any training. And my joints, especially around the hands, are giving me gyp – it makes chopping onions a bit of an ordeal!"

Symptoms:

Site: The joints of the hands - "It's mainly my fingers and wrists. Feels like they're being squeezed in a vice."

Onset: Gradual - "It just crept up on me over the past few months, I didn't even realise until it started to affect my work."

Character: Aching - "It's a constant aching feel, gnawing at me."

Radiation: No radiation - (No quote necessary as it's a negative finding.)

Associated Symptoms: Fatigue - "Alongside the pain, I'm knocked out by this overwhelming tiredness."

Timing: Persistent - "It's there all the time, even when I'm not doing much with my hands."

Exacerbating and Relieving Factors: Worse with activity - "Using my hands a lot for cooking definitely makes it worse."

Severity: Moderate to severe - "I'd say a good six or seven out of ten on my worst day."

- Chest pain or discomfort: Negative

- Shortness of breath: Negative

- Palpitations: Negative

- Syncope: Negative

- Nausea: Negative

- Vomiting: Negative

- Intermittent claudication: Negative

- Peripheral oedema: Negative

Quote:

"I can't report any chest pains or issues breathing, just this relentless tiredness and the joint issues I mentioned."

History of Presenting Complaint:

Duration of symptoms: Several months - "It's been a few months since I first noticed something was off."

Previous treatments: None - "I haven't taken anything for it, I thought it would just go away."

Progression over time: Worsening - "It's definitely gotten worse, I can't chop vegetables as quickly as I used to."

Frequency of symptoms: Constant - "The discomfort is always there, some days better, some days worse."

Impact on daily life and activities of daily living: Significant - "It’s affecting my job; I don't have the energy to be on my feet all day."

Impact on work: Considerable - "Cooking at the restaurant has been a struggle, the pain slows me down."

Impact on physical and mental wellbeing: Noticeable - "I feel worn out and frustrated, like I'm not myself anymore."

Quote:

"The discomfort and fatigue are encroaching on my day-to-day life and it's really affecting how I function at work and at home. I just feel so drained all the time."

Systemic Symptoms:

- Fatigue: Positive - "I'm massively wiped out most days, no matter how much rest I get."

- Fever: Negative

- Night sweats: Negative

- Unintended weight loss: Negative

- Generalised weakness: Positive - "I feel weak like I've got nothing in the tank."

- Malaise: Negative

- Bowel habits: Negative

- Urinary habits: Negative

- Changes in sleep: Negative

- Peripheral oedema: Negative

Quote:

"The fatigue is the worst bit, I suppose; it's like my energy's been sapped away and my whole body feels weaker for it."

Past Medical History:

- Surgeries: Negative

- Hospitalizations: Negative

- Previous injuries or traumas: Negative

- Psychiatric or psychological history: Negative

- History of substance abuse or addiction: Negative

- Immunizations and vaccination history: Up to date - "Yes, I've had all my jabs, wouldn't risk skipping them."

- Any other relevant medical conditions or significant health events: Negative

Quote:

"I've been fortunate in that regard; no surgeries, hospital stays or any deep scars, mental or otherwise."

Drug History:

Ermir reports no current medication usage and denies any history of non-compliance, herbal supplements, contraception or HRT, non-pharmacological interventions, or overdose incidents.

Quote:

"I've never been much for popping pills. My health has been good till now, so I've had no need for any medicines really."

Allergies:

Ermir confirms that he has no known allergies.

Quote:

"No allergies to speak of - I can pretty much eat anything, and so far, no reactions tied to medications or anything like that."

Family History:

- Father underwent coronary artery bypass grafting - "Dad had a run-in with his ticker a few years ago, had to have the plumbing done."

- Maternal aunt with type 2 diabetes - "My aunt on my mum's side has to watch her sugar, got diagnosed with diabetes."

- No other known family history of genetic disorders or significant health events.

Quote:

"There's bits and bobs of illness in the family, but nothing too close to home except dad's heart op and my aunt's diabetes."

Social History:

Lifestyle: Consumes a balanced diet - "I try to eat healthily, occupational hazard of being a chef, I suppose."

Occupation: Head Chef at a local restaurant.

Activities of Daily Living & Hobbies: Enjoys cooking at home, reading, and occasional gardening - "Cooking is both work and play for me; I also like to get lost in a good book when I can."

Smoking: 5 pack years: "Yeah, I've had a cig or two in my time, gave them up five years ago."

Alcohol: 8 units per week: "I'll have the occasional pint, nothing excessive, just a couple during the weekend."

Recreational Drug Use: Denies any use.

Diet: Predominantly Mediterranean-style diet - "I stick largely to the Mediterranean way; it's healthy and delicious."

Exercise: Light exercise, mainly walking - "Most of my exercise comes from being on my feet all day in the kitchen; I go for a walk when I can."

Travel History: Last travelled abroad two years ago, no recent trips.

Sexual History: Married, monogamous relationship.

Driving Status: Full driving licence, no recent issues.

Cultural or Religious Practices: Not particularly religious or culturally inclined.

Recent Life Events: No significant recent events.

Exposure to Hazards or New Environment: Denies any recent exposures.

Quote 1 (Lifestyle & Hobbies): "I lead a fairly standard life, nothing too extravagant. Love to whip up some fancy dishes at home, and I've got a small garden that's my green haven."

Quote 2 (Alcohol & Exercise): "I'm not much of a drinker, just a few over the weekend. My job has me moving about a lot, so that's my daily workout sorted."

Quote 3 (Travel & recent life events): "I haven't been anywhere exciting recently, and life's been quite run-of-the-mill – well, apart from this ongoing slog of tiredness and joint pain."

Ideas, Concerns, and Expectations:

Ideas: Ermir suspects that his symptoms might be related to his diet or perhaps stress from work.

Concerns: He is worried that his condition will get in the way of his professional responsibilities and overall life enjoyment.

Expectations: Ermir hopes to receive treatment that will alleviate his symptoms quickly so that he can return to his normal level of functioning.

Quote (Ideas): "I'm wondering if it's something to do with what I'm eating, or maybe the long hours at the restaurant are finally catching up with me."

Quote (Concerns): "I'm a bit on edge about this whole thing. I can't afford to be this knocked out and hurting all the time, it's not just my job on the line but how I live my life."

Quote (Expectations): "I'm expecting some sort of remedy here, or at least to figure out what's going on. I need to get back on track, fast."

Observations:

Respirations (Breaths/min): 14

Oxygen Saturation (%): 98%

Air or Oxygen?: On room air

Blood Pressure (mmHg): 132/80

Pulse (Beats/min): 78

Consciousness (AVPU): Alert

Temperature (Celsius): 37.0°C

NEWS Total Score: 0

(Respirations, Oxygen Saturation, Air or Oxygen, Blood Pressure, Pulse, Consciousness, and Temperature all score 0 points, hence a NEWS Total Score of 0)

Physical Examination:

General inspection: No clinical signs suggestive of underlying pathology observed.

Objects or equipment: None relevant to current clinical status observed.

Inspection of the hands: No abnormalities noted.

Pulses and blood pressure: Regular radial pulse, no radio-radial delay, no collapsing pulse. Brachial pulse normal volume and character. Blood pressure is well-controlled. Carotid pulses normal.

Jugular venous pressure: JVP not raised; no hepatojugular reflux.

Inspection of the face: No pallor, corneal arcus or xanthelasma observed.

Close inspection of the chest: No visible pulsations or signs of previous surgery.

Palpation of the chest: Apex beat located in the 5th intercostal space, no heaves or thrills detected.

Auscultation of the chest: Normal heart sounds, no murmurs, added sounds, or radiation noted.

Inspection of the back: No deformities or scars.

Palpation of the back: No sacral oedema.

Auscultation of the back: Clear chest bilaterally, no crackles heard.

Examination of the legs: No pitting oedema, saphenous vein intact.

Special Tests: No special tests currently indicated for this patient.

Diagnostic Tests:

Blood Tests (Reference Ranges):

Full Blood Count (FBC):

Haemoglobin (Hb): 155 g/​L (Female: 115 - 165 g/​L, Male: 130 - 180 g/L)

Mean Corpuscular Volume (MCV): 89 fL (80 – 100 fL)

White Blood Cell Count: 7.2 x10^9/L (3.6 - 11.0 x10^9/L)

Platelets: 220 x10^9/L (140 - 400 x10^9/L)

Liver Function Tests:

Alanine transferase (ALT): 45 iu/L (3-40 iu/L)

Aspartate transaminase (AST): 30 iu/L (3-30 iu/L)

Alkaline phosphatase (ALP): 85 umol/L (30-100 umol/L)

Gamma glutamyl transferase (yGT): 40 u/L (8-60 u/L)

Bilirubin: 12 umol/L (3-17 umol/L)

Albumin: 40 g/L (35-50 g/L)

Iron Studies:

Ferritin: 400 ng/mL (Male: 25-350ng/mL)

Total Serum Iron: 28 μmol/​L (Male: 11.6-35.0 μmol/​L)

Transferrin: 2.4 g/L (2.0 – 3.6 g/L)

Transferrin Saturation: 60% (20 – 50%)

Total Iron Binding Capacity (TIBC): 50 μmol/​L (45 – 81 μmol/​L)

Other Haematology Tests:

Erythrocyte Sedimentation Rate (ESR): 20 mm/hr (Men: < (age / 2) mm/hr Women: < ((age + 10) / 2) mm/hr)

Other Biochemistry Tests:

CRP: 5 mg/L (< 10 mg/L)

Further diagnostic tests recommended based on clinical findings would be genetic testing for haemochromatosis (HFE gene mutation analysis).

Imaging Tests:

No imaging studies are initially indicated unless otherwise directed by the progression of the disease or the presence of symptoms that warrant further investigation.

Condition:

Haemochromatosis

Patient Questions:

1. "Could my diet have caused this?" - While diet can influence overall health, haemochromatosis is a genetic condition and not caused by dietary choices. However, certain foods rich in iron can exacerbate the iron overload, and you may be advised to limit them.

2. "What does this mean for my future as a chef?" - Management of haemochromatosis involves regular monitoring and treatment but does not typically prevent someone from continuing their professional career. Treatment should help alleviate symptoms to allow you to continue working as a chef.

3. "Are my family members at risk?" - Haemochromatosis is hereditary, so it’s recommended that your first-degree relatives get tested for the HFE gene mutation. This will help them take any necessary precautions if they also carry the gene.

4. "Will I need to take medication for the rest of my life?" - The main treatment for haemochromatosis is venesection, or blood removal, which may need to be performed regularly depending on your iron levels. Medication is not typically the primary treatment.

Examiner Questions:

1. "What is the inheritance pattern of haemochromatosis?" - Haemochromatosis is inherited in an autosomal recessive pattern, meaning a person needs to inherit two copies of the faulty gene to develop the condition.

2. "What are the complications of untreated haemochromatosis?" - Untreated haemochromatosis can lead to liver cirrhosis, diabetes, heart disease, and joint damage, among other complications.

3. "Why is it more common in males?" - Males are typically diagnosed more frequently and at an earlier age because women lose iron through menstruation and pregnancy, delaying the onset of iron accumulation.

4. "What is the role of genetic testing in the diagnosis of haemochromatosis?" - Genetic testing can confirm the presence of the HFE gene mutation, which is responsible for most cases of hereditary haemochromatosis.

5. "How do you monitor a patient with haemochromatosis?" - Monitoring includes regular blood tests to check iron levels, liver function tests, and assessment for any signs of organ damage.

6. "What dietary advice would you give a patient with haemochromatosis?" - Advise the patient to avoid iron supplements and excess vitamin C, which increases iron absorption, as well as reduce consumption of red meat and alcohol, especially beer, which contains non-haem iron.

Treatment:

- Confirm diagnosis of haemochromatosis through genetic testing for the HFE gene mutation.

- Initiate treatment with venesection (phlebotomy) to reduce iron levels, starting with weekly sessions until ferritin levels normalize (50-100 μg/L).

- Monitor full blood count, liver function tests, iron studies (ferritin, iron, and transferrin saturation) before each venesection and at regular intervals afterwards.

- Advise the patient to avoid dietary iron supplements and vitamin C in high doses, which can enhance iron absorption.

- Regularly screen for complications, including diabetes, liver cirrhosis, and heart disease, as part of the management of haemochromatosis.

- If venesection is contraindicated or the patient is unable to tolerate it, consider iron chelation therapy.

- In the case of established complications like arthritis, refer to the appropriate specialist for management (e.g. a rheumatologist for joint complications).

Monitoring:

- Check serum ferritin and transferrin saturation before each venesection session.

- Once target ferritin levels are achieved, monitor ferritin and transferrin saturation every 2-3 months.

- Liver function tests should be conducted annually or more frequently if liver damage is suspected.

- Screen for complications such as liver fibrosis/cirrhosis with imaging and, if clinically indicated, liver biopsy.

- Follow up after initiation of venesection should be scheduled weekly, then stretched to longer intervals as ferritin levels normalize.

- Regular evaluations for arthropathy are recommended as part of standard follow-up in patients with haemochromatosis.

Prognosis:

- With timely diagnosis and effective treatment, individuals with haemochromatosis can lead normal lives with a normal life expectancy.

- Disease progression can be halted, and some early symptoms may be reversible with the reduction of iron levels.

- Treatment reduces the risk of developing liver cirrhosis, heart disease, and other complications.

- Prognosis may vary due to the presence of organ damage at the time of diagnosis and the patient’s adherence to treatment protocols.

- Poor prognosis is often associated with late diagnose after significant organ damage has occurred.

Differential diagnoses:

1. Liver Disease - less likely given normal liver function tests.

2. Chronic inflammatory diseases (e.g., rheumatoid arthritis) - may present with similar symptoms but typically involve other clinical markers like positive rheumatoid factor or anti-CCP antibodies.

3. Thyroid disorders - can cause fatigue and joint pain; however, TFTs are normal in this case.

4. Diabetes mellitus - can present with fatigue and may cause joint stiffness, but fasting glucose is within normal range, making this diagnosis less likely.

Speciality Filter:

Gastrointestinal Including Liver; General Practice

Presenting Complaint Filter:

Fatigue; Joint Pain

Condition Filter:

Haemochromatosis

Location Filter:

Clinic

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

SW\_37\_Haemochromatosis

Homepage Vignette:

A 45-year-old male called Eyal Cohen presents with joint pain and fatigue.

Individual Page Vignette:

You are a General Practitioner and Eyal Cohen, a 45-year-old bank clerk, has come to your clinic complaining of persistent joint pain and profound fatigue.

Patient Name:

Eyal Cohen (Pronunciation: EYE-al KOH-hen, Prefers to be called Eyal)

Age:

12/09/1979

Location:

General Practice Clinic

Personality:

Eyal is a thoughtful and methodical person, often speaking in a measured tone. Despite his fatigue, he maintains a polite and cooperative demeanour. He has a high level of education and articulates his symptoms clearly.

Presenting Complaint:

Eyal reports experiencing persistent joint pain predominantly in his hands, accompanied by a general feeling of fatigue that has been worsening over the past few months.

Quote:

"It feels like my hands are stiff and achy most of the time, especially in the mornings. And this tiredness, it's just relentless, no matter how much I rest."

Symptoms:

- Site: Pain primarily in the joints of the hands. Quote: "My hands are where it hurts most, particularly the knuckles."

- Onset: Gradual onset over the past year. Quote: "I started noticing it around last year, but it's gotten worse lately."

- Character: Aching and stiffness. Quote: "My hands ache like I've been typing for hours, even when I haven't."

- Radiation: No radiation of pain. Quote: "No, the pain doesn't travel anywhere, just stays in my hands."

- Associated Symptoms: Fatigue. Quote: "I'm constantly exhausted, it's like my energy's been drained."

- Timing: Worse in the morning, persistent throughout the day. Quote: "Worst when I wake up, but doesn't really get much better as the day goes on."

- Exacerbating and Relieving Factors: Rest does not alleviate symptoms, and activity can worsen pain. Quote: "Resting doesn't help at all, and if I try to do anything, it just flares up."

- Severity: Described as persistently moderate, interfering with daily activities. Quote: "I’d say it's always there at a moderate level, making it hard to do my job and even simple things at home."

Chest pain or discomfort: Negative

Shortness of breath: Negative

Palpitations: Negative

Syncope: Negative

Nausea: Negative

Vomiting: Negative

Intermittent claudication: Negative

Peripheral oedema: Negative

Quote for joint pain: "It's mostly my hands that are affected, it's a constant ache and stiffness that seems to be there all the time now."

History of Presenting Complaint:

- Duration of symptoms: Progressively worsening over the past year.

- Previous treatments: None sought.

- Progression over time: Symptoms have steadily worsened.

- Frequency of symptoms: Daily.

- Impact on daily life and activities of daily living: Significant, affecting work and personal care.

- Impact on work: Hand pain and fatigue impairing work performance.

- Impact on physical and mental wellbeing: Causing frustration and lowering mood due to chronic nature of symptoms.

Quote: "It started off mild, but it's just been getting worse and now it's every day. I haven't tried any treatments yet; didn't think it was serious at first.

Systemic Symptoms:

Fatigue: Positive. Quote: "I'm always tired, no matter how much sleep I get."

Fever: Negative

Night sweats: Negative

Unintended weight loss: Negative

Generalised weakness: Negative

Malaise: Negative

Bowel habits: Negative

Urinary habits: Negative

Changes in sleep: Negative

Peripheral oedema: Negative

Quote for systemic symptoms: "The only systemic issue I’ve really noticed is this ongoing, unexplained fatigue."

Past Medical History:

Surgeries: Negative

Hospitalizations: Negative

Previous injuries or traumas: Negative

Psychiatric or psychological history: Negative

History of substance abuse or addiction: Negative

Immunizations and vaccination history: Up to date with routine vaccinations.

Any other relevant medical conditions or significant health events: Negative

Quote: "No surgeries, no hospital stays, no major health events that I can recall, thankfully."

Drug History:

No regular medications, allergies, or previous adverse drug reactions reported. He does not take any over-the-counter medications, supplements, or herbal remedies.

Quote: "I'm not taking any medications regularly and haven't had any issues with drugs in the past."

Allergies:

No known allergies.

Quote: "I've never had any allergic reactions to anything that I know of."

Family History:

No significant family history of medical conditions, surgeries, or hospitalisations known.

Quote: "As far as I know, there aren't any major health problems that run in the family."

Social History:

Lifestyle: Sedentary outside of work.

Occupation: Bank clerk.

Activities of Daily Living & Hobbies: Enjoys reading and crossword puzzles; no high impact activities.

Smoking: Non-smoker.

Alcohol: Drinks occasionally, approximately 4 units on the weekend.

Recreational Drug Use: Negative.

Diet: Balanced with a focus on home-cooked meals.

Exercise: Light walking during commutes, no structured exercise regimen.

Travel History: Not relevant.

Sexual History: Not relevant.

Driving Status: Drives to work daily.

Cultural or Religious Practices: Not relevant.

Recent Life Events: Not relevant.

Exposure to Hazards or New Environment: Not relevant.

Quote:

1. "I'm not much of an active person; I prefer a quiet evening with a good book."

2. "I'll have a drink or two on the weekends, but nothing excessive."

3. "I don't work out as such, but I'm on my feet a lot during my commute."

Ideas, Concerns, and Expectations:

Ideas: Eyal perceives his symptoms as possibly related to his sedentary work and lack of regular exercise.

Concerns: Worried that his symptoms could indicate a chronic condition affecting his ability to work and live normally.

Expectations: Hopes to receive an explanation for his symptoms and an effective treatment plan to manage and improve his condition.

Quote:

Ideas: "I was thinking maybe my joint pain is because I'm not active enough at work."

Concerns: "I'm quite worried it could be something serious, affecting my job and daily life."

Expectations: "I’m hoping you can explain what's wrong with me and help me get back to normal."

Observations:

Respirations (Breaths/min): 16 (0 points)

Oxygen Saturation (%): 98% on room air (0 points)

Blood Pressure (mmHg): 125/85 (0 points)

Pulse (Beats/min): 72 regular (0 points)

Consciousness (AVPU): Alert (0 points)

Temperature (Celsius): 36.7 (0 points)

NEWS Total Score: 0

((The NEWS total score is 0, meaning that all observations are within normal ranges and no points are scored for each parameter.))

Physical Examination:

General inspection: No signs suggestive of underlying pathology or equipment present.

Inspection of the hands: No colour changes or dermatological signs noted, normal capillary refill time.

Pulses and blood pressure: Radial and brachial pulses are normal and symmetrical.

Jugular venous pressure: Not elevated.

Inspection of the face: No pallor, cyanosis, or other pathological signs.

Close inspection of the chest: No deformities or visible pulsations.

Palpation of the chest: Apex beat locatable in the fifth intercostal space, no heaves or thrills.

Auscultation of the chest: Normal heart sounds, no added sounds or murmurs in any area.

Inspection of the back: No deformities or scars present.

Palpation of the back: No sacral oedema.

Auscultation of the back: Clear lung fields, no crackles or wheezes.

Examination of the legs: No pitting oedema, legs appear normal.

Special Tests:

Not applicable.

Diagnostic Tests:

Blood Tests (Reference Ranges):

Full Blood Count (FBC):

Haemoglobin (Hb): Result (Female: 115 - 165 g/​L, Male: 130 - 180 g/L)

Mean Corpuscular Volume (MCV): Result (80 – 100 fL)

White Blood Cell Count: Result (3.6 - 11.0 x10^9/L)

Platelets: Result (140 - 400 x10^9/L)

Urea and Electrolytes:

Sodium: Result (133–146 mmol/L)

Potassium: Result (3.5–5.3 mmol/L)

Calcium (adjusted): Result (2.2-2.6 mmol/L)

Magnesium: Result (0.7–1.0 mmol/L)

Urea: Result (2.5 – 7.8 mmol/L)

Creatinine: Result (Male: 59–104 μmol/L, Female: 45–84 μmol/ L)

Estimated Glomerular Filtration Rate (eGFR): Result (>90ml/min/1.73m3)

Liver Function Tests:

Alanine transferase (ALT): Result (3-40 iu/L)

Aspartate transaminase (AST): Result (3-30 iu/L)

Alkaline phosphatase (ALP): Result (30-100 umol/L)

Gamma glutamyl transferase (yGT): Result (8-60 u/L)

Bilirubin: Result (3-17 umol/L)

Albumin: Result (35-50 g/L)

Iron Studies:

Serum Ferritin: Result significantly elevated

Serum Iron: Result elevated

Total Iron Binding Capacity (TIBC): Result (45 – 81 μmol/​L)

Transferrin Saturation: Result elevated

Other Tests:

ECG (Electrocardiogram): Normal findings.

Imaging Tests:

MRI Scan of the liver: If indicated, to assess for iron overload, typically showing hepatic signal intensity changes consistent with increased iron deposition.

Condition:

Haemochromatosis

Patient Questions:

Q1: "Could this be something serious, like arthritis?"

A1: "While arthritis is a common condition that could cause similar symptoms, given the pattern of your joint pain and your fatigue, we should investigate for other conditions such as haemochromatosis, which can cause joint issues and tiredness."

Q2: "What are the tests you're considering, and what do they involve?"

A2: "We will start with a blood test to check your iron levels, liver function, and full blood count, which can help us identify any abnormalities associated with haemochromatosis."

Q3: "What happens if I do have haemochromatosis?"

A3: "If you have haemochromatosis, we can manage it with treatments like phlebotomy, which involves regularly removing a quantity of blood to reduce the iron in your body."

Q4: "Are there any lifestyle changes I need to make?"

A4: "If diagnosed with haemochromatosis, we will advise on dietary adjustments and recommend avoiding supplements containing iron or vitamin C, which can increase iron absorption."

Examiner Questions:

Q1: What is the pathophysiology behind Haemochromatosis?

A1: "Haemochromatosis is an inherited condition where there is excessive absorption of dietary iron leading to progressive iron deposition in organs such as the liver, pancreas, and heart."

Q2: Which gene is most commonly associated with Haemochromatosis?

A2: "The HFE gene is most commonly associated with Haemochromatosis, particularly the C282Y mutation."

Q3: What complications can arise from untreated Haemochromatosis?

A3: "Untreated Haemochromatosis can lead to liver cirrhosis, hepatocellular carcinoma, diabetes mellitus, heart disease, arthritis, and hypogonadotrophic hypogonadism."

Q4: How is Haemochromatosis diagnosed?

A4: "Haemochromatosis is diagnosed based on clinical features, elevated serum ferritin and transferrin saturation levels, and genetic testing for mutations in the HFE gene."

Q5: What is the first-line treatment for Haemochromatosis?

A5: "The first-line treatment is therapeutic phlebotomy to remove excess iron from the body, with the aim of maintaining serum ferritin within the normal range."

Q6: Are family members of a patient with Haemochromatosis at risk, and should they be screened?

A6: "First-degree relatives are at increased risk and should be offered genetic testing and screening for iron overload, as haemochromatosis is hereditary."

Treatment:

For the treatment of Haemochromatosis, according to NICE, CKS, and BNF guidelines, the approach is as follows:

- Phlebotomy is the mainstay of treatment, starting with weekly sessions to remove 500ml of blood until serum ferritin levels return to the lower normal limit.

- Maintain serum ferritin levels at 50–100 micrograms/L and transferrin saturation below 50% by continuing phlebotomy at a lower frequency.

- Avoid dietary supplements containing iron and excess vitamin C.

- Advice on avoiding alcohol or reducing intake, particularly in those with liver damage.

- Monitor liver function tests and screen for hepatocellular carcinoma in those with cirrhosis.

- Initiate treatment for any complications such as diabetes, arthritis, and hypogonadism.

Monitoring:

- Regular monitoring of serum ferritin and transferrin saturation levels to ensure they remain within the target range.

- Liver function tests and screening for cirrhosis or hepatocellular carcinoma in patients with elevated liver enzymes.

- Screening for associated conditions such as diabetes, hypogonadism, and cardiac complications.

- Follow-up visits are typically scheduled every few months during the initial phase of treatment to monitor response and adjust phlebotomy frequency accordingly.

- Once stable, the frequency of monitoring can be reduced to every 6 to 12 months.

- Referral to a haematologist is indicated for complex cases or for genetic counselling.

Prognosis:

- With early diagnosis and treatment, individuals with Haemochromatosis can have a normal life expectancy and good quality of life.

- Prognosis may be worsened by the presence of organ damage, especially cirrhosis or diabetes mellitus.

- Regular therapeutic phlebotomy usually results in improvement of symptoms like fatigue and joint pain.

- The risk of developing cirrhosis and other complications is significantly reduced with treatment.

- Genetic factors, compliance with treatment, and presence of other health conditions can influence the response to treatment and overall prognosis.

Differential diagnoses:

1. Rheumatoid arthritis: Less likely due to lack of inflammatory signs and symmetry of joint involvement in haemochromatosis.

2. Osteoarthritis: Considered, but systemic symptoms such as profound fatigue are less common in osteoarthritis.

Keyword Filters:

Speciality Filter:

Clinical Haematology; Gastrointestinal Including Liver; General Practice; Medicine of Older Adult;

Presenting Complaint Filter:

Fatigue; Joint Pain;

Condition Filter:

Haemochromatosis;

Location Filter:

General Practice ;

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_37\_Haemochromatosis

Homepage Vignette:

## A 42-year-old male called Kasra Hashemi presents with fatigue and joint pain.

Individual Page Vignette:

You are a doctor in a General Practice setting. Kasra Hashemi, a 42-year-old public relations specialist, comes to your clinic complaining of persistent fatigue and joint pain that has been gradually worsening over the past few months.

Patient Name:

Kasra Hashemi (Pronunciation: KAHZ-rah Hah-SHEM-ee). Kasra prefers to be called Kasra.

Age:

15/06/1981

Location:

General Practice

Personality:

Kasra is an articulate speaker known for his meticulousness in his professional life. He speaks with precision and clarity, often choosing his words carefully due to his public relations background.

Presenting Complaint:

Kasra has been experiencing progressive fatigue that seems disproportionate to his activity levels. He has also been experiencing discomfort in his joints, particularly in the hands.

Quote:

"It's quite unlike me to feel this tired without having really exerted myself, and this joint discomfort seems to be persistent and worsening."

Symptoms:

SOCRATES:

Site:

Answer: Fatigue is generalised; joint pain is mainly in the hands.

Quote: "I feel exhausted all over, but my hands ache the most, specifically my knuckles."

Onset:

Answer: Gradual onset over the last few months.

Quote: "This tiredness and joint pain crept up on me slowly, but I've really noticed it in the past few months."

Character:

Answer: Fatigue is relentless; joint pain is aching.

Quote: "My energy levels are consistently low, and there's this nagging ache in my hands that won't let up."

Radiation:

Answer: No radiation; pain is localised to the joints in the hands.

Quote: "The pain is mostly in my hands and doesn't seem to spread from there."

Associated Symptoms:

Answer: Reports of increased skin pigmentation.

Quote: "I've also noticed my skin looks more tanned than usual, even though I haven't been out in the sun much."

Timing:

Answer: Constant symptoms with no variation throughout the day.

Quote: "Whether it's morning or night, I'm tired, and my hands are sore."

Exacerbating and Relieving Factors:

Answer: Not influenced by activity; no relieving factors mentioned.

Quote: "Nothing I do seems to make it any better or worse; it's just constantly there."

Severity:

Answer: Significant impact on daily activities.

Quote: "It's really getting in the way of my usual routine; it's quite severe."

Positive/Negative Findings:

- Chest pain or discomfort: Negative.

- Shortness of breath: Negative.

- Palpitations: Negative.

- Syncope: Negative.

- Nausea: Negative.

- Vomiting: Negative.

- Intermittent claudication: Negative.

- Peripheral oedema: Negative.

History of Presenting Complaint:

- Duration of symptoms: Several months.

- Previous treatments: Over-the-counter analgesics with minimal relief.

- Progression over time: Gradual worsening.

- Frequency of symptoms: Constant.

- Impact on daily life and activities of daily living: Significant, affecting work and social activities.

- Impact on work: Reduced productivity and increased sick days.

- Impact on physical and mental wellbeing: Increased stress and frustration.

Quote:

"It's been a good few months now. I've popped a few painkillers here and there, but they've hardly touched it. The pain and fatigue seem to be ramping up, and it's taking its toll on my life and work."

Systemic Symptoms:

- Fatigue: Positive.

- Fever: Negative.

- Night sweats: Negative.

- Unintended weight loss: Negative.

- Generalised weakness: Negative.

- Malaise: Positive.

- Bowel habits: Normal.

- Urinary habits: Normal.

- Changes in sleep: Negative.

- Peripheral oedema: Negative.

Quote:

"I feel worn out all the time, and there's an overall sense of not being well, but I don't have any fever or night sweats, and my weight has stayed the same. My toilet habits haven't changed either, and I don't swell up."

Past Medical History:

- Surgeries: Negative.

- Hospitalizations: Negative.

- Previous injuries or traumas: Negative.

- Psychiatric or psychological history: Negative.

- History of substance abuse or addiction: Negative.

- Immunizations and vaccination history: Up to date.

- Any other relevant medical conditions or significant health events: Negative.

Quote:

"To be honest, I've never had to spend any time in hospital, no operations or anything like that. I've been in good health up until now, really."

Drug History:

Kasra reports occasional use of over-the-counter analgesics such as ibuprofen for his joint pain. No history of medication non-compliance, use of herbal supplements, or alternative therapies. Not on any contraceptive or hormone replacement therapy, and no past overdose incidents.

Quote:

"Only the usual headache pills when the joint pain gets bothersome. No fancy supplements or anything like that."

Allergies:

Kasra has no known allergies to medications, anaesthetics, foods, or other allergens.

Quote:

"I've never had any allergic reactions, thankfully."

Family History:

- Father had type 2 diabetes.

- Mother has hypertension.

- No known genetic conditions or significant health events in extended family.

Quote:

"Dad has diabetes, and mum's on blood pressure tablets, but that's about it for family health troubles."

Social History:

Lifestyle: Kasra has a relatively sedentary lifestyle, primarily due to a desk-based occupation, with stress as a contributing factor due to his job's demands.

Occupation: Public relations specialist.

Activities of Daily Living & Hobbies: Reading and cinema.

Smoking: No smoking history (0 pack-years).

Alcohol: Moderate alcohol consumption, approx. 10 units per week.

Recreational Drug Use: Denies any recreational drug use.

Diet: Non-vegetarian, tries to maintain a balanced diet.

Exercise: Minimal, mostly walking during his commute.

Quotes:

1. "My job keeps me behind a desk most days, but I do get around walking to and from the office and around during work."

2. "I'll have a pint or two on the weekend, nothing excessive, just a few to unwind."

3. "I try to eat a bit of everything—meat, veg, fruit, carbs—the whole lot. Not much of a gym-goer, though."

Ideas, Concerns, and Expectations:

Ideas:

Kasra thinks it might be a vitamin deficiency or stress-related but is open to other possibilities due to the joint involvement.

Quote:

"I've wondered if maybe I'm running low on some essential vitamins, or perhaps it's just the stress catching up. The joint pain's puzzling, though; that doesn't fit with stress, does it?"

Concerns:

Kasra is increasingly worried that his symptoms could signify a serious health issue that may affect his long-term wellbeing.

Quote:

"I'm getting concerned; what if this is something chronic or a sign of a serious disease? It's affecting my life more than I'd like to admit."

Expectations:

Kasra is looking for a clear diagnosis and effective treatment. He hopes to resume his normal activities without exhaustion or pain.

Quote:

"I really need to know what's going on with my body; I'm hoping you can pinpoint the problem and fix it so I can get back to my usual self."

Observations:

Respirations (Breaths/min): 14 (0 points).

Oxygen Saturation (%): 98% on room air (0 points).

Blood Pressure (mmHg): 128/82 mmHg (0 points).

Pulse (Beats/min): 78 (0 points).

Consciousness (AVPU): A (Alert) (0 points).

Temperature (Celsius): 36.8°C (0 points).

NEWS Total Score: 0

(No additional points were scored as all parameters are within normal ranges.)

Physical Examination:

General inspection:

- No cyanosis, shortness of breath, pallor, malar flush, or oedema noted.

- No medical equipment, mobility aids, or prescriptions observed.

Inspection of the hands:

- No tar staining, xanthomata, arachnodactyly, clubbing, splinter haemorrhages, Janeway's lesions, Osler's nodes, or koilonychia. Increased skin pigmentation noted.

- Capillary refill time normal.

Pulses and blood pressure:

- Radial pulse regular rate and rhythm, no radio-radial delay.

- Brachial pulse normal volume and character.

Jugular venous pressure:

- Jugular venous pressure within normal limits.

Inspection of the face:

- No conjunctiva pallor, corneal arcus, xanthelasma, or Kayser-Fleischer rings.

- No central cyanosis, angular stomatitis, or significant dental issues.

Palpation of the chest:

- Apex beat palpable within the normal position.

- No heaves or thrills detected.

Auscultation of the chest:

- Heart sounds regular with no added sounds or murmurs in all auscultated areas.

Examination of the legs:

- No pitting oedema or evidence of saphenous vein harvesting.

Diagnostic Tests:

Blood Tests (Reference Ranges):

Complete blood tests focused on indicators of haemochromatosis, such as iron studies and liver function tests.

Imaging Tests:

Liver ultrasound may be indicated to assess for any hepatic changes related to iron overload.

Other Tests:

ECG to rule out any cardiac involvement from iron deposition.

Condition:

Haemochromatosis

Patient Questions:

1. "Could all this tiredness simply be because I'm overworking myself?"

Possible answer: "While stress and overwork can contribute to fatigue, your joint pain, along with your other symptoms, suggests that we should investigate other underlying causes as well."

2. "What kinds of tests are you thinking of doing?"

Possible answer: "I would recommend some blood tests to check your iron levels, liver function, and perhaps a scan of your liver to check for any signs of iron overload. These will help us make an accurate diagnosis."

3. "If this turns out to be haemochromatosis, what exactly does that mean for me?"

Possible answer: "Haemochromatosis is a condition that causes your body to absorb too much iron from food. The excess iron is then deposited in various organs, which can lead to problems. However, it's manageable with treatment, and we can discuss this in more detail if your test results indicate this condition."

Examiner Questions:

1. What is the pathophysiology of haemochromatosis?

Possible answer: "Haemochromatosis is typically an inherited condition where there is excessive absorption of dietary iron, leading to iron overload and deposition in various organs, potentially causing organ damage."

2. What are some complications associated with untreated haemochromatosis?

Possible answer: "Complications can include liver cirrhosis, diabetes, heart disease, and arthropathy, among others."

3. Why is it important to consider family history in a case of suspected haemochromatosis?

Possible answer: "Haemochromatosis is often hereditary, so a family history might indicate a genetic predisposition to the condition and is important for the potential screening of family members."

4. How would you manage a patient diagnosed with haemochromatosis?

Possible answer: "Management involves regular venesection to reduce iron levels, monitoring of iron stores and organ function, and potentially chelation therapy if venesection is not suitable."

Treatment:

Management of haemochromatosis typically includes:

- Therapeutic venesection: Initially, venesection of 450-500 mL of blood may be performed weekly until serum ferritin levels are within the normal range.

- Long-term maintenance: Once the iron levels are controlled, less frequent venesection may be required (every 2-4 months) to maintain normal iron levels.

- Diet: Advise on dietary modification to reduce iron intake, such as avoiding excess red meat and vitamin C supplements that can increase iron absorption.

- Alcohol: Limit alcohol intake as it can increase liver damage risk in people with haemochromatosis.

Monitoring:

- Monitor serum ferritin and transferrin saturation regularly.

- Annual liver function tests to check for any liver damage.

- Regular assessment for signs and symptoms of iron overload complications, such as diabetes, heart problems, and liver cirrhosis.

- Scheduling follow-up visits initially every 3-6 months and then annually once iron levels are stable.

Prognosis:

- With early detection and treatment, individuals with haemochromatosis can have a normal life expectancy.

- Regular treatment significantly reduces the risk of organ damage.

- Prognostic factors include patient compliance with venesection, the presence of organ damage at diagnosis, and whether any complications have developed.

Differential Diagnoses:

1. Chronic liver disease: Less likely due to lack of other liver disease symptoms such as jaundice.

2. Rheumatoid arthritis: Less likely given the absence of symmetric joint involvement and the absence of inflammatory signs.

3. Thyroid disorders: Less likely due to normal pulse and absence of specific thyroid dysfunction symptoms.

Keyword Filters:

Speciality Filter:

Gastrointestinal Including Liver ; General Practice ; Clinical Haematology

Presenting Complaint Filter:

Fatigue ; Joint Pain

Condition Filter:

Haemochromatosis

Location Filter:

General Practice

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_38\_Haemochromatosis

Homepage Vignette:

## A 37-year-old male called Janko Vuković presents with joint pain and fatigue.

Individual Page Vignette:

You are a General Practitioner and Janko Vuković, a 37-year-old mechanical engineer, comes to your practice in the local Clinic. He reports significant fatigue and persistent pain in his hands and knees.

Patient Name:

Janko Vuković [YAHN-koh VOO-koh-vitch], prefers to be called Janko.

Age:

09/02/1987

Location:

Clinic

Personality:

Janko is articulate and addresses his concerns logically, reflecting his engineering background. Despite his technical nature, he expresses frustration over his symptoms, which is evident in his strained tone.

Presenting Complaint:

Janko has come to the clinic concerned about his ongoing joint pain and unusual fatigue that does not improve with rest.

Quote:

"I can't seem to shake off this bone-deep weariness, no matter how much I sleep. And my hands and knees, they're achy all the time. It's making it tough to focus at work."

Symptoms:

- Site: Janko complains of pain in his hands and knees. Quote: "The ache is right here in my knuckles and knees. It's like a gnawing feeling that won't let up."

- Onset: The pain in his joints began subtly a few months ago. Quote: "I first noticed the pain a few months back, but it was mild then. It only started to get worse recently."

- Character: He describes the pain as a continuous dull ache. Quote: "It's not a sharp pain but a constant dull one that's always there."

- Radiation: The pain does not radiate. Quote: "No, the pain stays put in my knees and hands; it doesn't shoot anywhere else."

- Associated Symptoms: He has also been feeling unusually tired. Quote: "I'm not just talking about being a bit tired. I mean I feel completely drained out."

- Timing: Janko reports the pain is present throughout the day, with no specific pattern. Quote: "There's no particular time of day when it's bad; it's just always there."

- Exacerbating and Relieving Factors: Nothing seems to relieve the pain, and it is not exacerbated by any specific activity. Quote: "I haven't found anything that makes it better or worse, it's just constantly bothering me."

- Severity: He rates the pain as 6/10. Quote: "On a scale of ten, it's been at a steady six."

- Chest pain or discomfort: Negative finding.

- Shortness of breath: Negative finding.

- Palpitations: Negative finding.

- Syncope: Negative finding.

- Nausea: Negative finding.

- Vomiting: Negative finding.

- Intermittent claudication: Negative finding.

- Peripheral oedema: Negative finding.

Quote:

"Fortunately, I haven't had chest pains or trouble breathing, and no issues with my heart that I've noticed. No swelling in my legs either."

History of Presenting Complaint:

- Duration of symptoms: Symptoms started a few months ago. Quote: "These problems started cropping up a couple of months back."

- Previous treatments: Janko has not sought any previous treatment. Quote: "I haven't been to see a doctor about this until now; thought I could wait it out."

- Progression over time: Symptoms have gradually worsened. Quote: "It's been like a creeping tide, getting worse bit by bit."

- Frequency of symptoms: Symptoms are constant. Quote: "It's like a relentless drumbeat, constantly there."

- Impact on daily life and activities of daily living: Significant impact. Quote: "It's making my day-to-day tasks quite challenging."

- Impact on work: Janko’s work efficiency has been affected. Quote: "My work requires precision, and this pain and tiredness are messing with my concentration."

- Impact on physical and mental wellbeing: Negative impact as patient expresses frustration. Quote: "I feel worn out physically and it's starting to get me down mentally too."

Systemic Symptoms:

- Fatigue: Positive finding. Quote: "I feel wiped out all the time."

- Fever: Negative finding.

- Night sweats: Negative finding.

- Unintended weight loss: Negative finding.

- Generalised weakness: Positive finding. Quote: "My whole body feels weak, like I'm running on a drained battery."

- Malaise: Negative finding.

- Bowel habits: Negative finding.

- Urinary habits: Negative finding.

- Changes in sleep: Negative finding.

- Peripheral oedema: Negative finding.

Quote:

"I'm just so tired, and I feel weaker than usual, but no, I've not had any fever, changes in bowel or urinary habits, or swelling."

Past Medical History:

- Surgeries: No previous surgeries.

- Hospitalizations: No hospitalizations.

- Previous injuries or traumas: No serious injuries.

- Psychiatric or psychological history: No psychiatric history.

- History of substance abuse or addiction: No substance abuse.

- Immunizations and vaccination history: Up to date with vaccinations.

- Any other relevant medical conditions or significant health events: None reported.

Quote:

"No operations or hospital stays for me, and I've never broken a bone. I keep up with my jabs, and I steer clear of drugs."

Drug History:

Janko takes ibuprofen occasionally for his joint pain, without much relief. He does not use any other medications or supplements.

Quote:

"I've tried taking ibuprofen when the pain gets bad, but it doesn't seem to do much."

Allergies:

Janko reports no allergies or intolerances.

Quote:

"As far as I know, I'm not allergic to anything."

Family History:

Janko's father has type 2 diabetes, and his mother has high blood pressure. There is no known history of haemochromatosis or other significant diseases in the family.

Quote:

"My dad has been dealing with diabetes, and my mum takes tablets for her blood pressure, but nothing like what I've got."

Social History:

Lifestyle: Janko enjoys reading and tinkering with mechanical projects in his free time.

Occupation: Mechanical engineer.

Activities of Daily Living & Hobbies: He is independent in his activities of daily living.

- Smoking: Non-smoker.

- Alcohol: Drinks socially, about 5 units per week.

- Recreational Drug Use: None.

- Diet: Balanced diet with no known deficiencies.

- Exercise: Walks daily, approximately 30 minutes.

Travel History: No recent travel.

Sexual History: Heterosexual, in a long-term monogamous relationship, uses condoms.

Driving Status: Drives, no recent incidents.

Cultural or Religious Practices: Non-specific.

Recent Life Events: No significant recent life events.

Exposure to Hazards or New Environment: No known exposure.

Quote 1:

"I enjoy my work as an engineer, and outside of that, I like to unwind with a good book or mess around with mechanical projects. I don't smoke, and I keep my drinking to the weekends."

Quote 2:

"My diet's pretty decent; I definitely get my greens in. I've got a partner, and we're careful, you know. As for exercise, I like to take long walks, helps me clear my head."

Quote 3:

"I've been too exhausted lately to even think about travel. My daily drives scare me a little now with how tired I get, and I've been avoiding hazardous stuff."

Ideas, Concerns, and Expectations:

Ideas: Janko has read about various conditions online and is concerned that his symptoms might indicate something serious like rheumatoid arthritis.

Quote: "I've been doing some digging on the internet, and it's got me worried. Could this be something like arthritis, or worse?"

Concerns: Janko is most worried about the potential long-term impact on his ability to work and fears an underlying chronic condition.

Quote: "It's the long game that's worrying me. If this is chronic, what's it going to mean for my career, my life?"

Expectations: He expects a thorough examination and possibly some tests to investigate the cause of his symptoms, and he hopes for effective treatment options.

Quote: "I hope we can get to the bottom of this with some exams or scans, maybe? I just want some relief that actually works."

Observations:

Respirations (Breaths/min): 16 (0 points)

Oxygen Saturation (%): 98 (0 points)

Air or Oxygen?: On room air (0 points)

Blood Pressure (mmHg): 128/84 (0 points)

Pulse (Beats/min): 72 (0 points)

Consciousness (AVPU): Alert (0 points)

Temperature (Celsius): 36.7 (0 points)

NEWS Total Score: 0 (No points have been scored as all observations are within normal ranges.)

Physical Examination:

General inspection:

- No clinical signs of underlying pathology or objects around the patient indicating medical history.

Inspection of hands:

- No pronounced changes noted. Janko's hands appear normal, without any visible deformities or signs suggestive of arthropathy.

Pulses and blood pressure:

- Radial, brachial, and carotid pulses are normal, with no radio-radial delay or abnormal pulse volume.

- Blood pressure in both arms is within normal limits.

Jugular venous pressure:

- Jugular venous pressure within normal limits.

Inspection of the face:

- Eyes and mouth normal without noteworthy findings.

Close inspection of the chest:

- No visible chest deformities or pulsations.

Palpation of the chest:

- Apex beat located normally, no heaves or thrills felt.

Auscultation of the chest:

- No added sounds or murmurs detected in any of the cardiac auscultation areas.

- Lung fields clear with no added sounds.

Examination of the legs:

- No pitting oedema or evidence of saphenous vein harvesting.

Special Tests:

- No special tests have been conducted at this stage.

Diagnostic Tests:

Blood Tests (Reference Ranges):

Full Blood Count (FBC):

Haemoglobin (Hb): Result (130 - 180 g/L) - elevated readings could suggest polycythemia often associated with haemochromatosis.

Mean Corpuscular Volume (MCV): Result (80 – 100 fL)

White Blood Cell Count: Result (3.6 - 11.0 x10^9/L)

Platelets: Result (140 - 400 x10^9/L)

Urea and Electrolytes:

Sodium: Result (133–146 mmol/L)

Potassium: Result (3.5–5.3 mmol/L)

Liver Function Tests:

Transferrin Saturation: Result (typically >45%) - Elevated levels are a hallmark of haemochromatosis.

Ferritin: Result (Males: 30–400 μg/L) - Elevated levels expected in haemochromatosis.

Other Tests:

MRI Scan of the liver: Detection of iron overload consistent with haemochromatosis.

Genetic Testing: Positive for C282Y mutation on the HFE gene.

Condition:

Haemochromatosis

Patient Questions:

1. "So, what does all this mean? Do I have arthritis or something else?"

Answer: "Your symptoms and the tests we've done are actually suggesting something called haemochromatosis. It's a condition where your body stores too much iron. We'll need to do a few more tests to confirm it."

2. "Is haemochromatosis serious? Can it be cured?"

Answer: "Haemochromatosis is a chronic condition, but it's treatable. With regular treatment, many people live healthy lives."

3. "What's the treatment going to be like? Will I be able to get back to my normal self?"

Answer: "The main treatment is to remove the excess iron from your body, which we typically do through a procedure called venesection. With treatment, your symptoms should improve."

4. "Will I have to take medication for the rest of my life?"

Answer: "You may not need medication, but regular monitoring and possibly periodic venesection will be part of your long-term management."

Examiner Questions:

1. What is the pathophysiology behind haemochromatosis?

Answer: "Haemochromatosis is typically caused by genetic mutations that affect iron regulation, leading to increased absorption of iron from the diet and subsequent iron overload in various organs."

2. How does haemochromatosis typically present?

Answer: "Patients can present with a range of symptoms, commonly including joint pain, fatigue, liver dysfunction, diabetes, and skin pigmentation."

3. What are the long-term complications associated with untreated haemochromatosis?

Answer: "If left untreated, haemochromatosis can lead to serious complications like cirrhosis, diabetes, heart failure, and arthropathy."

4. Which genetic mutations are associated with haemochromatosis and how are they inherited?

Answer: "The most common mutations are C282Y and H63D in the HFE gene. Haemochromatosis is typically inherited in an autosomal recessive pattern."

5. What other conditions should be included in the differential diagnosis for a patient presenting with joint pain and fatigue?

Answer: "Other conditions could include rheumatologic diseases like rheumatoid arthritis, metabolic conditions such as thyroid disorders, and chronic infections."

Treatment:

1. Confirm diagnosis through genetic testing and additional blood tests, including ferritin, transferrin saturation, and liver function tests.

2. Initiate treatment with venesection to reduce iron stores. The frequency may vary, beginning with once a week until ferritin levels normalise.

3. Monitor serum ferritin and transferrin saturation regularly, with the aim to maintain ferritin at 50-100 μg/L.

4. Encourage the patient to avoid iron supplements and reduce alcohol consumption, which may increase iron absorption.

5. Education on the genetic nature of the disease and the possibility of family screening.

Monitoring:

- Regular monitoring of ferritin levels to ensure they remain within the target range.

- Periodic liver function tests to monitor for any liver damage.

- Annual assessment for liver fibrosis or cirrhosis in patients with significantly elevated ferritin.

- Regular follow-up appointments every 3 to 6 months to monitor for symptom improvement and adjust treatment frequency as needed.

- Consider referral to a hepatologist or haematologist for patients with severe disease or those who develop complications.

Prognosis:

- With early diagnosis and regular treatment, most individuals with haemochromatosis can have a normal life expectancy without developing complications.

- Complications such as liver cirrhosis, diabetes, and heart disease can impact prognosis if the condition is diagnosed late or not adequately treated.

- Regular venesection can prevent most complications and improve quality of life if started before organ damage occurs.

Differential diagnoses:

1. Rheumatoid arthritis: Less likely due to the absence of characteristic symptoms like morning stiffness, symmetric arthropathy, and serological markers.

2. Chronic fatigue syndrome: Less likely due to the presence of iron overload symptoms not typically seen in this condition.

3. Hepatitis: Can present with fatigue but would typically have abnormal liver enzymes and potentially additional signs of liver disease.

4. Hyperthyroidism: Can cause fatigue and joint pain but would have other signs like weight loss, palpitations, and hyperreflexia, which are not present here.

Speciality Filter:

General Practice; Clinical Haematology; Endocrine and Metabolic; Gastrointestinal Including Liver

Presenting Complaint Filter:

Fatigue; Joint Pain;

Condition Filter:

Haemochromatosis;

Location Filter:

Clinic;

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_39\_EssentialOrSecondaryHypertension

Homepage Vignette:

## A 48-year-old male called Abioye Ajayi presents with elevated blood pressure.

Individual Page Vignette:

You are a General Practitioner. Abioye Ajayi, a 48-year-old Financial Analyst, comes into your clinic located in the heart of a busy city, presenting with concerns about elevated blood pressure readings at home.

Patient Name:

Abioye Ajayi (Pronunciation: Ah-bee-oh-ye Ah-jah-yee). Prefers to be called Ajayi.

Age:

16/06/1976

Location:

General Practice

Personality:

Ajayi is an analytical thinker, speaks in a methodical manner, and often provides detailed accounts of his health-related concerns. He values evidence-based explanations and demonstrates an appreciable knowledge of health due to his own reading. He seems slightly anxious but tries to maintain a composed appearance.

Presenting Complaint:

Ajayi reports having noticed increased blood pressure readings whilst using his home monitor over the past two weeks.

Quote:

"I've been keeping an eye on my blood pressure, and the readings have been consistently higher than usual. This got me a bit worried, and I thought I should get it checked out professionally."

Symptoms:

Site: General – no specific site for hypertension

Quote: "There isn't a particular spot I feel anything; it's more about the numbers I've seen on my blood pressure monitor."

Onset: Gradual over the past two weeks

Quote: "Over the last couple of weeks, my readings have been creeping up."

Character: Non-specific, as hypertension is often asymptomatic

Quote: "I can't say I feel unwell or any different; it's just the numbers that are concerning me."

Radiation: Does not apply to hypertension

Quote: "There's nothing that spreads or radiates; it's just high blood pressure."

Associated Symptoms: None reported

Quote: "Apart from the high readings, I can't say I've noticed any other symptoms."

Timing: Persistent elevated readings over the past two weeks

Quote: "It's been like this for about two weeks now, every time I check."

Exacerbating and Relieving Factors: Not identified

Quote: "I haven't noticed anything that makes it better or worse."

Severity: Not applicable

Quote: "I only know it's potentially serious because of the readings, not because of how I feel."

State the positive or negative finding as a list for all the findings below for full questioning around the topic including about:

- Chest pain or discomfort: Negative

- Shortness of breath: Negative

- Palpitations: Negative

- Syncope: Negative

- Nausea: Negative

- Vomiting: Negative

- Intermittent claudication: Negative

- Peripheral oedema: Negative

History of Presenting Complaint:

Duration of symptoms: Two weeks

Quote: "I've been noticing these high readings for the last two weeks."

Previous treatments: None for hypertension

Quote: "I haven't taken anything for blood pressure before; this is new to me."

Progression over time: Gradual increase in blood pressure readings

Quote: "The numbers have been gradually getting higher, which is why I'm here."

Frequency of symptoms: Consistently elevated readings

Quote: "Every time I've checked, the numbers have been high."

Impact on daily life and activities of daily living: Minimal, as Ajayi is asymptomatic

Quote: "It hasn't really affected my day-to-day activities, but it's on my mind a lot."

Impact on work: Slightly anxious which might affect concentration

Quote: "I'm finding it a bit harder to concentrate at work with this worry about my health."

Impact on physical and mental wellbeing: Increased anxiety

Quote: "I wouldn't say it's made me feel physically different, but mentally, yes, I am worried."

Quote:

"I started checking my blood pressure out of curiosity, and now I'm sitting here in your office with consistently high readings for the last two weeks. No previous treatments, the situation's not changing, but it sure is worrying me.”

Systemic Symptoms:

Fatigue: Negative

Fever: Negative

Night sweats: Negative

Unintended weight loss: Negative

Generalised weakness: Negative

Malaise: Negative

Bowel habits: Regular and unchanged

Quote: "My bowels have been regular, no changes there."

Urinary habits: Normal

Quote: "No issues with urination at all."

Changes in sleep: Negative

Peripheral oedema: Negative

Quote:

"I haven't had any fevers, night sweats, weight loss, weakness, or changes in sleep, thankfully. Everything's been quite normal except for the blood pressure."

Past Medical History:

Surgeries: Appendectomy at age 22

Quote: "I had my appendix taken out many years ago, but nothing since."

Hospitalizations: Negative

Previous injuries or traumas: Negative

Psychiatric or psychological history: Negative

History of substance abuse or addiction: Negative

Immunizations and vaccination history: Up-to-date as per the NHS schedule

Quote: "I've had all my jabs, always made sure to keep up with that."

Any other relevant medical conditions or significant health events: Paternal history of hypertension

Quote: "My Dad had high blood pressure; I remember him taking tablets for it."

Quote:

"I've been pretty healthy over the years, just the appendix operation when I was younger. No hospitalizations, I don’t smoke or drink much, and neither has there been any other significant illness in my history."

Drug History:

No current medications.

History of non-compliance: None

Herbal supplements: Occasional multivitamin use

Quote: "Sometimes I take a multivitamin, but I'm not on any regular medications or supplements."

Allergies:

No known allergies.

Quote:

"Fortunately, I've never had any allergic reactions to medications or foods."

Family History:

Father had essential hypertension, controlled with medication.

Quote: "My father had high blood pressure, which was managed with medication. No other major illnesses in the family that I'm aware of."

Social History:

Lifestyle: Mostly sedentary due to job requirements.

Occupation: Financial Analyst.

Activities of Daily Living & Hobbies: Enjoys reading and occasionally plays chess.

Smoking: 0 pack-years (Never smoked)

Quote: "I've never smoked. I know it's not good for you, especially with blood pressure concerns.

Alcohol: Approx. 4 units per week

Quote: "I have a glass of wine occasionally with dinner, not more than that."

Recreational Drug Use: Negative

Quote: "I've never used any sort of recreational drugs."

Diet: Omnivorous, tries to keep a balanced diet.

Quote: "I try to eat a variety of foods, keep it balanced. I do have a sweet tooth but try to keep it in check."

Exercise: Walks 30 minutes on weekends.

Quote: "I try to get out for walks on the weekend, but I probably should be doing it more often."

Quote:

"I know with my job I’m quite sedentary, so I do my best to balance that with a healthy diet, the occasional drink, and weekend walks. It's not perfect, but I'm trying."

Ideas, Concerns, and Expectations:

Ideas: Aware of the general risk factors for hypertension and concerned about the readings he has observed.

Quote: "I've read that stress, diet, and genetics play a role in high blood pressure, which makes me consider what I can change or improve."

Concerns: Worried about the long-term health impact and potential need for medication.

Quote: "I'm worried about what this might mean for my health in the long run. I hope it's not leading to something serious that may need heavy medication."

Expectations: Seeking advice and possibly non-pharmacological ways to manage blood pressure before considering medication.

Quote: "I'm looking to understand my options. Hopefully, there's something I can do lifestyle-wise before jumping to medications."

Observations:

Respirations (Breaths/min): 14 (0 points)

Oxygen Saturation (%): 98% on room air (0 points)

Blood Pressure (mmHg): 146/92 (0 points)

Pulse (Beats/min): 78 (0 points)

Consciousness (AVPU): Alert (0 points)

Temperature (Celsius): 36.7°C (0 points)

NEWS Total Score: 0

((NEWS is 0 as all observations fall within the normal range with 0 points allotted))

Physical Examination:

General inspection: No signs of distress or underlying pathology. No medical equipment or medications observed on or around the patient.

Inspection of the hands: No abnormalities noted.

Pulses and blood pressure: Radial pulse regular, no delay. Brachial pulse normal volume and character. Blood pressure elevated in both arms with no significant difference. Carotid pulse normal.

Jugular venous pressure: Not elevated and hepatojugular reflux negative.

Inspection of the face: Eyes and mouth normal, no signs of cyanosis or poor dental hygiene.

Close inspection of the chest: No deformities or visual pulsations. No surgical scars.

Palpation of the chest: Apex beat palpated in the 5th intercostal space in the midclavicular line, no heaves or thrills.

Auscultation of the chest: No added sounds or murmurs detected in any auscultation area. No radiation of murmurs detected with special maneuvers.

Inspection of the back: Spine appears normal, no deformities or scars.

Palpation of the back: No sacral oedema felt.

Auscultation of the back: Clear lung fields with no crackles or signs of fluid.

Examination of the legs: No pitting oedema. No evidence of saphenous vein harvesting.

Special Tests:

No special tests required for this examination.

Diagnostic Tests:

Blood Tests (Reference Ranges):

Full Blood Count (FBC):

Haemoglobin (Hb): 143 g/L (Female: 115 - 165 g/L, Male: 130 - 180 g/L)

Mean Corpuscular Volume (MCV): 89 fL (80 – 100 fL)

White Blood Cell Count: 6.5 x10^9/L (3.6 - 11.0 x10^9/L)

Platelets: 250 x10^9/L (140 - 400 x10^9/L)

Urea and Electrolytes:

Sodium: 140 mmol/L (133–146 mmol/L)

Potassium: 4.2 mmol/L (3.5–5.3 mmol/L)

Calcium (adjusted): 2.4 mmol/L (2.2-2.6 mmol/L)

Magnesium: 0.9 mmol/L (0.7–1.0 mmol/L)

Urea: 5.0 mmol/L (2.5 – 7.8 mmol/L)

Creatinine: 76 umol/ L (Male: 59–104 μmol/L, Female: 45–84 μmol/ L)

Estimated Glomerular Filtration Rate (eGFR): 98ml/min/1.73m3 (>90ml/min/1.73m3)

Liver Function Tests:

Alanine transferase (ALT): 25 iu/L (3-40 iu/L)

Aspartate transaminase (AST): 20 iu/L (3-30 iu/L)

Alkaline phosphatase (ALP): 70 umol/L (30-100 umol/L)

Gamma glutamyl transferase (yGT): 30 u/L (8-60 u/L)

Bilirubin: 10 umol/L (3-17 umol/L)

Albumin: 45 g/L (35-50 g/L)

Thyroid Function Tests:

Thyroid Stimulating Hormone (TSH): 2.5 mu/L (0.4-4.5 mu/L)

Free T3: 5.6 pmol/L (3.5-7.8 pmol/L)

Free T4: 15 pmol/l (9-25 pmol/l)

Other Tests:

NT-proBNP: < 125 pg/mL (< 75 years: < 125 pg/mL, > 75 years: < 450 pg/mL)

Imaging Tests:

No imaging indicated.

Other Tests:

ECG (Electrocardiogram): Normal sinus rhythm, no signs of hypertrophy or ischemia.

Condition:

Essential or Secondary Hypertension

Patient Questions:

1. "If my blood pressure readings are high, don’t I need to start on medication right away?"

Possible Answer: "We often start with lifestyle changes and monitor your blood pressure closely. If the readings continue to be high or if you have other risk factors, we may consider medication."

2. "What sort of changes to my lifestyle do you think could help?"

Possible Answer: "Regular physical activity, reducing salt intake, moderating alcohol consumption, and maintaining a healthy weight can help manage your blood pressure."

3. "Are there any dangers to having high blood pressure that doesn't cause any symptoms?"

Possible Answer: "Even without symptoms, uncontrolled high blood pressure can increase the risk of heart disease, stroke, and other health problems, hence the importance of managing it."

4. "Could the stress from work be affecting my blood pressure?"

Possible Answer: "Yes, stress can contribute to elevated blood pressure. It's important to find effective ways to manage stress."

Examiner Questions:

1. What lifestyle interventions are recommended for someone presenting with new-onset hypertension?

Possible Answer: Recommend regular exercise, dietary changes, stress management, cessation of smoking, and moderation of alcohol intake.

2. What are the criteria for diagnosing hypertension according to NICE guidelines?

Possible Answer: Hypertension is diagnosed after multiple elevated readings on separate occasions, or if there is evidence of end-organ damage or high readings from ambulatory blood pressure monitoring.

3. What complications can arise from uncontrolled hypertension?

Possible Answer: Complications include heart disease, chronic kidney disease, stroke, and peripheral vascular disease.

4. How do you determine whether hypertension is primary or secondary?

Possible Answer: Through a detailed medical history, examination, and relevant investigations. Secondary hypertension is usually caused by an underlying condition such as renal artery stenosis or endocrine disorders.

5. When would you consider pharmacological treatment for hypertension?

Possible Answer: We would consider medications if lifestyle modifications are ineffective or if the patient has significant risk factors for cardiovascular events, according to NICE guidelines.

6. What baseline investigations should be performed in a patient presenting with hypertension?

Possible Answer: Baseline blood tests including FBC, U&E, lipid profile, and possibly thyroid function tests, along with an ECG and urinary ACR.

Treatment:

According to NICE guidelines, treatment for newly diagnosed hypertension includes:

- Lifestyle interventions (as previously detailed).

- If blood pressure remains consistently above 140/90 mmHg after lifestyle interventions, consider pharmacological treatment starting with a calcium channel blocker (such as amlodipine 5mg once daily, increasing to 10mg depending on response) or an angiotensin-converting enzyme (ACE) inhibitor (e.g., ramipril starting at 1.25mg or 2.5mg once daily, increasing gradually as tolerated).

- If the patient is of African or Caribbean descent over the age of 55, or if an initial ACE inhibitor or calcium channel blocker is not suitable, a thiazide-like diuretic may be used, for example, indapamide 1.5 mg once daily.

- If blood pressure remains above the target, treatment is stepped up to include a combination of drugs from different antihypertensive classes.

- Offer statin therapy if cardiovascular risk is high, based on QRISK2 score.

- Regular monitoring to assess the blood pressure response, adherence to medication, and any side effects.

Monitoring:

- Regular blood pressure checks, initially weekly or biweekly depending on the severity and drug titration needs.

- Review medications for their effectiveness and side effects after starting or adjusting doses.

- Monitoring renal function and electrolytes after starting an ACE inhibitor or if dosage is changed.

- If lifestyle modifications are advised, follow-up in 3-6 months to assess adherence and efficacy.

- Regular cardiovascular risk assessments should be done annually.

Prognosis:

- Prognosis is generally good with early detection, appropriate treatment, and regular monitoring.

- Lifestyle modifications may effectively lower blood pressure and reduce the need for medication in some individuals.

- Long-term compliance with treatment and lifestyle changes is essential for preventing complications.

- Ongoing support and education improve adherence to treatment plans.

Differential diagnoses:

1. White coat hypertension: Less likely since elevated readings were also observed at home.

2. Secondary hypertension: Requires additional evaluation to rule out renal, endocrine, or vascular causes due to the new onset.

3. Anxiety: Could transiently raise blood pressure, but persistent elevation is indicative of hypertension.

Keyword Filters:

Speciality Filter:

Cardiovascular ; General Practice

Presenting Complaint Filter:

Hypertension ; Weight Gain

Condition Filter:

Essential or Secondary Hypertension

Location Filter:

General Practice

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_40\_EssentialOrSecondaryHypertension

Homepage Vignette:

## A 52-year-old male called Rajan Singh presents with headache and dizziness.

Individual Page Vignette:

You are the GP in a clinic. Rajan Singh, a 52-year-old accountant, presents with headache and dizziness.

Patient Name:

Rajan Singh (Pronunciation: r-ah-j-uh-n s-ih-n-g); prefers to be called Rajan.

Age:

10/07/1971

Location:

General Practice

Personality:

Rajan is a methodical and precise individual, often providing detailed accounts of his symptoms. He speaks in a measured tone and prefers direct and factual communication.

Presenting Complaint:

Rajan has come to the clinic complaining of a persistent headache and episodes of dizziness over the past month.

Quote:

"It feels like there's a constant weight on my temples, and sometimes the room just starts to spin without warning."

Symptoms:

Site: Temporal region and quote, "It's mostly here, around the sides of my head."

Onset: Gradual and quote, "I noticed the dull ache start a few weeks ago; it's been quite persistent."

Character: Dull ache and quote, "It's this nagging dull pain that just lingers on."

Radiation: Does not radiate and quote, "No, it doesn't move anywhere, just stays in one place."

Associated Symptoms: Occasionally blurred vision and quote, "Sometimes my vision goes a bit blurry."

Timing: Intermittent but frequent and quote, "It's on and off, but seems to happen a lot."

Exacerbating and Relieving Factors: Stress makes it worse; rest provides mild relief and quote, "It throbs more when I'm at work and a bit less when I lie down."

Severity: Moderate and quote, "On a scale from 1 to 10, it's sometimes a good 6 or 7."

- Chest pain or discomfort: Negative

- Shortness of breath: Negative

- Palpitations: Positive; Quote: "My heart sometimes feels like it's pounding."

- Syncope: Negative

- Nausea: Negative

- Vomiting: Negative

- Intermittent claudication: Negative

- Peripheral oedema: Negative

History of Presenting Complaint:

- Duration of symptoms: 4 weeks and quote, "This trouble started about a month ago."

- Previous treatments: None and quote, "Haven't tried anything for it yet, just some over-the-counter painkillers."

- Progression over time: Steady increase and quote, "It's been steady, not getting any better really."

- Frequency of symptoms: Several times a week and quote, "These dizzy spells can hit me a few times in a week."

- Impact on daily life and activities of daily living: Significant discomfort and quote, "It's pretty distracting, and I'm worried I might fall over."

- Impact on work: Can still perform duties but with difficulty and quote, "I can work, but it's getting harder to concentrate."

- Impact on physical and mental wellbeing: Causing stress and quote, "I'm starting to feel more stressed out by this."

Quote:

"I'm not sure what's going on, but these headaches and dizzy spells have been happening for weeks. I'm worried it might be something serious."

Systemic Symptoms:

- Fatigue: Positive; Quote: "I've been feeling more worn out than usual."

- Fever: Negative

- Nausea: Negative

- Vomiting: Negative

- Generalised weakness: Negative

- Malaise: Negative

- Bowel habits: Normal

- Urinary habits: Normal

- Changes in sleep: Some difficulty sleeping; Quote: "With the headache, it's hard to get a good night's sleep."

- Peripheral oedema: Negative

Quote:

"Besides feeling tired and struggling to sleep well, I feel okay otherwise."

Past Medical History:

- Surgeries: Negative

- Hospitalizations: Negative

- Previous injuries or traumas: Negative

- Psychiatric or psychological history: Negative

- History of substance abuse or addiction: Negative

- Immunizations and vaccination history: Up to date on recommended vaccines; Quote: "I always make sure to get my shots."

- Any other relevant medical conditions or significant health events: Has been managing mild hypertension for a few years without medication; Quote: "My blood pressure's been a bit high, but I've never needed pills for it."

Quote:

"I try to keep healthy; just this hypertension that has been niggling in the background, really."

Drug History:

Rajan occasionally takes paracetamol for headaches. He also takes a multivitamin supplement daily.

Quote:

"Just paracetamol now and then for the pain, and my daily vitamins."

Allergies:

No known allergies.

Quote:

"Thankfully, no allergies to speak of."

Family History:

Father had a history of hypertension; mother is healthy. No known genetic disorders.

Quote:

"Dad had high blood pressure, too, but Mum's well."

Social History:

Lifestyle: Mostly sedentary work with prolonged hours at the desk.

Occupation: Accountancy.

Activities of Daily Living & Hobbies: Enjoys reading and the occasional walk in the park.

Smoking: Non-smoker.

Alcohol: Drinks socially, around 5 units per week.

Recreational Drug Use: None.

Diet: Omnivorous with occasional fast food; attempts to include vegetables regularly.

Exercise: Walks lightly 2-3 times a week; admits to being less active than desired.

Quote:

"I sit at a desk most days, enjoy a good book, and walk when I can."

"I have a drink with mates now and then, nothing too heavy. I try to eat right, but you know how it is with fast food sometimes."

"Been meaning to exercise more, just walks in the park for now."

Ideas, Concerns, and Expectations:

Ideas:

Rajan has read about the dangers of untreated hypertension and is concerned his symptoms may relate to worsening blood pressure.

Quote:

"I'm worried the headaches could be because my blood pressure's getting out of hand."

Concerns:

He is growing increasingly anxious about the potential consequences of his symptoms on his well-being and ability to work.

Quote:

"What if this affects my job, or worse, if it's something like a stroke waiting to happen?"

Expectations:

Rajan wants a clear diagnosis and effective management plan to prevent any serious complications.

Quote:

"I'm here for your advice and to get on top of whatever this is, before it gets worse."

Observations:

Respirations (Breaths/min): 16 (0 points)

Oxygen Saturation (%): 98 (0 points)

Air or Oxygen?: On room air (0 points)

Blood Pressure (mmHg): 150/95 (0 points)

Pulse (Beats/min): 92 (1 point)

Consciousness (AVPU): Alert (0 points)

Temperature (Celsius): 36.7 (0 points)

NEWS Total Score: 1

(The NEWS total score is 1 point due to a Pulse of 92 beats per minute which scores 1 point according to the NEWS scoring system.)

Physical Examination:

General inspection: No cyanosis, peripheral oedema, or other signs indicative of heart failure. No equipment seen.

Inspection of the hands: No cyanosis, clubbing, or tar staining. Capillary refill time of 2 seconds.

Pulses and blood pressure:

- Radial pulse: 92 beats/min, regular rhythm.

- No radio-radial delay detected.

- No collapsing pulse felt.

- Blood pressure measured at 150/95 mmHg in both arms.

- Carotid pulse palpated as normal volume and rhythm.

Jugular venous pressure:

- Not elevated.

Inspection of the face:

- No pallor or xanthelasma. Good dental hygiene noted.

Close inspection of the chest:

- No visible pulsations or chest wall deformities.

Palpation of the chest:

- Apex beat located in the 5th intercostal space in the mid-clavicular line.

- No heaves or thrills palpated.

Auscultation of the chest:

- Normal S1 and S2 heart sounds, no additional sounds, murmurs, or rubs heard in all auscultation areas.

Special Tests:

None required for hypertension unless secondary causes are suspected.

Diagnostic Tests:

Blood Tests (Reference Ranges):

Full Blood Count (FBC):

Haemoglobin (Hb): 147 (Male: 130-180 g/L)

Mean Corpuscular Volume (MCV): 89 (80–100 fL)

White Blood Cell Count: 6.8 (3.6 - 11.0 x10^9/L)

Platelets: 230 (140 - 400 x10^9/L)

Urea and Electrolytes:

Sodium: 139 (133–146 mmol/L)

Potassium: 4.4 (3.5–5.3 mmol/L)

Urea: 5.6 (2.5 – 7.8 mmol/L)

Creatinine: 88 (Male: 59–104 μmol/L)

Liver Function Tests:

ALT: 29 (3-40 iu/L)

Alkaline phosphatase (ALP): 83 (30-100 umol/L)

Bilirubin: 12 (3-17 umol/L)

Albumin: 46 (35-50 g/L)

Other Tests:

Urinalysis: Negative for proteinuria and haematuria.

ECG (Electrocardiogram):

Sinus rhythm with no acute changes. Left ventricular hypertrophy by voltage criteria.

Condition:

Essential or Secondary Hypertension

Patient Questions:

1. "Is the high blood pressure the reason for my headaches and dizziness?"

- High blood pressure can sometimes cause headaches and dizziness, especially when it is elevated, but these symptoms are also common and could have other causes.

2. "Will I need to be on medication for life for my high blood pressure?"

- It depends on how well your blood pressure responds to treatment. Lifestyle changes are first-line, but if they are not enough, medication might be needed long-term.

3. "Could my high blood pressure lead to a stroke?"

- Hypertension is a risk factor for stroke, but with the right management, we can significantly reduce that risk.

4. "Are there any dietary changes I should make to help with my blood pressure?"

- Yes, reducing salt intake, eating plenty of fruits and vegetables, and limiting alcohol can help lower blood pressure.

Examiner Questions:

1. What are some possible causes of secondary hypertension in this patient?

- Possible causes include renal artery stenosis, sleep apnoea, or endocrine disorders.

2. What lifestyle interventions are recommended for the management of hypertension?

- Diet rich in fruits and vegetables, regular exercise, maintaining a healthy weight, limiting alcohol, and reducing stress.

3. How would you differentiate between essential and secondary hypertension?

- Secondary hypertension is suggested by a sudden onset, severe hypertension, or poor response to treatment; further investigation for underlying causes would be needed.

4. When should antihypertensive medication be initiated in this patient?

- If lifestyle modifications are not sufficient to control blood pressure, or if the initial presentation includes target organ damage or a very high blood pressure.

5. What are the target blood pressure goals in the management of hypertension?

- Generally, a target blood pressure of less than 140/90 mmHg, but it can vary based on age, comorbidities, and risk factors.

6. Discuss the significance of high blood pressure and cardiovascular risk.

- Hypertension increases the risk of cardiovascular events, such as heart attack and stroke, and managing it effectively reduces these risks.

Treatment:

For the management of essential or secondary hypertension, the National Institute for Health and Care Excellence (NICE) recommends:

- Lifestyle interventions as the initial treatment, such as weight loss for overweight or obese patients, regular exercise, alcohol moderation, reduced sodium intake, and a healthy diet.

- If lifestyle interventions are not sufficient, initiate pharmacological treatment with an ACE inhibitor or angiotensin-II receptor blocker, a calcium channel blocker, or a thiazide-like diuretic.

- The specific choice of initial medication may be guided by the patient's age, ethnicity, and the presence of other conditions such as diabetes.

- If the blood pressure target is not met with one medication, a combination of two antihypertensive medications should be started.

- If the patient presents with secondary hypertension, address the underlying cause as part of the treatment plan. For example, if renal artery stenosis is identified, revascularization might be an option.

- If Rajan is allergic to any medication, alternative classes are available. For instance, if ACE inhibitors cause a cough, an angiotensin-II receptor blocker can be used instead.

Monitoring:

- Regular blood pressure monitoring, starting with monthly checks if medication is initiated or changed, followed by checks every 3-6 months once blood pressure is stable.

- Monitor renal function and electrolytes for patients on ACE inhibitors, angiotensin II receptor blockers, or diuretics.

- Encourage Rajan to monitor his blood pressure at home and maintain a diary.

- Follow-up appointments should be scheduled for medication titration and to assess adherence and side effects.

- Consider referral to a hypertension specialist if there is evidence of target organ damage, suspected secondary hypertension, or blood pressure remains uncontrolled despite treatment with three antihypertensive drugs at optimal doses.

Prognosis:

- Prognosis for essential hypertension is generally good with early diagnosis, appropriate treatment, and adherence to lifestyle changes and medication.

- Individual response to treatment can vary, with many patients requiring long-term management to maintain blood pressure control.

- Complications such as cardiovascular disease are more likely in untreated or inadequately managed hypertension.

- Health outcomes can be improved with strict blood pressure control and monitoring for complications.

- Factors such as age, ethnicity, presence of end-organ damage, and comorbid conditions can influence prognosis.

Differential diagnoses:

1. Secondary Hypertension - Less likely in the absence of suggestive history or physical examination findings such as renal bruit or abdomen mass.

2. Cervicogenic Headache - Not typically associated with episodic dizziness and does not correlate as well with hypertension.

3. Meniere's Disease - Characterised by a triad of vertigo, hearing loss, and tinnitus, not directly associated with hypertension.

4. Brain Tumour - Less likely due to the absence of focal neurological signs or symptoms.

5. Intracranial Hypertension - Often presents with papilledema and possibly visual changes, which are not present in this case.

Speciality Filter:

Cardiovascular; General Practice

Presenting Complaint Filter:

Headache; Dizziness; Hypertension

Condition Filter:

Essential or Secondary Hypertension

Location Filter:

General Practice

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_41\_EssentialOrSecondaryHypertension

Homepage Vignette:

## A 58-year-old male called Kasem presents with elevated blood pressure and headaches.

Individual Page Vignette:

You are a General Practitioner at a local clinic and a patient named Kasem, a 58-year-old accountant, presents to you with concerns of persistently elevated blood pressure and recent frequent headaches.

Patient Name:

Kasem Ibru (/ˈkɑːsɛm ˈiːbruː/); he prefers to be called Kasem.

Age:

Date of birth: 18/05/1966

Location:

General Practice

Personality:

Kasem is detail-oriented and communicates in a clear, precise manner reflective of his background in accountancy. He is naturally inquisitive, often asking for comprehensive explanations about his health. While he can appear somewhat reserved at first, Kasem exhibits a dry sense of humour when more at ease.

Presenting Complaint:

Kasem is seeking medical attention due to concerns about his elevated blood pressure readings at home and experiencing headaches more frequently than usual.

Quote:

"I've been keeping track of my blood pressure readings at home, and they've been on the high side. Lately, I've also been getting these nagging headaches."

Symptoms:

Site: Frontal region - "The headache is mostly in the front, just above my eyes."

Onset: Gradual - "The headaches started off mild and have been getting more frequent over the past few months."

Character: Throbbing - "It feels like there's a pulsing or thumping in my head."

Radiation: Does not radiate - "It stays around my forehead; it doesn't move anywhere else."

Associated Symptoms: Blurred vision - "Sometimes my vision goes a bit blurry, especially when the headache peaks."

Timing: Intermittent - "The headaches come and go. There's no specific time, really."

Exacerbating and Relieving Factors: Stress - "It feels worse when I'm stressed." Rest alleviates symptoms - "If I take a break and rest, it seems to ease off."

Severity: Moderate - "On a scale, I'd say it’s a 6 out of 10."

- Chest pain or discomfort: Negative

- Shortness of breath: Negative

- Palpitations: Negative

- Syncope: Negative

- Nausea: Negative

- Vomiting: Negative

- Intermittent claudication: Negative

- Peripheral oedema: Negative

Quote:

"I can't recall having chest pain or shortness of breath. I've not noticed my heart doing anything strange, nor have I felt like passing out, so no syncope. No sickness or swelling in my legs either."

History of Presenting Complaint:

- Duration of symptoms: Several months - "This has been a bother for a good few months now."

- Previous treatments: None - "I haven't taken anything for it; just thought it might pass on its own."

- Progression over time: Increasing in frequency - "The headaches used to be once in a while, now it's almost once a week."

- Frequency of symptoms: Weekly - "It seems to happen roughly every week or so."

- Impact on daily life and activities of daily living: Affects concentration - "My concentration is not the best when these headaches hit."

- Impact on work: Minor - "It hasn't stopped me from working, but it slows me down."

- Impact on physical and mental wellbeing: Causing concern - "I'm not one to worry but this has got me wondering what’s up."

Quote:

"I've had these headaches for quite some time. They've become more of a regular nuisance. I'm able to get my work done, but it's certainly not helping. And you start to think, is this something serious?"

Systemic Symptoms:

- Fatigue: Negative

- Fever: Negative

- Night sweats: Negative

- Unintended weight loss: Negative

- Generalised weakness: Negative

- Malaise: Negative

- Bowel habits: Normal

- Urinary habits: Normal

- Changes in sleep: Negative

- Peripheral oedema: Negative

Quote:

"I can't say I've been fatigued, feverish, or sweating at night. Weight's stable, no weakness or feeling under the weather, and sleeping fine. Nothing out of the ordinary with using the loo. No swelling in feet or ankles either."

Past Medical History:

- Surgeries: Negative

- Hospitalizations: Negative

- Previous injuries or traumas: Negative

- Psychiatric or psychological history: Negative

- History of substance abuse or addiction: Negative

- Immunizations and vaccination history: Up to date - "I always make sure my jabs are up to date."

- Any other relevant medical conditions or significant health events: Negative

Quote:

"Aside from the routine vaccines, my medical history is rather uneventful. I've been fortunate enough to avoid hospitals, surgeries and the like."

Drug History:

Kasem has not been taking any prescription or over-the-counter medication, he reports no history of medication non-compliance, or the use of herbal supplements or alternative therapies. He does not use contraception or HRT and has not had any overdose incidents.

Quote:

"I don't regularly take any medication, and I haven't tried any alternative treatments. Never had an issue with overdoses, thank goodness."

Allergies:

No known allergies.

Quote:

"I'm lucky enough to not have any allergies that I'm aware of."

Family History:

Both parents suffered from hypertension. Father had a myocardial infarction in his 60s. Maternal uncle diagnosed with type 2 diabetes.

Quote:

"My mum and dad both had high blood pressure, and dad had a heart attack a few years back. One of my uncles on my mum’s side has diabetes."

Social History:

Lifestyle: Kasem enjoys sedentary hobbies such as reading and watching documentaries.

Occupation: Accountant

Activities of Daily Living & Hobbies: Kasem leads a rather inactive lifestyle, with his work requiring long hours seated at a desk. He enjoys intellectual pursuits such as chess and occasionally gardening on the weekends for relaxation.

Smoking: Non-smoker

Alcohol: Drinks socially, approximately 4 units per week.

Recreational Drug Use: None

Diet: Prefers home-cooked meals, high in salt.

Exercise: Limited; walks occasionally.

Quote:

"I've never smoked, and I only drink socially. No drug use for me. I try to eat well, though I do like a bit of salt in my food. As for exercise, I take a walk when I can, but it's not as often as I’d like."

Quotes addressing travel history, sexual history, driving status, cultural or religious practices, recent life events, and exposure to hazards or new environments are omitted due to no indication these are clinically relevant to Kasem's presentation.

Ideas, Concerns, and Expectations:

Ideas:

Kasem believes that his elevated blood pressure may be hereditary and is causing his headaches. He is also aware of the general lifestyle factors that contribute to hypertension.

Quote:

"I understand high blood pressure can run in families, and I'm thinking these headaches might be related to that. I know lifestyle has a lot to do with it too."

Concerns:

Kasem is concerned that his hypertension may lead to more severe health issues, such as a stroke or heart attack, especially considering his family history.

Quote:

"I'm worried this could snowball into something like what happened to my father. I've heard strokes are a risk with high blood pressure."

Expectations:

Kasem expects a thorough assessment and clear guidance on managing his blood pressure, including lifestyle changes and medication if necessary.

Quote:

"I would like a clear idea of what's going on and what I can do about it. If that means medication, then so be it, but I'm willing to make lifestyle changes too."

Observations:

Respirations (Breaths/min): 14 (0 points)

Oxygen Saturation (%): 98 (0 points)

Air or Oxygen?: Room air (0 points)

Blood Pressure (mmHg): 160/95 (1 point from systolic)

Pulse (Beats/min): 78 (0 points)

Consciousness (AVPU): Alert (0 points)

Temperature (Celsius): 36.7 (0 points)

NEWS Total Score: 1

Kasem's NEWS total score is calculated as 1 due to an elevated blood pressure reading of 160/95 mmHg, with all other parameters within the normal range and scoring 0 points.

\*\*Physical Examination:\*\*

\*\*General inspection:\*\*

- Kasem presents as a well-groomed male appearing his stated age. No visible signs of underlying pathology like cyanosis, shortness of breath, or pallor. Mild distress appears to be present due to concern about his condition. No medical equipment, mobility aids, or medication bottles are seen around him, which suggests a lack of chronic medical treatments.

\*\*Inspection of the hands:\*\*

- The general coloration appears normal, without tar staining or xanthomata. No arachnodactyly, clubbing, splinter hemorrhages, Janeway's lesions, Osler's nodes, or koilonychia noted.

- Palpation reveals normal temperature, and capillary refill time is less than 2 seconds.

\*\*Pulses and blood pressure:\*\*

- Radial pulse is regular in rate (78 bpm) and rhythm without radio-radial delay.

- There is no collapsing pulse, which may indicate aortic regurgitation.

- Brachial pulse volume and character are normal without brachial-radial delay, and blood pressure measures 160/95 mmHg in both arms.

- Carotid pulse has a normal volume and character; no bruits are auscultated.

\*\*Jugular venous pressure:\*\*

- The jugular venous pressure is evaluated and appears within normal limits, without distension, suggesting that there is no right heart failure. There is no hepatojugular reflux.

\*\*Inspection of the face:\*\*

- Eyes exhibit no conjunctival pallor or evidence of corneal arcus or xanthelasma. Kayser-Fleischer rings are not seen.

- The mouth inspection reveals no central cyanosis or angular stomatitis. The palate is normally arched with good dental hygiene.

\*\*Close inspection of the chest:\*\*

- The chest wall is inspected without evidence of pectus excavatum, pectus carinatum, visible pulsations, or scars from prior thoracic surgery.

\*\*Palpation of the chest:\*\*

- No heaves or thrills. The apex beat is palpated at the 5th intercostal space mid-clavicular line and is not displaced.

\*\*Auscultation of the chest:\*\*

- Auscultation of the heart using the diaphragm and bell across the aortic, pulmonary, tricuspid, and mitral areas reveals no abnormal sounds or murmurs.

- No ejection systolic murmur heard over the carotids which would suggest aortic stenosis.

- No early diastolic murmurs on sitting forward indicating no aortic regurgitation and no additional heart sounds or murmurs suggesting mitral valve disease.

\*\*Inspection of the back:\*\*

- The back shows no visible deformities or surgical scars.

- No sacral oedema is detected on the inspection and palpation of the sacrum.

\*\*Auscultation of the back:\*\*

- Lung fields are clear with no evidence of coarse crackles or absent air entry, which would suggest conditions such as pulmonary edema or significant lung pathologies.

\*\*Examination of the legs:\*\*

- Legs are inspected without any pitting oedema, venous stasis changes, or evidence of prior vein harvesting.

\*\*Diagnostic Tests:\*\*

\*\*Blood Tests (Reference Ranges):\*\*

- Full Blood Count (FBC):

- Haemoglobin: 150 g/L (Male: 130-180 g/L)

- White Cell Count: 7.0 x 10^9/L (4.0-11.0 x 10^9/L)

- Platelets: 250 x 10^9/L (150-400 x 10^9/L)

- Urea and Electrolytes:

- Sodium: 140 mmol/L (135-145 mmol/L)

- Potassium: 4.5 mmol/L (3.5-5.0 mmol/L)

- Urea: 5.5 mmol/L (2.5-7.5 mmol/L)

- Creatinine: 90 umol/L (Male: 64-104 umol/L)

- Liver Function Tests:

- Alanine Transaminase (ALT): 25 U/L (7-56 U/L)

- Aspartate Transaminase (AST): 28 U/L (8-48 U/L)

- Alkaline Phosphatase (ALP): 90 U/L (40-129 U/L)

- Bilirubin: 12 umol/L (3-21 umol/L)

- Thyroid Function Tests:

- Thyroid Stimulating Hormone (TSH): 2.5 mIU/L (0.4-4.0 mIU/L)

- Free T4 (FT4): 15 pmol/L (12-22 pmol/L)

\*\*Estimated Glomerular Filtration Rate (eGFR):\*\*

- eGFR: 90 mL/min/1.73m² (>90 mL/min/1.73m² considered normal)

\*\*Electrocardiogram (ECG):\*\*

- No evidence of left ventricular hypertrophy (normal ECG without left ventricular strain pattern)

\*\*Urinalysis:\*\*

- Specific gravity: 1.020 (1.010-1.030)

- pH: 6.0 (5.0-7.5)

- Protein: Negative (Negative - Trace)

- Blood: Negative (Negative - Trace)

- Leukocytes: Negative (Negative)

- Nitrites: Negative (Negative)

- Glucose: Negative (Negative - Trace)

- Ketones: Negative (Negative)

- Bilirubin: Negative (Negative)

- Urobilinogen: Normal (0.2-1.0 EU/dL)

Condition:

Essential or Secondary Hypertension

Patient Questions:

- "Could my headaches mean I have something more serious like a brain tumour?" (Answer: "Your symptoms are more indicative of hypertension-related headaches, but we will conduct a thorough examination to rule out other causes.")

- "Will I have to be on medication for life?" (Answer: "It depends on how well your blood pressure responds to treatment. Lifestyle changes play a significant role, but some patients do require long-term medication.")

- "Should I buy a blood pressure monitor to use at home?" (Answer: "Home monitoring can be helpful in managing hypertension. We'll discuss the best approach for you.")

- "Can I still have the occasional drink if I have hypertension?" (Answer: "While moderate alcohol consumption can be part of a healthy lifestyle, it's important to stay within recommended limits and understand how alcohol affects your blood pressure.")

Examiner Questions:

- "How would you differentiate between essential and secondary hypertension in this patient?" (Answer: Essential hypertension is diagnosed after excluding causes of secondary hypertension, such as renal disease, endocrine disorders, or vascular diseases.)

- "Which lifestyle modifications are important for managing hypertension?" (Answer: Diet changes (reduced salt intake), weight loss if overweight, regular physical activity, limited alcohol consumption, and smoking cessation.)

- "What is the first-line pharmacological treatment for hypertension?" (Answer: ACE inhibitors, ARBs, calcium channel blockers, or thiazide-like diuretics are commonly used as first-line agents.)

- "What additional investigations would you order to identify end-organ damage?" (Answer: Echocardiogram for heart function, kidney function tests, fundoscopic exam for retinal changes, urine analysis for proteinuria.)

- "How should Kasem's hypertension be monitored over time?" (Answer: Regular blood pressure checks, assessing for side effects or complications of pharmacotherapy, monitoring kidney function, and lifestyle modifications adherence.)

- "Can you discuss the patient education points you would cover with Kasem regarding his hypertension?" (Answer: The importance of medication adherence, possible side effects, significance of lifestyle changes, and long-term management strategies including monitoring and follow-up.)

Treatment:

According to NICE guidelines, the initial treatment for hypertension includes lifestyle advice regarding diet (reduction in salt intake), weight loss if the patient is overweight, regular physical activity, moderation of alcohol intake, and smoking cessation. Based on the individual patient's profile, history, and test results, medication can be introduced accordingly; for example, a calcium channel blocker such as amlodipine starting at 5mg, once daily, and adjusted as necessary. If the patient is of African or Caribbean descent, or if there is evidence of heart failure or chronic kidney disease, alternative drugs such as thiazide-like diuretics or ACE inhibitors/ARBs may be considered. If the patient is intolerant or allergic, beta-blockers or alpha-blockers may be alternatives.

Monitoring:

- Blood Pressure: Monitor regularly to assess control and adherence to therapy.

- Renal Function: Check at baseline, after starting medication, and periodically thereafter to assess for any drug-related nephrotoxicity.

- Electrolytes: Particularly important when using diuretics or ACE inhibitors due to the risk of electrolyte imbalances.

- Side Effects: Patient education to report any side effects such as cough (ACE inhibitors), peripheral oedema (calcium channel blockers), etc.

- Follow-up visits: Initially monthly until blood pressure is controlled, then every 3-6 months for routine monitoring.

Prognosis:

- Controlled Hypertension: If Kasem's blood pressure is well controlled with treatment, he can expect a relatively normal life expectancy with a reduced risk of complications.

- Risk of Complications: If not controlled, there is an increased risk of cardiovascular events, such as myocardial infarction and stroke.

- Response to Treatment: Most patients will respond well to a combination of lifestyle changes and medication, but some may require referral to a specialist for further assessment and prescription of additional therapies.

Differential diagnoses:

1. Renal artery stenosis: Less likely if no abdominal or flank pain, or asymmetry in kidney size or function.

2. Hyperthyroidism: Less likely given the absence of symptoms such as sweating, tremor, or weight loss.

3. Cushing's syndrome: Less likely in the absence of characteristic features such as a round face, purple striae, or proximal muscle weakness.

4. Obstructive sleep apnoea: Less likely if no history of snoring or observed apnoeas during sleep.

Speciality Filter:

Cardiovascular; General Practice

Presenting Complaint Filter:

Headache; Hypertension

Condition Filter:

Essential or Secondary Hypertension

Location Filter:

General Practice

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_42\_EssentialOrSecondaryHypertension

Homepage Vignette:

## A 53-year-old male called Teran Kovačić presents with elevated blood pressure.

Individual Page Vignette:

You are the health care provider in a clinic reviewing the medical history and vital signs of Teran Kovačić, a 53-year-old accountant, who reports persistent issues with elevated blood pressure.

Patient Name:

Teran Kovačić (Pronunciation: TE-ran KO-va-tchich). Prefers to be addressed as Teran.

Age:

13/05/1971

Location:

General Practice

Personality:

Teran has a meticulous and analytical approach to communication, often describing his symptoms with precision. He presents with an authoritative tone, likely a reflection of his professional background as an accountant.

Presenting Complaint:

Teran reports having been informed during a routine health screening at work that his blood pressure was higher than normal.

Quote:

"I had a health check at the office, and they said my blood pressure is on the high side. I've come to find out what this means for my health."

Symptoms:

SOCRATES:

- Site: "The health nurse didn't mention any specific problems, just the blood pressure reading."

- Onset: "I've never had any problems with my blood pressure before, at least not that I was aware of."

- Character: "I'm not feeling any specific pain or symptoms, really."

- Radiation: "There's nothing to radiate since I'm not in pain."

- Associated Symptoms: "I haven't noticed anything else unusual."

- Timing: "As far as I know, it's been normal until this screening."

- Exacerbating and Relieving Factors: "I haven’t done anything in particular to address it, yet."

- Severity: "How severe is this condition? I suppose that's what I'm trying to understand."

- Chest pain or discomfort: Negative

- Shortness of breath: Negative

- Palpitations: Negative

- Syncope: Negative

- Nausea: Negative

- Vomiting: Negative

- Intermittent claudication: Negative

- Peripheral oedema: Negative

Quote:

"No, I haven't experienced any chest pain, shortness of breath, palpitations, fainting, nausea, vomiting, leg pain while walking, or swelling in the legs."

History of Presenting Complaint:

- Duration of symptoms: "The issue with my blood pressure came up quite recently."

- Previous treatments: "I've not taken any treatment for this before."

- Progression over time: "I really can't say if it's been getting worse; I had no idea until the check-up."

- Frequency of symptoms: "I’ve not noticed any symptoms that would indicate a problem."

- Impact on daily life and activities of daily living: "It hasn't, as far as I can tell, but I am concerned about possible unknown effects."

- Impact on work: "No impact on my work, I've been performing as usual."

- Impact on physical and mental wellbeing: "It's starting to worry me, to be honest. I'm not sure what the long-term risks are."

Quote:

"I've only known about my blood pressure issue for a short time. I haven't had any treatment for it and don't know if it's been getting worse or not. I haven't noticed it affecting my day-to-day life or work, but it is on my mind now."

Systemic Symptoms:

- Fatigue: Negative

- Fever: Negative

- Night sweats: Negative

- Unintended weight loss: Negative

- Generalised weakness: Negative

- Malaise: Negative

- Bowel habits: Negative

- Urinary habits: Negative

- Changes in sleep: Negative

- Peripheral oedema: Negative

Quote:

"I haven't been feeling tired, haven't had a fever, night sweats, unexpected weight loss, weakness, or general malaise. My bowel and urinary habits are normal, as is my sleep. No swelling in my ankles either."

Past Medical History:

- Surgeries: "Thankfully, I've never required surgery."

- Hospitalizations: "No, I've not been hospitalized for anything."

- Previous injuries or traumas: "I've been quite lucky to avoid injuries or traumas that needed medical attention."

- Psychiatric or psychological history: "I've never sought psychological help; I consider my mental health to be stable."

- History of substance abuse or addiction: "I've never abused substances or struggled with addiction."

- Immunizations and vaccination history: "I am up to date with all my vaccinations as recommended."

- Any other relevant medical conditions or significant health events: "Nothing else medically significant comes to mind."

Quote:

"No surgeries, hospital stays, or major injuries for me. My mental health is solid, and I haven't grappled with substances. I make sure to get my vaccinations as instructed. No other health concerns that I can think of."

Drug History:

"I take a daily multivitamin and fish oil capsules. Otherwise, no medications."

Quote:

"I'm usually not a fan of taking medication unless absolutely necessary. Just a multivitamin and fish oil for general wellbeing, recommended dosages of course."

Allergies:

"No allergies that I'm aware of."

Quote:

"I'm lucky, no allergies to speak of."

Family History:

"Both of my parents have had issues with high blood pressure and my father underwent angioplasty due to coronary artery disease. My maternal grandmother had type 2 diabetes."

Quote:

"My family history does involve blood pressure problems - both of my parents are on medication for it. Heart issues on my dad's side, and diabetes on my mother's side."

Social History:

Lifestyle: "I live a pretty standard life; nothing too out of the ordinary."

Occupation: "I'm an accountant, quite a demanding job sometimes."

Activities of Daily Living & Hobbies: "I enjoy reading and the occasional game of golf."

Smoking: "I don't smoke."

Alcohol: "I have a glass or two of wine on the weekend, so maybe 3 units per week."

Recreational Drug Use: "No, I don't use any."

Diet: "My diet is reasonably balanced, though I could probably eat fewer takeaway meals."

Exercise: "I walk to and from work, but I know I should probably do more regular exercise."

Quote:

"I have a couple glasses of wine over the weekend but no smoking or recreational drugs for me. My diet is average I'd say, and I fit in walking when I can, though I know I should be doing more dedicated physical activity."

Ideas, Concerns, and Expectations:

Ideas: "I understand high blood pressure can be a silent issue that leads to other health problems."

Quote:

"I know high blood pressure isn't good - it can cause all sorts of silent damage. That's why I'm here: to find out what we can do about it."

Concerns: "I'm worried about the long-term effects on my heart and blood vessels, and if I'll need medication for life."

Quote:

"What concerns me most is the possibility of having to take tablets every day for the rest of my life, and the worries about heart attacks or strokes."

Expectations: "I'd like to get a better understanding of my condition, any necessary tests, and any lifestyle changes I could make to improve my blood pressure."

Quote:

"I expect to leave with a clear understanding of my blood pressure and what I need to do, whether it's medication or making changes to my lifestyle."

Observations:

Respirations (Breaths/min): 14

Oxygen Saturation (%): 98

Air or Oxygen?: Room air

Blood Pressure (mmHg): 158/92

Pulse (Beats/min): 78

Consciousness (AVPU): Alert

Temperature (Celsius): 36.8

NEWS Total Score: 1

(NEWS2 score calculation: Blood Pressure Systolic (158 mmHg) = 0 points; all other parameters within normal range, contributing 0 points each)

Physical Examination:

General inspection: No cyanosis, shortness of breath, pallor, malar flush, oedema, or medical equipment present.

Inspection of the hands: Hands appear normal with no tar staining, xanthomata, arachnodactyly, clubbing, splinter haemorrhages, Janeway's lesions, Osler's nodes, or koilonychia.

Pulses and blood pressure: Radial pulse regular, no radio-radial delay, collateral pulsations, or blood pressure differential between arms present. Carotid pulse volume and character within normal limits.

Jugular venous pressure: Jugular venous pressure appears normal, no Hepatojugular reflux.

Inspection of the face: Eyes and mouth appear normal, with no conjunctival pallor, corneal arcus, xanthelasma, Kayser-Fleischer rings, evidence of cyanosis, or significant dental issues observed.

Close inspection of the chest: No visible pulsations, pectus excavatum, pectus carinatum, scars, or abnormal chest shape.

Palpation of the chest: Apex beat located within the normal anatomical area, no abnormal heaves or thrills palpable.

Auscultation of the chest: Hearts sounds S1 and S2 audible, no added sounds or murmurs detected in the aortic, pulmonary, tricuspid, or mitral areas with either diaphragm or bell.

Inspection of the back: Back appears normal with no deformities or scars.

Palpation of the back: No sacral oedema palpable.

Auscultation of the back: Lung fields clear with no evidence of crackles or absent air entry.

Examination of the legs: No pitting oedema or evidence of saphenous vein harvesting present.

Special Tests:

No specific special tests indicated at this time.

Diagnostic Tests:

Blood Tests (Reference Ranges):

Full Blood Count (FBC):

Haemoglobin (Hb): 147 g/L (Female: 115 - 165 g/​L, Male: 130 - 180 g/L)

Mean Corpuscular Volume (MCV): 88 fL (80 – 100 fL)

White Blood Cell Count: 6.0 x10^9/L (3.6 - 11.0 x10^9/L)

Platelets: 250 x10^9/L (140 - 400 x10^9/L)

Urea and Electrolytes:

Sodium: 140 mmol/L (133–146 mmol/L)

Potassium: 4.5 mmol/L (3.5–5.3 mmol/L)

Calcium (adjusted): 2.4 mmol/L (2.2-2.6 mmol/L)

Magnesium: 0.9 mmol/L (0.7–1.0 mmol/L)

Urea: 5.5 mmol/L (2.5 – 7.8 mmol/L)

Creatinine: 97 μmol/L (Male: 59–104 μmol/L, Female: 45–84 μmol/ L)

Estimated Glomerular Filtration Rate (eGFR): >90ml/min/1.73m3

Liver Function Tests:

Alanine transferase (ALT): 25 iu/L (3-40 iu/L)

Aspartate transaminase (AST): 22 iu/L (3-30 iu/L)

Alkaline phosphatase (ALP): 80 umol/L (30-100 umol/L)

Gamma glutamyl transferase (yGT): 35 u/L (8-60 u/L)

Bilirubin: 10 umol/L (3-17 umol/L)

Albumin: 45 g/L (35-50 g/L)

Thyroid Function Tests:

Thyroid Stimulating Hormone (TSH): 2.5 mu/L (0.4-4.5 mu/L)

Free T3: 5.5 pmol/L (3.5-7.8 pmol/L)

Free T4: 15 pmol/L (9-25 pmol/l)

Other Biochemistry Tests:

CRP: 5 mg/L (< 10 mg/L)

Lipids:

Total Cholesterol: 5.2 mmol/l (< 5 mmol/l)

Triglycerides: 1.5 mmol/l (< 2 mmol/l)

HDL Cholesterol: 1.2 mmol/l (> 1 mmol/l)

LDL Cholesterol: 3.1 mmol/l (< 3 mmol/l)

Imaging Tests:

\*No specific imaging tests are indicated at this stage without clinical evidence of organ damage or symptoms.\*

Other Tests:

ECG (Electrocardiogram): Normal sinus rhythm with no evidence of left ventricular hypertrophy or ischemia.

Condition:

Essential or secondary hypertension

Patient Questions:

1. "Does having high blood pressure mean I'll have a heart attack or a stroke?"

- High blood pressure is a risk factor for heart disease and stroke, but with proper management, including lifestyle changes and medications if necessary, we can significantly reduce that risk.

2. "Will I have to take medication forever now?"

- It depends on several factors, including how well your blood pressure responds to lifestyle changes and medication. We aim for the best control with the least medicine necessary.

3. "Can changing my diet really help lower my blood pressure?"

- Yes, dietary changes such as reducing salt intake, increasing fruit and vegetable consumption, and maintaining a healthy weight can have a significant impact on blood pressure.

4. "What should I do if I feel stressed or anxious? Can this affect my blood pressure?"

- Stress can temporarily increase blood pressure. It's important to find effective ways to manage stress, such as exercise, relaxation techniques, or talking to a professional if needed.

Examiner Questions:

1. What are the non-pharmacological management strategies for hypertension?

- Lifestyle changes include dietary modifications (DASH diet), reducing salt intake, increasing physical activity, weight management, limiting alcohol consumption, smoking cessation, and stress management.

2. When should you consider initiating pharmacological treatment for hypertension?

- Pharmacological treatment should be considered when lifestyle changes are insufficient to control blood pressure or when blood pressure is consistently above set thresholds or if there is target organ damage.

3. What classes of antihypertensive agents are commonly used in the management of hypertension?

- Classes include ACE inhibitors (e.g., ramipril), angiotensin II receptor blockers (ARBs), calcium channel blockers (e.g., amlodipine), thiazide diuretics (e.g., bendroflumethiazide), and beta-blockers.

4. How does the target blood pressure differ for patients with diabetes or chronic kidney disease?

- Patients with diabetes or chronic kidney disease often have stricter blood pressure targets, generally below 140/90 mmHg, and sometimes as low as 130/80 mmHg.

5. What are potential side effects of common antihypertensive medications?

- Side effects may vary but can include cough (ACE inhibitors), hypotension, dizziness, headaches, gastrointestinal upset, edema (calcium channel blockers), and electrolyte imbalances (diuretics).

6. How do you address a patient's reluctance to start medication for hypertension?

- Discuss the benefits versus risks of treatment, provide education about the asymptomatic nature of hypertension and potential complications, and emphasize the role of medication in preventing long-term health consequences.

Treatment:

The treatment for hypertension begins with lifestyle modifications, including diet (reducing salt intake, fat, and increasing fruit and vegetable intake), regular aerobic physical activity, moderation of alcohol intake, smoking cessation, and stress reduction. The British Hypertension Society (BHS) guidelines recommend starting antihypertensive medication in patients with Stage 1 hypertension and a high risk of cardiovascular disease or organ damage, or in patients with Stage 2 hypertension.

First-line treatment can include one of the following (from NICE):

- ACE inhibitor (Ramipril up to 10mg daily)

- Calcium-channel blocker (Amlodipine 5-10mg daily)

- Thiazide-like diuretic (Indapamide 1.5mg daily or Bendroflumethiazide 2.5mg daily)

If initial treatment is not effective, insufficient, or there are allergies, different classes of antihypertensive agents may be combined, and doses adjusted or alternative medications prescribed as necessary.

Monitoring:

- Monitor blood pressure regularly to ensure target BP goals are achieved and maintained.

- Check for potential side effects of medications, such as dry cough with ACE inhibitors or ankle edema with calcium-channel blockers.

- Conduct blood tests periodically to assess renal function and electrolyte levels, particularly if taking a thiazide-like diuretic.

- Follow-up visits should be scheduled initially every month, then every 3 to 6 months once blood pressure is stabilised.

Prognosis:

- With effective management, including lifestyle modifications and adherence to pharmacological treatment, most patients with hypertension can maintain good control of their blood pressure.

- Failure to control blood pressure increases the risk of cardiovascular disease, stroke, renal failure, and other complications.

- Regular monitoring and appropriate management can prevent or mitigate these risks.

- Some patients may achieve blood pressure control and would be able to reduce the doses or number of medications with time, especially with sustained lifestyle changes.

Differential diagnoses:

1. Secondary hypertension (due to kidney disease, hormonal disorders, etc.) - less likely in the absence of symptoms or clinical signs indicative of these conditions.

2. White coat hypertension – possible but requires ambulatory blood pressure monitoring for confirmation.

3. Medication-induced hypertension – less likely given the patient's negative drug history for known offending agents.

Keyword Filters:

Speciality Filter:

Cardiovascular ; General Practice

Presenting Complaint Filter:

Hypertension ; Weight Gain

Condition Filter:

Essential or Secondary Hypertension

Location Filter:

General Practice

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_43\_EssentialOrSecondaryHypertension

Homepage Vignette:

## A 54-year-old male called Kavi Anouar presents with a consistently high blood pressure.

Individual Page Vignette:

You are a General Practitioner and Kavi Anouar, a 54-year-old software developer, comes to your clinic concerned about repeated high blood pressure readings from health checks at his workplace.

Patient Name:

Kavi Anouar (pronounced Kah-vee Ah-noo-ar); prefers to be called Kavi.

Age:

25/06/1970

Location:

Clinic

Personality:

Kavi comes across as meticulous and analytically minded, likely a reflection of his profession in software development. He speaks with precision and often attempts to understand the technicalities of medical explanations.

Presenting Complaint:

Kavi has come in after noticing that over the past several months, his blood pressure readings have been consistently higher than what he knows to be within the normal range.

Quote:

"I've been tracking my blood pressure for months now, and it's been steadily above the normal range. Could you explain what this may indicate?"

Symptoms:

Kavi reports no explicit symptoms but is concerned about the health implications of his high blood pressure.

Site: Not applicable, no pain or discomfort. Quote: "I feel fine; it's just the blood pressure numbers that are worrying me."

Onset: Kavi reports noticing the high readings a few months ago. Quote: "A few months back I started paying attention, and the numbers haven't been very encouraging."

Character: Not applicable, no pain. Quote: "No, there's no pain or anything, it's just the readings."

Radiation: Not applicable, no pain. Quote: "No pain to speak of, so nothing radiating anywhere."

Associated Symptoms: Kavi denies any associated symptoms. Quote: "Apart from the blood pressure, I can't say I've noticed anything else amiss."

Timing: The high readings have been consistent across different times of the day. Quote: "Morning or evening, the blood pressure is still on the higher side."

Exacerbating and Relieving Factors: Not applicable, as he reports no symptoms. Quote: "Nothing really changes the readings from what I can tell."

Severity: Not applicable, no pain. Quote: "There's no pain, so I can't rate any severity."

- Chest pain or discomfort: Negative

- Shortness of breath: Negative

- Palpitations: Negative

- Syncope: Negative

- Nausea: Negative

- Vomiting: Negative

- Intermittent claudication: Negative

- Peripheral oedema: Negative

History of Presenting Complaint:

- Duration of symptoms: Kavi reports high blood pressure for several months. Quote: "It's been a good few months with these high blood pressure readings."

- Previous treatments: Kavi has not sought treatment for this before. Quote: "This is the first time I'm seeking medical advice on this."

- Progression over time: Kavi has noticed a gradual increase in blood pressure readings. Quote: "The numbers have crept up bit by bit over time."

- Frequency of symptoms: Kavi has regularly recorded high readings. Quote: "Every time I check, it seems to be high."

- Impact on daily life and activities of daily living: No impact reported. Quote: "It hasn't really changed what I do on a daily basis."

- Impact on work: Kavi has not experienced any work impact. Quote: "No, it doesn't affect my job at all."

- Impact on physical and mental well-being: Kavi has expressed concern over potential health implications. Quote: "I find it a bit stressful not knowing what these blood pressure readings might mean for my health."

Systemic Symptoms:

- Fatigue: Negative

- Fever: Negative

- Night sweats: Negative

- Unintended weight loss: Negative

- Generalised weakness: Negative

- Malaise: Negative

- Bowel habits: Negative

- Urinary habits: Negative

- Changes in sleep: Negative

- Peripheral oedema: Negative

Past Medical History:

- Surgeries: Negative

- Hospitalizations: Negative

- Previous injuries or traumas: Negative

- Psychiatric or psychological history: Negative

- History of substance abuse or addiction: Negative

- Immunizations and vaccination history: Kavi is up to date with his vaccinations. Quote: "I've had all my jabs in time, as recommended."

- Any other relevant medical conditions or significant health events: Negative

Drug History:

Kavi is not currently taking any medications, prescription or over-the-counter, and has no history of medication non-compliance. He does not use herbal supplements or alternative therapies, contraception or HRT, non-pharmacological interventions, or has any overdose incidents.

Allergies:

Kavi reports no known allergies or intolerances.

Family History:

There is a history of hypertension and cardiovascular disease in Kavi's family, with his father having had a history of hypertension and a myocardial infarction in his late sixties.

Social History:

Lifestyle: Kavi leads a sedentary lifestyle due to his occupation and hobbies.

Occupation: Software developer.

Activities of Daily Living & Hobbies: Enjoys reading, playing chess, and occasionally programming as a hobby.

Smoking: Non-smoker (0 pack years)

Alcohol: Drinks socially, an average of 4 units per week.

Recreational Drug Use: Negative

Diet: Omnivorous with infrequent vegetable intake.

Exercise: Walks occasionally, but no routine exercise regimen.

Ideas, Concerns, and Expectations:

Ideas: Kavi believes that his high blood pressure could be due to stress and his family history.

Quote: "I'm guessing this might be something genetic or perhaps the stress from work? Though I don't really feel stressed."

Concerns: Kavi is worried about the risk of heart disease and stroke.

Quote: "My father had heart problems, and I'm concerned this blood pressure situation might lead me down the same path."

Expectations: Kavi expects to understand the cause of his high blood pressure and receive treatment advice.

Quote: "I'd like to know why this is happening and what can be done about it. Hopefully, it's something we can manage."

Observations:

Respirations (Breaths/min): 14 (0 points)

Oxygen Saturation (%): 98 on room air (0 points)

Air or Oxygen?: On room air (0 points)

Blood Pressure (mmHg): 158/94 (0 points)

Pulse (Beats/min): 84 (0 points)

Consciousness (AVPU): Alert (0 points)

Temperature (Celsius): 36.7 (0 points)

NEWS Total Score: 0

\*\*Physical Examination:\*\*

\*\*General inspection:\*\*

- Kavi Anouar appears well-nourished and well-kept, without overt signs of distress. No clinical signs of cyanosis, shortness of breath, pallor, malar flush, or oedema are apparent. No medical equipment, mobility aids, or prescriptions are noted on or around the patient that may indicate an ongoing treatment or health condition.

\*\*Inspection of the hands:\*\*

- Hands are of normal color with no signs of tar staining, xanthomata, arachnodactyly, clubbing, splinter haemorrhages, Janeway's lesions, Osler's nodes, or koilonychia.

- Palpation reveals hands that are warm, suggesting good perfusion, with a capillary refill time within the normal range of less than 2 seconds.

\*\*Pulses and blood pressure:\*\*

- Radial pulse: Regular rate and rhythm at 84 beats per minute, with no radio-radial delay.

- Collapsing pulse: Absent.

- Brachial pulse: Normal in volume and character across both arms, no evidence of radiofemoral delay.

- Blood pressure: Measures at 158/94 mmHg on the right arm and repeated with similar readings on the left arm.

- Carotid pulse: Normal in character and volume, no bruits.

\*\*Jugular venous pressure:\*\*

- JVP: Not visibly elevated and appears within normal limits.

- Hepatojugular reflux: Not elicited.

\*\*Inspection of the face:\*\*

- Eyes: No conjunctival pallor, corneal arcus, or xanthelasma are noted. Kayser-Fleischer rings are not observed.

- Mouth: No evidence of central cyanosis. No angular stomatitis, high arched palate observed, and dental hygiene is adequate.

\*\*Close inspection of the chest:\*\*

- No visible abnormalities such as pectus excavatum or pectus carinatum. No visible pulsations or scars from previous surgeries noted.

\*\*Palpation of the chest:\*\*

- Apex beat: Located in the 5th intercostal space, midclavicular line, without displacement.

- No heaves or thrills palpated across any of the valve areas.

\*\*Auscultation of the chest:\*\*

- No added heart sounds or murmurs over the aortic, pulmonary, tricuspid, or mitral areas with the diaphragm or bell.

- The carotid arteries are auscultated with no radiation of murmurs indicative of valvular heart disease.

\*\*Inspection of the back:\*\*

- Back is straight without any notable deformities or surgical scars.

\*\*Palpation of the back:\*\*

- No sacral oedema is detected upon palpation.

\*\*Auscultation of the back:\*\*

- The lung fields are clear bilaterally with no coarse crackles or absent air entry discerned.

\*\*Examination of the legs:\*\*

- No signs of pitting edema are present on inspection and palpation of the ankles. There is no evidence of previous saphenous vein harvesting seen on the legs.

Diagnostic Tests:

Blood Tests (Reference Ranges):

Full Blood Count (FBC):

Haemoglobin (Hb): 145 g/L (Female: 115 - 165 g/​L, Male: 130 - 180 g/L)

Mean Corpuscular Volume (MCV): 89 fL (80 – 100 fL)

White Blood Cell Count: 6.8 x10^9/L (3.6 - 11.0 x10^9/L)

Platelets: 250 x10^9/L (140 - 400 x10^9/L)

Urea and Electrolytes:

Sodium: 138 mmol/L (133–146 mmol/L)

Potassium: 4.2 mmol/L (3.5–5.3 mmol/L)

Calcium (adjusted): 2.4 mmol/L (2.2-2.6 mmol/L)

Magnesium: 0.9 mmol/L (0.7–1.0 mmol/L)

Urea: 5.3 mmol/L (2.5 – 7.8 mmol/L)

Creatinine: 88 μmol/L (Male: 59–104 μmol/L, Female: 45–84 μmol/ L)

Estimated Glomerular Filtration Rate (eGFR): 95ml/min/1.73m3 (>90ml/min/1.73m3)

Liver Function Tests:

Alanine transferase (ALT): 35 iu/L (3-40 iu/L)

Aspartate transaminase (AST): 28 iu/L (3-30 iu/L)

Alkaline phosphatase (ALP): 70 umol/L (30-100 umol/L)

Gamma glutamyl transferase (yGT): 40 u/L (8-60 u/L)

Bilirubin: 10 umol/L (3-17 umol/L)

Albumin: 45 g/L (35-50 g/L)

Thyroid Function Tests:

Thyroid Stimulating Hormone (TSH): 2.1 mu/L (0.4-4.5 mu/L)

Free T3: 5.4 pmol/L (3.5-7.8 pmol/L)

Free T4: 14 pmol/l (9-25 pmol/l)

Endocrine Tests:

Parathyroid Hormone: 40 ng/L (10 – 65 ng/L)

Testosterone: 20 nmol/L (Male <50: 10-45 nmol/L, Male >50: 6.2-26 nmol/L)

Arterial Blood Gases:

pH: 7.4 (7.35 - 7.45)

pO2: 12 kPa (11 - 13 kPa)

pCO2: 5.4 kPa (4.7 - 6.0 kPa)

Bicarbonate: 24 mmol/l (22-28 mmol/l)

Base Excess: 0 mmol/L (-2 to +2 mmol/L)

Haematinics:

Ferritin: 120 ng/mL (Male: 25-350ng/mL, Female: 10-300 ng/mL)

Vitamin B12: 480 pg/mL (180 – 1000 pg/mL)

Vitamin D: 55 nmol/L ( > 50 nmol/L)

Folate: 10 ng/mL ( > 4.0 ng/mL)

Total Serum Iron: 20 μmol/​L (Male: 11.6-35.0 μmol/​L, Female: 4.6 - 30.4 μmol/​L)

Transferrin Saturation: 30% (20 – 50%)

Coagulation:

Prothrombin Time (PT): 12 seconds (10 – 14 seconds)

Activated Partial Thromboplastin Time (APTT): 30 seconds (25– 35 seconds)

Fibrinogen: 3 g/L (1.50 – 4.50 g/L)

D-dimer: 200 ng/mL (< 500 ng/mL)

Metabolic Tests:

Serum Ketones: 0.4 mmol/L (< 0.6 mmol/L)

Random Blood Glucose: 5.0 mmol/L (< 11.1 mmol/L)

Fasting Blood Glucose: 5.0 mmol/L (4.0 to 5.5 mmol/L)

HbA1c: 38 mmol/mol (< 42 mmol/mol)

Other Haematology Tests:

Erythrocyte Sedimentation Rate (ESR): 20 mm/hr (Men: < (age / 2) mm/hr Women: < ((age + 10) / 2) mm/hr)

Other Biochemistry Tests:

CRP: 5 mg/L (< 10 mg/L)

NT-proBNP: 80 pg/mL (< 75 years: < 125 pg/mL, > 75 years: < 450 pg/mL)

Serum osmolality: 290 mOsmol/kg (275 – 295 mOsmol/kg)

24h urine osmolality: 600 mOsm/kg (500 – 800 mOsm/kg)

Random urine osmolality: 600 mOsm/kg (300 – 900 mOsm/kg)

Lipids:

Total Cholesterol: 4.5 mmol/l (< 5 mmol/l)

Triglycerides: 1.8 mmol/l (< 2 mmol/l)

HDL Cholesterol: 1.2 mmol/l (> 1 mmol/l)

LDL Cholesterol: 2.8 mmol/l (< 3 mmol/l)

Tumour Markers and Other Markers are not clinically relevant to hypertension and are therefore not listed.

Imaging Tests:

As part of the evaluation for hypertension, a renal ultrasound may be considered to assess the renal arteries and exclude renal pathology as a secondary cause for hypertension.

Other Tests:

ECG (Electrocardiogram): An ECG is done to check for any signs of left ventricular hypertrophy or other cardiac abnormalities associated with hypertension.

Condition:

Essential or Secondary Hypertension

\*\* Patient Questions: \*\*

1. "What do these blood pressure numbers really mean for my health?"

Possible answer: "High blood pressure can increase your risk of heart disease and stroke. We'll work together to manage it and reduce these risks."

2. "Is this high blood pressure something I've caused? Can I reverse it by changing my lifestyle?"

Possible answer: "Lifestyle factors can contribute to high blood pressure, but genetics also play a role. Making healthy lifestyle changes can improve blood pressure control and reduce the need for medication."

3. "Will I need to take medication for life? Are there side effects to worry about?"

Possible answer: "That depends on how well your blood pressure responds to lifestyle changes and, if necessary, medication. Some medications can have side effects, which we'll discuss and monitor."

4. "Could my job be affecting my blood pressure?"

Possible answer: "Stressful work environments can contribute to high blood pressure. It's worth exploring stress reduction techniques and the possible impact of work on your blood pressure."

\*\* Examiner Questions: \*\*

1. What could be the underlying causes of hypertension in a 54-year-old man with no other symptoms?

Possible answer: "Potential causes include essential hypertension, which is influenced by genetic and lifestyle factors, or secondary hypertension due to renal disease, endocrine disorders, or other systemic conditions."

2. Why might we consider doing a renal ultrasound in this patient?

Possible answer: "To assess for potential renal artery stenosis or other kidney pathologies that could be causing secondary hypertension."

3. How would you distinguish between essential and secondary hypertension?

Possible answer: "Through detailed history taking, physical examination, blood tests to screen for endocrine issues, renal function, and specialized imaging when indicated."

4. What lifestyle interventions would you recommend for this patient?

Possible answer: "Increase physical activity, dietary changes including reduced salt intake, moderation of alcohol consumption, stress management, and smoking cessation if applicable."

5. What is the target blood pressure for treatment in this patient?

Possible answer: "According to NICE guidelines, a clinic blood pressure target below 140/90 mmHg or a home blood pressure target below 135/85 mmHg is generally recommended."

6. When would you refer this patient to a specialist?

Possible answer: "If secondary hypertension is suspected, or if blood pressure remains uncontrolled despite optimal treatment, or if there are other complicating factors."

\*\* Treatment: \*\*

According to NICE guidelines for the management of hypertension in adults for both essential and secondary hypertension, the following treatment plan should be implemented:

1. Lifestyle modifications:

- Reduce salt intake to less than 6g per day.

- Engage in regular physical activity such as 150 minutes of moderate-intensity activity weekly.

- Achieve and maintain a healthy weight.

- Limit alcohol intake to no more than 14 units per week for men.

- Increase fruit and vegetable intake and reduce dietary fat.

2. Pharmacological treatment:

- If aged under 55 years, start with an ACE inhibitor or a low-cost angiotensin-II receptor blocker (ARB).

- If aged 55 years or older, or of African or Caribbean family origin at any age, start with a calcium-channel blocker.

- If blood pressure is not controlled by the single agent, a calcium-channel blocker should be added to an ACE inhibitor or ARB, or vice versa. If not tolerated, a thiazide-like diuretic may be used.

- Titrate doses and, if required, add further medication from the alternative class or a thiazide-like diuretic.

\*\* Monitoring: \*\*

- Check blood pressure after starting treatment, then at least every month until the blood pressure is stable and at the target level.

- Monitor for side effects of medications, especially after changes in treatment.

- Once blood pressure is stable, review at least annually.

- Assess for the development of end-organ damage (e.g., echocardiography for left ventricular hypertrophy) as appropriate.

- Consider specialist referral if blood pressure is not adequately controlled, if there is suspicion of secondary hypertension, or if there are complications.

\*\* Prognosis: \*\*

- The prognosis for essential hypertension, when well-managed, is generally good.

- With proper treatment and lifestyle modifications, most individuals can achieve blood pressure control.

- Uncontrolled hypertension can lead to end-organ damage, cardiovascular events, and increased mortality.

- Prognosis in secondary hypertension depends on the underlying cause and its treatability.

\*\* Differential diagnoses: \*\*

1. Renal artery stenosis - less likely due to lack of abdominal bruit, normal renal function.

2. Hyperaldosteronism - less likely in the absence of hypokalemia and metabolic alkalosis.

3. Pheochromocytoma - less likely given the absence of paroxysmal symptoms like sweating, palpitations, or headache.

4. Cushing's syndrome - less likely without features such as central obesity, skin changes, or muscle weakness.

\*\* Keyword Filters: \*\*

Speciality Filter:

Cardiovascular; General Practice;

Presenting Complaint Filter:

Hypertension;

Condition Filter:

Essential or Secondary Hypertension;

Location Filter:

Clinic

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_44\_EssentialOrSecondaryHypertension

Homepage Vignette:

## A 53-year-old male called Felipe Quispe presents with elevated blood pressure and headaches.

Individual Page Vignette:

You are a General Practitioner, and Felipe Quispe, a 53-year-old engineer, comes to your clinic concerned about recently recorded high blood pressure readings at a pharmacy and has been experiencing frequent headaches.

Patient Name:

Felipe Gopal Quispe (pronounced: FEH-lee-pay GOH-pahl KEES-peh). He would like to be called Felipe.

Age:

17/04/1971

Location:

General Practice

Personality:

Felipe is an engineer with a methodical and analytical mindset. He's articulate, detail-oriented, and tends to thoroughly research his health concerns before visiting the clinic. He has a preference for clear and concise communication.

Presenting Complaint:

Felipe presents with headaches that have become more frequent over the past two months and elevated blood pressure readings.

Quote:

"I've never had issues with my blood pressure before, but these headaches and the high readings at the pharmacy screening have got me worried."

Symptoms:

Site: Temporal region; "The pain seems to be pounding on the sides of my head, right here."

Onset: Gradual over the past two months; "I started noticing these headaches a couple of months ago, they've been creeping up on me."

Character: Pounding; "It feels like there's a drum beating rhythmically in my head."

Radiation: Does not radiate; "No, the pain stays put, doesn’t move around."

Associated Symptoms: None related to headaches; "Just the headaches on their own, no nausea or anything like that."

Timing: Intermittent; "It comes and goes, can’t really pin down a pattern."

Exacerbating and Relieving Factors: Stress seems to exacerbate; "They get worse when I'm on a tight deadline at work."

Severity: Moderate; "On a scale from one to ten, I’d say it’s around a six."

Findings:

- Chest pain or discomfort: Negative

- Shortness of breath: Negative

- Palpitations: Negative

- Syncope: Negative

- Nausea: Negative

- Vomiting: Negative

- Intermittent claudication: Negative

- Peripheral oedema: Negative

Quote:

"The headaches are troubling, but I haven't had any chest pain or trouble breathing, nothing like that."

History of Presenting Complaint:

- Duration of symptoms: Two months; "These headaches have been botherin' me for about two months now."

- Previous treatments: None; "I haven't taken anything specific for it, just the odd paracetamol."

- Progression over time: Increasing in frequency; "They've been getting more frequent, which is why I'm here."

- Frequency of symptoms: Several times a week; "I would say it happens several times a week now."

- Impact on daily life and activities of daily living: Minimal at present; "I just power through it, doesn't stop me from doing what I need to do."

- Impact on work: Mild; "It’s annoying more than anything, makes it hard to concentrate."

- Impact on physical and mental wellbeing: Some concern; "I’m worried something might be up, which is stressin' me out a bit."

Quote:

"I'd say it's been getting a bit worse over time, but I've not let it stop me doing my normal stuff."

Systemic Symptoms:

- Fatigue: Negative

- Fever: Negative

- Night sweats: Negative

- Unintended weight loss: Negative

- Generalised weakness: Negative

- Malaise: Negative

- Bowel habits: Normal

- Urinary habits: Normal

- Changes in sleep: Negative

- Peripheral oedema: Negative

Quote:

"I feel pretty normal otherwise; it's mainly these headaches that have been out of the ordinary."

Past Medical History:

- Surgeries: Negative

- Hospitalizations: Negative

- Previous injuries or traumas: Negative

- Psychiatric or psychological history: Negative

- History of substance abuse or addiction: Negative

- Immunizations and vaccination history: Up to date

- Any other relevant medical conditions or significant health events: Negative

Quote:

"As far as I'm aware, there's nothing noteworthy in my past health history."

Drug History:

Felipe does not take any regular medications, has no history of medication non-compliance, and doesn't use any herbal supplements. He does not take any contraception or HRT and has not had any non-pharmacological interventions or overdose incidents.

Quote:

"I'm not on any medications, and I don't tend to use herbal stuff either."

Allergies:

Felipe reports no known allergies to medications, substances, or environmental factors.

Quote:

"I've not had any allergic reactions that I know of."

Family History:

Felipe reports no significant family history of medical conditions.

Quote:

"My family's been quite lucky with health, nothing major that I’ve heard about."

Social History:

Lifestyle: Felipe leads a relatively sedentary lifestyle due to his occupation.

Occupation: Engineer

Activities of Daily Living & Hobbies: Felipe enjoys building model airplanes and reading about aviation history.

Smoking: Non-smoker

Alcohol: Drinks socially, about 4 units per week

Recreational Drug Use: None

Diet: Moderately balanced, with a tendency to eat out frequently due to work commitments

Exercise: Light walking, no regular exercise program

Travel History: No recent travel

Sexual History: Not relevant to the current presentation

Driving Status: Drives daily to work

Cultural or Religious Practices: Not actively practicing any religion

Recent Life Events: Completed a major project at work

Exposure to Hazards or New Environment: Regularly works in an office environment with no particular hazards

Quote:

- "I don't smoke at all, and I only drink a pint or two on the weekends with my mates."

- "I would say I eat pretty normal; I'm not overly strict with my diet."

- "Exercise? Does walking to the car count? I'm not much for the gym, to be honest."

Ideas, Concerns, and Expectations:

Ideas: Felipe thinks his blood pressure might be up because of work stress and his diet.

Concerns: He is worried that he might have developed hypertension and is concerned about potential complications.

Expectations: He expects a full assessment of his blood pressure and advice on managing it, possibly with medication.

Quote for Ideas:

"I’m thinking maybe it's my blood pressure because of the stress at work and maybe the takeaways I sometimes have."

Quote for Concerns:

"What worries me is the possibility that I've got high blood pressure, you know, hypertension, and what that could mean down the line."

Quote for Expectations:

"I'd like to get a proper blood pressure check and understand what we can do about it. If it means taking some pills, then so be it."

Observations:

Respirations (Breaths/min): 16 (0 points)

Oxygen Saturation (%): 98% on room air (0 points)

Air or Oxygen?: Room air (0 points)

Blood Pressure (mmHg): 152/96 (0 points)

Pulse (Beats/min): 78 (0 points)

Consciousness (AVPU): Alert (0 points)

Temperature (Celsius): 37.0°C (0 points)

NEWS Total Score: 0

Physical Examination:

General inspection:

- No signs of cyanosis, shortness of breath, pallor, malar flush, or oedema

Inspection of the hands:

- No abnormalities observed including tar staining, xanthomata, and clubbing

Pulses and blood pressure:

- Normal radial and brachial pulse volume and rhythm.

- No radio-radial delay

- No collapsing pulse

Jugular venous pressure:

- Not elevated

Inspection of the face:

- No conjunctiva pallor, corneal arcus, or xanthelasma observed

Palpation of the chest:

- Apex beat palpated within normal limits

- No heaves or thrills palpated

Auscultation of the chest:

- No added sounds or murmurs heard in any of the cardiac areas

Examination of the legs:

- No pitting oedema or evidence of saphenous vein harvesting observed

Special Tests:

Not indicated based on the current clinical presentation.

Diagnostic Tests:

Blood tests might include full blood count, renal and liver function tests, lipid profile, thyroid function test, glucose levels, and electrolytes to assess overall health and rule out secondary causes of hypertension.

Condition:

Essential or secondary hypertension

Patient Questions:

"Why are my pressure readings higher at the pharmacy than at home?"

- "Blood pressure can vary throughout the day and can be influenced by many factors, including stress, activity levels, and the environment."

"What kind of diet should I be looking at if I have high blood pressure?"

- "A low-salt diet rich in fruits, vegetables, lean protein and whole grains is typically recommended for managing high blood pressure."

"Could these headaches be related to my blood pressure?"

- "Yes, headaches can sometimes be a symptom of high blood pressure. It's important to monitor your blood pressure regularly and follow up with your healthcare provider."

"How soon will we know if I need medications for my blood pressure?"

- "We may start with lifestyle modifications and monitor your blood pressure over the next few weeks. If it remains high, we might consider medication."

Examiner Questions:

"What are the diagnostic criteria for hypertension?"

- "A clinic blood pressure of 140/90 mmHg or higher, or an ambulatory blood pressure monitoring daytime average or home blood pressure monitoring average of 135/85 mmHg or higher."

"What lifestyle interventions are recommended for a patient with newly diagnosed hypertension?"

- "Recommendations include reducing salt intake, regular physical activity, moderating alcohol consumption, quitting smoking, and a balanced diet."

"How does the age and sex of a patient affect the risk of developing hypertension?"

- "The risk of developing hypertension increases with age, and men are more likely to develop it at a younger age than women."

"What would be the first-line medication offered for hypertension management in this scenario?"

- "Depending on the patient's ethnic background and age, a calcium-channel blocker or a thiazide-like diuretic may be offered as the first-line treatment."

"How would you differentiate between essential and secondary hypertension?"

- "Secondary hypertension is typically suggested by a sudden onset, severe hypertension, or poor control with treatment. Investigations for secondary causes like renal function, electrolytes, and endocrine tests may be needed."

Treatment:

Initial management for hypertension typically involves lifestyle advice:

- Reduce salt intake (aim for less than 6g a day).

- Engage in regular aerobic exercise (e.g. 30 minutes a day).

- Limit alcohol consumption and reduce caffeine.

- Aim for a healthy diet rich in fruits and vegetables.

- Achieve and maintain a healthy weight.

If lifestyle modifications fail to control blood pressure adequately, pharmacological treatment is indicated. According to NICE guidelines, for patients under 55 years of age who are not of black African or black Caribbean descent, the first-line treatment is an ACE inhibitor or a low-cost angiotensin-II receptor blocker (ARB). For patients aged 55 and over or who are of black African or black Caribbean descent of any age, a calcium-channel blocker would be the first choice.

Ensure to check renal function and electrolytes before starting an ACE inhibitor/ARB, and monitor periodically afterward.

If the blood pressure target is not achieved with one drug, then depending on therapeutic response, a combination of drugs from different classes, including ACE inhibitors, ARBs, calcium-channel blockers, and diuretics may be used. The specific combination of medication depends on patient factors and any contraindications or tolerance issues.

Dose adjustments following NICE and BNF guidance should be adhered to.

Monitoring:

- Monitor blood pressure every month until it is consistently within the target range.

- Annually review medication, lifestyle advice, and perform baseline electrolytes and renal function tests.

- If on ACE inhibitor/ARB, monitor kidney function and potassium levels shortly after starting treatment and after any dose change.

- Advise the patient to return to the clinic if they experience any side effects or if there's no improvement in blood pressure.

Prognosis:

- The majority of patients can achieve good blood pressure control with appropriate treatment and lifestyle modifications.

- Lifelong treatment and monitoring are often necessary.

- Early treatment and control of blood pressure can significantly reduce the risk of cardiovascular disease, stroke, and renal impairment.

- Prognosis worsens if patients do not adhere to treatment or if secondary hypertension is due to an underlying condition that is difficult to manage.

Differential diagnoses:

1. Kidney disease – less likely due to the absence of symptoms like changes in urinary habits and no history of complications.

2. Thyroid dysfunction – less likely given the lack of symptoms such as weight changes, temperature intolerance, and palpitations.

3. Pheochromocytoma – less likely in the absence of episodic hypertension, palpitations, or diaphoresis.

4. Coarctation of the aorta – less likely given the age and lack of findings such as radio-femoral delay or symptoms of heart failure.

5. Primary aldosteronism – less likely due to absence of hypokalemia symptoms like muscle weakness or significant thirst.

Speciality Filter:

Cardiovascular; General Practice

Presenting Complaint Filter:

Headache; Hypertension

Condition Filter:

Essential or Secondary Hypertension

Location Filter:

General Practice

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_45\_Pulmonary Hypertension

Homepage Vignette:

## A 34-year-old female called Mihaela Voinea presents with breathlessness and fatigue.

Individual Page Vignette:

As the attending healthcare professional, you are met with Mihaela Voinea, a 34-year-old, finance analyst at your clinic. She complains of increasing breathlessness and extreme fatigue that has been affecting her daily life.

Patient Name:

Mihaela Voinea (pronounced "Mee-hah-EL-ah Voy-NEH"). Mihaela would like to be called by her first name.

Age:

14/06/1990

Location:

Clinic

Personality:

Mihaela maintains a strong presence, articulating her concerns with clarity and intention. Her speech is concise and she exhibits a high educational level, but she is noticeably anxious about her symptoms and the potential implications for her work and lifestyle.

Presenting Complaint:

Mihaela has come to the clinic troubled by increasing breathlessness on exertion and unrelenting fatigue over the past few months.

Quote:

"It's becoming overwhelmingly difficult to manage simple tasks without feeling out of breath, and no amount of rest seems to alleviate this profound tiredness."

Symptoms:

Site: Chest and generalised – "It feels like my whole body is struggling, especially my chest."

Onset: Gradual over the past few months – "I first noticed feeling short of breath a few months back, but it's gotten much worse lately."

Character: Progressive breathlessness and fatigue – "The tiredness is deep, more than just feeling sleepy, and the breathlessness is suffocating."

Radiation: Not applicable – "The breathlessness is not really localised; it's not like pain that radiates."

Associated Symptoms: None specific – "I just feel breathless and extremely tired, nothing else really."

Timing: More pronounced with activity – "The more I do, the worse it becomes."

Exacerbating and Relieving Factors: Activity worsens, rest does not fully relieve – "Doing just about anything tires me out, and resting doesn't seem to help much."

Severity: Intense enough to affect daily activities – "It's affecting my work and my ability to enjoy life."

Chest pain or discomfort: Negative

Shortness of breath: Positive – "Walking up the stairs makes me feel like I've run a marathon."

Palpitations: Negative

Syncope: Negative

Nausea: Negative

Vomiting: Negative

Intermittent claudication: Negative

Peripheral oedema: Negative

Quote for shortness of breath:

"Even minimal exertion leaves me gasping for air, it's very distressing."

History of Presenting Complaint:

Duration of symptoms: Gradual onset over months – "It's been a few months, started slowly but now it's constant."

Previous treatments: None – "I haven't taken anything for it, I thought it would go away on its own."

Progression over time: Worsening – "It's been getting steadily worse every week."

Frequency of symptoms: Daily, especially with activity – "I feel breathless every day now, especially when I'm active."

Impact on daily life and activities of daily living: Significant – "I can't even enjoy a walk in the park any more without feeling exhausted."

Impact on work: Considerable – "My job requires focus and energy, which I'm really struggling with right now."

Impact on physical and mental wellbeing: Affected significantly – "It's starting to get me down; I'm tired and frustrated all the time."

Quote:

"I feel like my body is failing me. I'm short of breath all the time and so tired, it's making everyday life a real struggle."

Systemic Symptoms:

Fatigue: Positive – "I'm exhausted all the time, no matter how much I sleep."

Fever: Negative

Night sweats: Negative

Unintended weight loss: Negative

Generalised weakness: Positive – "My whole body feels weak, especially after any effort."

Malaise: Positive – "I just don't feel well in myself, you know? Just off."

Bowel habits: Normal

Urinary habits: Normal

Changes in sleep: Negative

Peripheral oedema: Negative

Quote:

"I'm completely drained, constantly weak, and just feel generally unwell."

Past Medical History:

Surgeries: Negative

Hospitalizations: Negative

Previous injuries or traumas: Negative

Psychiatric or psychological history: Negative

History of substance abuse or addiction: Negative

Immunizations and vaccination history: Up-to-date on routine vaccinations

Any other relevant medical conditions or significant health events: Negative

Quote:

"Thankfully, I've been quite healthy up until now. No hospital stays or major health issues."

Drug History:

Mihaela reports no current use of prescription or over-the-counter medications. She does not use herbal supplements or alternative therapies. No history of medication non-compliance or overdose incidents is reported.

Quote:

"I don't take any medicines regularly, and I've never really needed them before."

Allergies:

Mihaela has no known allergies.

Quote:

"I've never had any allergies that I know of. Nothing's ever caused a bad reaction."

Family History:

No known family history of cardiac or pulmonary diseases. Parents are alive and well with no chronic illnesses. No siblings.

Quote:

"My family has been lucky health-wise; no heart or lung problems that I'm aware of."

Social History:

Lifestyle: Moderate stress due to job

Occupation: Finance analyst

Activities of Daily Living & Hobbies: Enjoys reading and hiking, but recently limited by symptoms

Smoking: Non-smoker

Alcohol: Drinks socially, approximately 3-4 units per week

Recreational Drug Use: None

Diet: Generally balanced with occasional fast food intake

Exercise: Limited by current symptoms but previously active

Quote 1:

"I've never smoked and I only have a drink once in a while with friends."

Quote 2:

"I'm not much of a fast food person really, I try to eat balanced meals."

Quote 3:

"It's so frustrating; I used to love hiking, but now I can't even manage a gentle walk without feeling winded."

Ideas, Concerns, and Expectations:

Ideas:

Mihaela believes her symptoms might be related to stress at work or perhaps an undiagnosed heart condition.

Quote:

"I've wondered if all the stress from my job is taking its toll, or if there could be something wrong with my heart."

Concerns:

She is concerned about the potential impact of her symptoms on her ability to work and fears she may have a chronic illness.

Quote:

"I'm really worried this could be something chronic, and I don't know how I'll manage my work if it continues."

Expectations:

Mihaela hopes to have a thorough assessment, receive an explanation for her symptoms, and commence an effective treatment plan.

Quote:

"I'm expecting to find out what's causing this and to start treatment to get me back to my normal self."

Observations:

Respirations (Breaths/min): 22

Oxygen Saturation (%): 96%

Air or Oxygen?: Room air

Blood Pressure (mmHg): 135/85

Pulse (Beats/min): 80

Consciousness (AVPU): Alert

Temperature (Celsius): 36.7°C

NEWS Total Score: 2

(The NEWS total score is 2, calculated from 2 points for respiratory rate being 22 breaths/min, and all other parameters scoring 0 points.)

\*\*Physical Examination:\*\*

\*\*General inspection:\*\*

- Mihaela appears well-groomed but exhibits a mild pallor and signs of fatigue. No signs of cyanosis, malar flush, or oedema are appreciated. She looks anxious about her health. No medical equipment, personal effects, or prescription bottles are visible that may indicate her diagnosis or ongoing treatments.

\*\*Inspection of the hands:\*\*

- Color is normal with no evidence of tar staining, xanthomata, arachnodactyly, or clubbing.

- No splinter haemorrhages, Janeway's lesions, Osler's nodes, or koilonychia are present.

- Palpation reveals warm hands with a brisk capillary refill time of less than 2 seconds.

\*\*Pulses and blood pressure:\*\*

- Radial pulse is regular with a rate of 80 beats per minute and no radio-radial delay.

- No collapsing pulse is noted, arguing against aortic regurgitation.

- Brachial pulse volume and character are normal, and there is no blood pressure differential between the arms, measuring 135/85 mmHg bilaterally.

- Carotid pulse is palpable bilaterally with normal volume and character without carotid bruits.

\*\*Jugular venous pressure:\*\*

- The jugular venous pressure is not elevated and difficult to assess for hepatojugular reflux in a clinic setting without appropriate positioning and absence of heart failure symptoms.

\*\*Inspection of the face:\*\*

- No conjunctival pallor or jaundice is visible, and there is no corneal arcus or xanthelasma.

- The perioral area appears normal with no evidence of central cyanosis. Angular stomatitis and a high arched palate are absent, and dental hygiene is good.

\*\*Close inspection of the chest:\*\*

- The chest wall is symmetrical with no deformities such as pectus excavatum or pectus carinatum.

- No significant visible pulsations are observed, and no surgical scars are present.

\*\*Palpation of the chest:\*\*

- The apex beat is palpated at the fifth intercostal space in the midclavicular line, which is not displaced, and there are no palpable heaves.

- No thrills are felt on palpation.

\*\*Auscultation of the chest:\*\*

- The aortic, pulmonary, tricuspid, and mitral areas are auscultated. No added heart sounds or murmurs are heard when auscultating with both diaphragm and the bell.

- Auscultation of the carotid arteries does not reveal any radiation of an ejection systolic murmur which would suggest aortic stenosis.

\*\*Inspection of the back:\*\*

- The back is normal without any visible deformities or surgical scars.

\*\*Palpation of the back:\*\*

- No sacral oedema is detected upon palpation of the sacrum.

\*\*Auscultation of the back:\*\*

- The lung fields are clear to auscultation without any coarse crackles or areas of absent air entry.

\*\*Examination of the legs:\*\*

- There is no pitting oedema present on inspection and palpation of the ankles.

- No signs suggesting previous saphenous vein harvesting are observed.

Special Tests:

Echocardiogram indicated based on presenting complaint and suspicions of pulmonary hypertension.

Diagnostic Tests:

Blood Tests (Reference Ranges):

FBC, U&Es, LFTs, TFTs, and other tests as indicated to help rule out other underlying causes.

Condition:

Pulmonary Hypertension

Patient Questions:

1. "Could all of this just be because I'm under a lot of stress lately?"

Possible answer: "Stress can affect your body in many ways, but your symptoms suggest a medical condition that needs to be investigated further."

2. "Is there something seriously wrong with my heart?"

Possible answer: "We need to conduct some tests to understand what's happening, but it's important to check for conditions like pulmonary hypertension that affect the heart and lungs."

3. "Will I need to be on medication for the rest of my life?"

Possible answer: "Treatment depends on the diagnosis, but if it is pulmonary hypertension, then long-term medication may be needed to manage the condition."

4. "Can I still exercise or should I be resting?"

Possible answer: "Until we have a better understanding of your condition, it's best to avoid strenuous activity and discuss a suitable exercise program with your doctor."

Examiner Questions:

1. What is the pathophysiology of pulmonary hypertension?

Possible answer: "Pulmonary hypertension is a type of high blood pressure that affects the arteries in the lungs and the right side of the heart, leading to narrowing and thickening of the vessel walls, impeding blood flow, and causing the heart to work harder."

2. What are the key clinical signs of pulmonary hypertension?

Possible answer: "Clinical signs can include dyspnoea, fatigue, syncope, chest pain, and on examination, signs such as a loud P2, raised JVP, lower limb edema, or ascites might be present."

3. Which diagnostic tests are most commonly used to diagnose pulmonary hypertension?

Possible answer: "An echocardiogram is commonly done initially, but right heart catheterization is the definitive diagnostic test."

4. What are the main treatment options for pulmonary hypertension?

Possible answer: "Treatment options include vasodilators like calcium channel blockers, phosphodiesterase-5 inhibitors, endothelin receptor antagonists, and in severe cases, lung transplantation."

5. What are the key causes of secondary pulmonary hypertension?

Possible answer: "Secondary pulmonary hypertension can be caused by chronic lung diseases, chronic thromboembolic disease, connective tissue diseases, congenital heart disease, and other conditions that put strain on the pulmonary vasculature."

6. When would you refer a patient with pulmonary hypertension to a specialist?

Possible answer: "Referral to a specialist is indicated for confirmation of diagnosis, management with specialized therapies, and to consider advanced treatment options such as surgical intervention."

Treatment:

1. Refer to a specialist center for pulmonary hypertension for confirmation of diagnosis and management.

2. Initiate general measures including supervised exercise training, diuretics for right heart failure symptoms, and oxygen therapy if required.

3. Depending on the etiology, targeted treatments may include calcium channel blockers (e.g., amlodipine), phosphodiesterase-5 inhibitors (e.g., sildenafil), endothelin receptor antagonists (e.g., bosentan), or prostacyclin analogues (e.g., epoprostenol).

4. Anticoagulation may be considered if thromboembolic disease is present.

5. Advanced therapies, like riociguat, for specific forms of pulmonary hypertension classified under group 1.

6. Continuous follow-up and re-evaluation of therapy effectiveness and side effects.

Monitoring:

- Regular outpatient follow-up at a specialized center to monitor response to treatment and disease progression.

- Monitor for side effects of medications used in treatment.

- Regular echocardiograms to assess right heart function and pulmonary artery pressures.

- Re-assessment of functional status, exercise tolerance, and blood tests as advised by the specialist.

- Consider referral for lung transplantation evaluation if indicated.

Prognosis:

- Prognosis for pulmonary hypertension is varied and depends on underlying causes, response to treatment, and overall health status.

- Early diagnosis and treatment initiation improve outcomes significantly.

- Survival rates have improved with the advent of targeted therapies, but disease progression is generally considered chronic and progressive.

Differential diagnoses:

1. Chronic thromboembolic pulmonary hypertension (CTEPH) - less likely without history of venous thromboembolism.

2. Chronic obstructive pulmonary disease (COPD) - lacks spirometric confirmation or typical symptoms/signs.

3. Cardiac causes (e.g. left heart disease) - no clinical signs of left-sided heart failure present.

4. Connective tissue disease - no symptoms indicative of systemic involvement.

5. Sleep-disordered breathing - no symptoms of sleep apnoea are reported.

Keyword Filters:

Speciality Filter:

Cardiovascular; Respiratory

Presenting Complaint Filter:

Breathlessness; Fatigue

Condition Filter:

Pulmonary Hypertension

Location Filter:

Clinic

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_46\_Pulmonary Hypertension

Homepage Vignette:

## A 64-year-old woman called Thienna Albasini presents with worsening breathlessness on exertion.

Individual Page Vignette:

You are a registrar in a local hospital Respiratory Clinic. Thienna Albasini, a 64-year-old retired librarian, has come in today complaining of worsening breathlessness on exertion, which has been limiting her daily activities.

Patient Name:

Thienna Albasini (Pronunciation: Tee-en-nah Al-bah-see-nee). Thienna prefers to be called by her first name.

Age:

24/08/1959

Location:

Respiratory Clinic

Personality:

Thienna is well-read with a penchant for detail and clarity, owing to her librarianship. She communicates with precision and has a reserved but attentive demeanor, naturally inquisitive about her health.

Presenting Complaint:

Thienna has noticed that she becomes increasingly short of breath with activities she used to manage without difficulty, such as walking to the local shop or gardening.

Quote:

"I've always enjoyed an active life, but recently even pottering about in my garden leaves me quite winded."

Symptoms:

Site: Chest, quote: "It feels like my chest gets tight, right here in the middle."

Onset: Gradual, quote: "It's been creeping up on me over the past year, getting worse recently."

Character: 'Heavy' feeling, quote: "My chest feels heavy, like there's a weight on it."

Radiation: Does not radiate, quote: "No, the heaviness doesn't spread, it's just in my chest."

Associated Symptoms: Fatigue, quote: "Along with the breathlessness, there's this pervasive tiredness."

Timing: During exertion, quote: "I notice it more when I'm carrying shopping or going up stairs."

Exacerbating and Relieving Factors: Physical activity worsens it, rest improves it, quote: "If I sit down for a bit, the shortness of breath eases off."

Severity: Moderate, affecting activities, quote: "It's got to the point where it stops me from doing things."

Negative or Positive Findings:

Chest pain or discomfort: Positive, quote: "Yes, this unsettling tightness in my chest."

Shortness of breath: Positive, quote: "I've had to stop and catch my breath more often these days."

Palpitations: Negative

Syncope: Negative

Nausea: Negative

Vomiting: Negative

Intermittent claudication: Negative

Peripheral oedema: Positive, quote: "My ankles do seem a bit puffed up by the evening."

History of Presenting Complaint:

Duration of symptoms: Approximately one year, worsening recently, quote: "It's been a year or so, but the last few months have been especially tough."

Previous treatments: None sought, quote: "I haven't been treated for this, I thought it might just go away."

Progression over time: Worsening, quote: "It's definitely getting harder to do things, I'm quite worried."

Frequency of symptoms: Daily with effort, quote: "Every day, if I do anything a little strenuous."

Impact on daily life and activities of daily living: Significant, quote: "Even housework can be a challenge now."

Impact on work: Retired, quote: "Thankfully, I'm retired, but I fear how it would've affected my job."

Impact on physical and mental wellbeing: Causing distress, quote: "I hate this feeling of restriction, it's not like me."

Systemic Symptoms:

Fatigue: Positive, quote: "I'm wiped out by the simplest of tasks."

Fever: Negative

Night sweats: Negative

Unintended weight loss: Negative

Generalised weakness: Positive, quote: "I feel this general weakness that wasn't there before."

Malaise: Negative

Bowel habits: Normal

Urinary habits: Normal

Changes in sleep: Negative

Peripheral oedema: Positive, quote: "By the evening, my socks are tight with the swelling in my legs."

Past Medical History:

Surgeries: Negative

Hospitalizations: Negative

Previous injuries or traumas: Negative

Psychiatric or psychological history: Negative

History of substance abuse or addiction: Negative

Immunizations and vaccination history: Up-to-date

Any other relevant medical conditions or significant health events: Negative

Drug History:

Thienna is not currently on any medications and hasn't been known to miss doses as she's generally very organised. No history of medication non-compliance. No use of herbal supplements or alternative therapies. No contraception or HRT mentioned. No known overdoses.

Allergies:

Thienna reports no known allergies.

Family History:

There is no family history of diagnosed pulmonary hypertension or other significant respiratory disorders. However, her father had a history of coronary artery disease.

Social History:

Lifestyle:

Thienna leads a mostly sedentary lifestyle since retirement but does enjoy light gardening when able.

Occupation:

Retired librarian, known for a meticulous approach to her work.

Activities of Daily Living & Hobbies:

She enjoys reading and knitting, activities that don't tax her respirations too much.

Smoking: Never smoked (0 pack years)

Alcohol: Drinks occasionally, about 3 units of wine per week.

Recreational Drug Use: None

Diet: Balanced diet, includes sufficient vegetables and fruits.

Exercise: Light gardening occasionally, but limited by symptoms.

Quotes:

"If I could, I would spend more time in my garden, it always brought me peace."

"I enjoy a glass of wine with my Sunday roast – it's one of my small pleasures."

"The idea of doing nothing frightens me more than the breathlessness. A good book and my knitting needles have been my solace."

Ideas, Concerns, and Expectations:

Ideas:

Thienna believes her symptoms may be a sign of underlying heart disease, given her father's history.

Quote:

"I wonder if this is something to do with my heart, like my father had."

Concerns:

She is concerned that her condition may worsen, preventing her from enjoying her retirement.

Quote:

"I'm afraid this will stop me from living my retirement years as I'd hoped."

Expectations:

She hopes to understand the cause of her symptoms and receive treatment to manage her condition.

Quote:

"I hope you can tell me what's wrong, and there's something that can be done about it."

Observations:

Respirations (Breaths/min): 20 (0 points)

Oxygen Saturation (%): 94% (1 point)

Air or Oxygen?: On room air (0 points)

Blood Pressure (mmHg): 135/85 (0 points)

Pulse (Beats/min): 78 (0 points)

Consciousness (AVPU): Alert (0 points)

Temperature (Celsius): 36.9°C (0 points)

NEWS Total Score: 1

(Thienna has a NEWS score of 1 due to her oxygen saturation being in the 94-95% range.)

Physical Examination:

General inspection:

- Clinical signs suggestive of underlying pathology: No cyanosis, no malar flush, presence of peripheral oedema.

- Objects or equipment: None observed related to her condition.

Inspection of the hands:

- General observation: No clubbing, no tar staining.

- Capillary refill time: Normal, <2 seconds.

Pulses and blood pressure:

- Radial pulse: Regular rate and rhythm, no radio-radial delay.

- Blood pressure: No significant difference between arms.

- Carotid pulse: Normal volume and character.

Jugular venous pressure:

- Jugular venous pressure: Not elevated.

- Hepatojugular reflux test: Negative.

Inspection of the face:

- Eyes: No conjunctiva pallor, no corneal arcus, no xanthelasma.

- Mouth: No central cyanosis, good dental hygiene.

Close inspection of the chest:

- Visible pulsations: No visible pulsations.

- Scars from previous thoracic surgery: None present.

Palpation of the chest:

- The apex beat: Located within the fifth intercostal space, not displaced.

- No heaves or thrills palpated.

Auscultation of the chest:

- No added sounds or murmurs in all areas auscultated.

Inspection of the back:

- No deformities or scars appreciated.

Palpation of the back:

- No sacral oedema palpated.

Auscultation of the back:

- Lung fields: Clear, no coarse crackles or absent air entry noted.

Examination of the legs:

- Pitting oedema is present at the ankles.

Special Tests:

As indicated, appropriate for respiratory assessment and pulmonary hypertension evaluation.

Diagnostic Tests:

Blood Tests (Reference Ranges):

Full Blood Count (FBC):

Haemoglobin (Hb): Result (Female: 115-165 g/L)

Mean Corpuscular Volume (MCV): Result (80–100 fL)

White Blood Cell Count: Result (3.6-11.0 x10^9/L)

Platelets: Result (140-400 x10^9/L)

Urea and Electrolytes:

Sodium: Result (133–146 mmol/L)

Potassium: Result (3.5–5.3 mmol/L)

Calcium (adjusted): Result (2.2-2.6 mmol/L)

Urea: Result (2.5 – 7.8 mmol/L)

Creatinine: Result (Female: 45–84 μmol/L)

Estimated Glomerular Filtration Rate (eGFR): Result (>90ml/min/1.73m^3)

Liver Function Tests:

Alanine transferase (ALT): Result (3-40 iu/L)

Aspartate transaminase (AST): Result (3-30 iu/L)

Alkaline phosphatase (ALP): Result (30-100 umol/L)

NT-proBNP: Result (< 75 years: < 125 pg/mL, > 75 years: < 450 pg/mL)

Other Biochemistry Tests:

CRP: Result (< 10 mg/L)

Arterial Blood Gases:

pH: Result (7.35 - 7.45)

pO2: Result (11 - 13 kPa)

pCO2: Result (4.7 - 6.0 kPa)

Bicarbonate: Result (22-28 mmol/l)

Base Excess: Result (-2 to +2 mmol/L)

Imaging Tests:

Echocardiography: Shows evidence of right ventricular enlargement, consistent with pulmonary hypertension. Increased pulmonary artery pressures may be noted.

Treatment:

Based on NICE guidelines, initial treatment will focus on optimising the management of any underlying conditions and providing supportive therapy, such as diuretics for control of peripheral oedema. If warranted, consideration may be given to specific pharmacological treatments for pulmonary hypertension, including phosphodiesterase type-5 inhibitors like sildenafil, endothelin receptor antagonists, and prostanoids, tailored to the patient's specific type of pulmonary hypertension and any contraindications they may have.

Monitoring:

- Monitor for symptomatic relief, particularly the reduction in dyspnoea and fatigue.

- Follow-up echocardiography to assess response to therapy and disease progression.

- Right heart catheterisation may be performed as a part of the initial diagnostic work-up or to assess the response to therapy if clinically indicated.

- Regular follow-up visits to assess for adverse effects of therapy and titration of medications, typically every 3-6 months.

Prognosis:

- Pulmonary hypertension is a chronic and progressive disease.

- Early diagnosis and treatment can improve symptoms and potentially slow progression.

- Factors such as response to therapy, severity at diagnosis, and comorbidities will influence the prognosis.

- New advances and treatments continue to improve the outlook for patients with pulmonary hypertension.

Differential Diagnoses:

1. Chronic Obstructive Pulmonary Disease (COPD): Less likely due to lack of smoking history and the absence of wheeze or chronic productive cough.

2. Heart Failure: Could present similarly, but typically accompanied by bilateral basal crackles, which are not present here.

3. Pulmonary Embolism: Usually acute onset, sharp chest pain, history may reveal risk factors for clotting, which are not evident here.

Keyword Filters:

Speciality Filter:

Respiratory; Cardiovascular

Presenting Complaint Filter:

Breathlessness; Peripheral Oedema and Ankle Swelling

Condition Filter:

Pulmonary Hypertension

Location Filter:

Clinic

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_47\_Pulmonary Hypertension

Homepage Vignette:

## A 45-year-old female named Jadzia Dax presents with shortness of breath and fatigue.

Individual Page Vignette:

You are a junior doctor in a clinic. Jadzia Dax, a 45-year-old astrophysicist, presents to your clinic with complaints of progressive shortness of breath and increasing fatigue.

Patient Name:

Jadzia Dax (Pronunciation: JAD-zee-ah Dax; Preferred name: Jadzia)

Age:

14/06/1979

Location:

Clinic

Personality:

Jadzia is an articulate and assertive person who speaks with precise diction. She has a curious and analytical mindset, often presenting her symptoms with well-considered reasoning. Her educational background in astrophysics contributes to her habit of meticulously documenting the details surrounding her symptoms.

Presenting Complaint:

Jadzia reports experiencing increased shortness of breath on exertion and a persistent sense of fatigue that has progressively worsened over the past six months.

Quote: "It feels as if I'm gasping for air after climbing just a short flight of stairs, and I'm so tired that even my usual morning jogs have become too challenging to complete."

Symptoms:

Site: Chest - "The discomfort seems to radiate across my chest."

Onset: Gradual onset - "I began noticing these issues increasingly over the past six months."

Character: Dull ache - "It's like a constant dull pressure across my chest."

Radiation: Does not radiate - "No, the sensation doesn't seem to move to any specific area."

Associated Symptoms: Fatigue - "Along with the breathlessness, I've been feeling extremely run down."

Timing: Episodes worsen with exertion - "It becomes particularly challenging when I try to exert myself physically."

Exacerbating and Relieving Factors: Exacerbation with climbing stairs or physical activity, relief when resting - "If I take a break and sit down, I start to catch my breath after a while."

Severity: Moderate to severe - "It's quite concerning; it impacts what I can do daily."

- Chest pain or discomfort: Positive - "There's this unfailing pressure in my chest."

- Shortness of breath: Positive - "I struggle to breathe, especially when climbing stairs or rushing to meetings."

- Palpitations: Negative

- Syncope: Negative

- Nausea: Negative

- Vomiting: Negative

- Intermittent claudication: Negative

- Peripheral oedema: Positive - "I've also noticed my ankles are often swollen by the evening."

Quote: "The chest pressure is almost always there, but the shortness of breath is particularly troublesome when I'm active."

History of Presenting Complaint:

- Duration of symptoms: 6 months - "This has been an issue for around half a year now."

- Previous treatments: None - "I haven't sought treatment until today."

- Progression over time: Symptoms worsening - "It's getting gradually worse, I must say."

- Frequency of symptoms: Daily during activities - "I encounter these issues nearly every day, especially when I'm active."

- Impact on daily life and activities of daily living: Significant impact - "My daily runs have turned into strolls; even those are tough these days."

- Impact on work: Some impact - "It's harder to get through my busy work schedule with this breathlessness."

- Impact on physical and mental wellbeing: Noticeable impact - "It's starting to get to me; I'm worried about what it might mean."

Quote: "Day-to-day activities have become increasingly burdensome and I'm genuinely concerned about my health."

Systemic Symptoms:

- Fatigue: Positive - "I'm constantly tired, no matter how much rest I get."

- Fever: Negative

- Night sweats: Negative

- Unintended weight loss: Negative

- Generalised weakness: Positive - "My whole body feels weak."

- Malaise: Positive - "There's this persistent feeling of unwellness shadowing me."

- Bowel habits: Normal

- Urinary habits: Normal

- Changes in sleep: Negative

- Peripheral oedema: Positive - "My ankles swell by the end of the day, even without much activity."

Quote: "The fatigue is overwhelming, and there's a general feeling of weakness that doesn't seem to go away."

Past Medical History:

- Surgeries: Negative

- Hospitalizations: Negative

- Previous injuries or traumas: Negative

- Psychiatric or psychological history: Negative

- History of substance abuse or addiction: Negative

- Immunizations and vaccination history: Fully vaccinated - "I'm up to date with my shots."

- Any other relevant medical conditions or significant health events: Negative

Quote: "Aside from the usual set of vaccinations, my medical history has been quite uneventful."

Drug History:

"I take no regular medications; I've never been one for even popping an aspirin unless necessary."

Allergies:

Jadzia has no known allergies.

Quote: "No allergies that I'm aware of; I'm generally not sensitive to anything."

Family History:

No significant family history of heart or lung disease.

Quote: "There's nothing to note in my family medical history, at least not for anything like this."

Social History:

Lifestyle: "I live by myself; I'm quite independent."

Occupation: "I'm an astrophysicist, which involves some travel to observatories."

Activities of Daily Living & Hobbies: "I enjoy outdoor activities, astronomy, and yoga."

Smoking: Never smoked

Alcohol: Occasionally, roughly 2 units per week

Recreational Drug Use: None

Diet: Balanced diet with a focus on whole foods

Exercise: Regular exercise, currently limited due to symptoms

Quote: "My work does involve some travel, but my symptoms have made even simple activities challenging. I drink a glass of wine occasionally, never smoked or used drugs, and until recently, I'd jog every morning."

Ideas:

Jadzia suspects her symptoms may be related to heart or lung conditions but is not sure about the exact cause.

Quote: "Given my symptoms, I would not be surprised if this was some sort of cardiovascular or pulmonary issue."

Concerns:

Jadzia is worried that her condition might progress and further limit her independence and ability to work.

Quote: "I am particularly worried about the possibility of these symptoms becoming debilitating."

Expectations:

Jadzia expects to have a thorough assessment and to receive information and treatment options for her condition.

Quote: "I hope to understand what's affecting me and to discuss the treatments available."

Observations:

Respirations (Breaths/min): 24

Oxygen Saturation (%): 94%

Air or Oxygen?: Room air

Blood Pressure (mmHg): 135/85

Pulse (Beats/min): 78

Consciousness (AVPU): Alert

Temperature (Celsius): 37.0

NEWS Total Score: 3 (2 points added for respirations 21-24/min, 1 point for oxygen saturation 94-95%)

\*\*Physical Examination:\*\*

\*\*General inspection:\*\*

- Clinical signs: Jadzia is alert and able to communicate her concerns articulately but appears mildly fatigued. No cyanosis, marked shortness of breath, pallor, or malar flush evident at rest. Peripheral oedema is noted, particularly around the ankles.

- Objects/equipment: No medical equipment, mobility aids, or other objects suggestive of chronic condition management present.

\*\*Inspection of the hands:\*\*

- General observation: Hands are of normal color with no tar staining, xanthomata, arachnodactyly, clubbing, splinter hemorrhages, Janeway's lesions, Osler's nodes, or koilonychia observed.

- Palpation: The hands are warm to touch, capillary refill time is less than 2 seconds, suggesting adequate peripheral perfusion.

\*\*Pulses and blood pressure:\*\*

- Radial pulse: Rate is 78 beats per minute, rhythm is regular, with no radio-radial delay.

- Collapsing pulse: Not observed.

- Brachial pulse: Volume and character are normal bilaterally.

- Blood pressure: 135/85 mmHg in both arms, with no significant inter-arm difference.

- Carotid pulse: Volume and character are normal, no carotid bruits detected.

\*\*Jugular venous pressure:\*\*

- JVP: No elevation of jugular venous pressure is noted, and waveform appears normal.

- Hepatojugular reflux: Not elicited.

\*\*Inspection of the face:\*\*

- Eyes: No conjunctival pallor, corneal arcus, xanthelasma, or Kayser-Fleischer rings.

- Mouth: No central cyanosis, angular stomatitis, nor evidence of a high arched palate. Dental hygiene is well maintained.

\*\*Close inspection of the chest:\*\*

- No visible pectus excavatum, pectus carinatum, visible pulsations or scars suggestive of previous thoracic surgery.

\*\*Palpation of the chest:\*\*

- Apex beat is palpable in the fifth intercostal space inside the midclavicular line, not displaced.

- No heaves or thrills detected.

\*\*Auscultation of the chest:\*\*

- Aortic area: No added sounds or murmurs when auscultated with the diaphragm or bell.

- Pulmonary area: No murmurs detected with the diaphragm or bell.

- Tricuspid area: Clear on auscultation with the diaphragm and bell.

- Mitral area: No murmurs audible with the diaphragm; auscultation with the bell in the left lateral position does not reveal any abnormal sounds.

- Carotid arteries: No radiation of an ejection systolic murmur indicative of aortic stenosis.

- No evidence of an early diastolic murmur on auscultating the aortic area while Jadzia sits forward, which would suggest aortic regurgitation.

\*\*Inspection of the back:\*\*

- No deformities or surgical scars noted.

\*\*Palpation of the back:\*\*

- Sacral oedema: Not present.

\*\*Auscultation of the back:\*\*

- Lung fields: Auscultation reveals no coarse crackles or areas of absent air entry.

\*\*Examination of the legs:\*\*

- Ankles exhibit bilateral pitting oedema up to the level of the shins.

- No evidence of saphenous vein harvesting or associated scars.

Jadzia's physical examination is notable for peripheral oedema without significant accompanying signs of volume overload such as elevated jugular venous pressure or abnormal heart sounds, which may raise concern for early heart failure or other systemic processes contributing to her symptoms. Further investigations, including an echocardiogram and possible referral to a cardiologist, would be required to ascertain the cause of her symptoms.

Diagnostic Tests:

Given the presentation of pulmonary hypertension, diagnostic tests should include:

Blood Tests:

Full Blood Count, Urea and Electrolytes, Liver Function Tests, Thyroid Function Tests, NT-proBNP, Arterial Blood Gases, Coagulation profile, and Echocardiography.

Imaging Tests:

Chest X-Ray: Indicated; findings might include enlargement of the pulmonary arteries and evidence of cardiac enlargement.

Echocardiography: Indicated; will assess heart structure and function, estimate pulmonary arterial pressures, and evaluate for any associated cardiac conditions.

Further diagnostic tests may also be considered based on the initial findings, including pulmonary function tests and CT pulmonary angiography to exclude pulmonary embolism.

Treatment:

Refer to NICE Clinical Guideline [CG95] for managing pulmonary hypertension:

- Start with lifestyle modifications, including supervised exercise programs and avoidance of situations that can exacerbate symptoms (such as high altitude, pregnancy, or use of non-essential medications that can increase pulmonary vascular resistance).

- For World Health Organization (WHO) functional class II-III pulmonary arterial hypertension, consider initial monotherapy with a phosphodiesterase-5 inhibitor (such as sildenafil or tadalafil).

- Endothelin receptor antagonists (ERAs) such as bosentan, ambrisentan, or macitentan can also be considered for WHO class II-III pulmonary arterial hypertension.

- For more severe cases or cases refractory to monotherapy, combination therapy may be indicated, using a combination of PDE-5 inhibitors, ERAs, and prostacyclin analogues (epoprostenol, iloprost, or treprostinil).

- Anticoagulation therapy may be considered in idiopathic pulmonary arterial hypertension.

- Refer to a specialist centre for further management, including consideration of lung transplantation if appropriate.

Monitoring:

- Monitor response to treatment clinically with six-minute walk tests and WHO functional class assessment.

- Regular follow-up appointments with the specialist pulmonary hypertension centre, typically every 3-6 months depending on symptom severity and treatment response.

Prognosis:

- Pulmonary hypertension is a serious condition with a variable but generally poor prognosis without treatment.

- Early detection and initiation of treatment can help to improve symptoms and slow disease progression.

- Prognosis depends on the underlying cause of the pulmonary hypertension, associated conditions, and response to therapy.

Differential Diagnoses:

1. Chronic obstructive pulmonary disease (COPD) - less likely due to the absence of a history of smoking or occupational exposures.

2. Left heart disease (e.g., left ventricular systolic or diastolic dysfunction) - less likely without a history of heart disease or suggestive findings on the physical examination.

Keyword Filters:

Speciality Filter:

Respiratory; Cardiovascular

Presenting Complaint Filter:

Shortness of Breath; Fatigue; Peripheral Oedema and Ankle Swelling

Condition Filter:

Pulmonary Hypertesnsion

Location Filter:

Clinic

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_48\_Mitral Valve Disease

Homepage Vignette:

## A 53-year-old female called Alexia presents with shortness of breath and fatigue.

Individual Page Vignette:

You are a GP at a clinic. Alexia, a 53-year-old project manager, seeks consultation at your clinic, reporting symptoms of shortness of breath and fatigue.

Patient Name:

Kiran Vafaei (Pronunciation: Kee-ran Va-fay-yee). Prefers to be called Kiran.

Age:

09/06/1971

Location:

Clinic

Personality:

Kiran is an articulate speaker with a calm demeanor, often providing detailed descriptions of her symptoms. She displays a methodical and analytical approach to conversations, reflective of her career in project management. She's candid about her symptoms but maintains a composed attitude while discussing her concerns.

Presenting Complaint:

Kiran reports experiencing noticeable shortness of breath during light activities and unexplained episodes of fatigue.

Quote:

"I've found myself getting out of breath more easily than usual, even when I’m just doing some light housework. And there’s this unusual tiredness that just doesn’t seem to go away."

Symptoms:

Site: Substernal - "The discomfort seems to be coming from the middle of my chest."

Onset: Gradual onset - "Over the past few months, I’ve noticed these symptoms creeping up on me."

Character: The breathlessness is described as tightness - "It feels like a tight band around my chest when I’m trying to breathe during these spells.”

Radiation: Does not radiate - "No, it doesn't seem to spread anywhere; it's quite central."

Associated Symptoms: Lightheadedness - "Sometimes there’s this feeling of light-headedness that accompanies the breathlessness.”

Timing: Mostly during the day with exertion - "I notice it mostly when I’m active, mostly in the middle of the day."

Exacerbating and Relieving Factors: Exacerbated by activity, relieved by rest - "If I sit down and take a break, it eases off."

Severity: 5/10 - "On a scale from one to ten, the breathlessness and fatigue hit about halfway."

Chest pain or discomfort: Negative

Shortness of breath: Positive - "There are times when I just can’t catch my breath."

Palpitations: Negative

Syncope: Negative

Nausea: Negative

Vomiting: Negative

Intermittent claudication: Negative

Peripheral oedema: Negative

Quote:

“The feeling of being unable to take a full breath happens fairly often, especially with things like climbing stairs."

History of Presenting Complaint:

Duration of symptoms: 4 months - "This has been going on for about four months now."

Previous treatments: None - "No, I've just been trying to push through it, hoping it would go away on its own."

Progression over time: Worsening - "It started off pretty mild, but it’s gotten worse over time."

Frequency of symptoms: Daily - "It’s a daily struggle; some days are better than others, but it’s always there.”

Impact on daily life and activities of daily living: Significant - "It’s really starting to hinder my daily tasks, even simple things tire me out."

Impact on work: Impacting productivity - "My work involves quite a bit of movement and this breathlessness is slowing me down. My concentration isn’t what it used to be because of the fatigue."

Impact on physical and mental wellbeing: Noted decrease - "Physically, I can't do as much and it’s quite frustrating, it’s been taking a toll mentally too."

Quote:

"I'm used to being really active and this breathlessness is holding me back, even affecting how I feel emotionally because I can’t do as much.”

Systemic Symptoms:

Fatigue: Positive - "I find myself exhausted after minimal exertion."

Fever: Negative

Night sweats: Negative

Unintended weight loss: Negative

Generalised weakness: Positive - "My limbs sometimes feel too heavy and weak."

Malaise: Negative

Bowel habits: Normal

Urinary habits: Normal

Changes in sleep: Negative

Peripheral oedema: Negative

Quote:

"It's like all my energy's been sapped, even when I've done hardly anything all day."

Past Medical History:

Surgeries: Negative

Hospitalizations: Negative

Previous injuries or traumas: Negative

Psychiatric or psychological history: Negative

History of substance abuse or addiction: Negative

Immunizations and vaccination history: Up to date, no adverse reactions noted.

Any other relevant medical conditions or significant health events: Negative

Quote:

"As far as I'm aware, my medical history is pretty much clear."

Drug History:

Kiran reports no current medications and has no history of medication non-compliance. She does not use herbal supplements or alternative therapies, is not on contraception or HRT, and has had no previous overdose incidents.

Quote:

"I try to avoid taking medicines unless absolutely necessary."

Allergies:

Kiran reports no known allergies.

Quote:

"I’ve never had any allergic reactions that I know of."

Family History:

Negative for cardiopulmonary diseases; however, a maternal uncle had rheumatic fever as a child.

Quote:

"Nothing major runs in the family, though my mum's brother had rheumatic fever when he was young.”

Social History:

Lifestyle: Adopts a balanced approach to life with weekends dedicated to relaxation.

Occupation: Project Manager.

Activities of Daily Living & Hobbies: Enjoys reading and casual walks in the park.

Smoking: Non-smoker.

Alcohol: Occasionally drinks, averaging 6 units per week.

Recreational Drug Use: Negative.

Diet: Balanced with regular intake of fruits and vegetables.

Exercise: Gentle walks daily, has reduced intensity due to symptoms.

Quote 1:

“I make sure to eat a variety of foods, especially plenty of greens.”

Quote 2:

“A glass of wine at the end of the week is my little treat to myself.”

Quote 3:

“I've had to cut down on the walking; my body just doesn’t seem to want to keep up anymore."

Ideas:

Kiran believes her condition may be related to stress from work or perhaps an underlying heart issue considering her symptoms.

Quote:

"I'm wondering if all the stress is catching up with me, though I can’t shake the thought that it might be something with my heart."

Concerns:

Kiran is worried that her symptoms could indicate a serious health problem that might affect her lifespan or quality of life, especially regarding her capacity to be independent.

Quote:

"It worries me a bit; I don’t want to end up dependent on others or with a serious condition that could’ve been caught early."

Expectations:

Kiran expects to receive a thorough assessment to rule out or confirm any significant health issues and to receive appropriate guidance or treatment.

Quote:

"I'm hoping to get to the bottom of this so I can return to my normal activities as soon as possible."

Observations:

Respirations (Breaths/min): 22 - 0 points

Oxygen Saturation (%): 97% - 0 points

Air or Oxygen?: On room air - 0 points

Blood Pressure (mmHg): 125/85 - 0 points

Pulse (Beats/min): 78 - 0 points

Consciousness (AVPU): Alert - 0 points

Temperature (Celsius): 36.7°C - 0 points

NEWS Total Score: 0

(The NEWS total score is 0, indicating there are no current observations that fall within the NEWS scoring parameters.)

Physical Examination:

General inspection: Appears generally well; no cyanosis, shortness of breath at rest, pallor, or oedema observed. No medical equipment or objects indicating acute distress are present.

Inspection of the hands: Hands appear normal; no tar staining, xanthomata, arachnodactyly, clubbing, splinter haemorrhages, Janeway's lesions, Osler's nodes, or koilonychia evident. Capillary refill time within normal limits.

Pulses and blood pressure: Radial, brachial, and carotid pulses palpable, with regular rate and rhythm. Blood pressure within normal range in both arms with no radio-radial delay or collapsing pulse.

Jugular venous pressure: Jugular venous pressure within normal limits; no hepatojugular reflux.

Inspection of the face: No conjunctiva pallor, corneal arcus, xanthelasma, or Kayser-Fleischer rings present. Mouth examination shows no central cyanosis and good dental hygiene.

Inspection of the chest: Chest exhibits normal shape; no visible pulsations, pectus excavatum, pectus carinatum, or thoracic surgery scars.

Palpation of the chest: The apex beat is located within normal limits. No heaves or thrills palpable.

Auscultation of the heart: Normal S1 and S2 heart sounds, no added sounds or murmurs detected in any of the cardiac auscultation areas.

Inspection of the back: The back is normal in appearance with no visible deformities or scars.

Palpation of the back: No sacral oedema palpable.

Auscultation of the back: Lung fields are clear to auscultation, both anteriorly and posteriorly, with no coarse crackles or absent air entry.

Examination of the legs: No evidence of pitting oedema at the ankles; no signs of previous saphenous vein harvesting.

Special Tests:

No special tests indicated based on the current physical examination findings.

Diagnostic Tests:

Blood Tests (Reference Ranges):

Full Blood Count (FBC):

Haemoglobin (Hb): 145 g/L (Female: 115 - 165 g/L)

Mean Corpuscular Volume (MCV): 88 fL (80 – 100 fL)

White Blood Cell Count: 7.0 x10^9/L (3.6 - 11.0 x10^9/L)

Platelets: 250 x10^9/L (140 - 400 x10^9/L)

Urea and Electrolytes:

Sodium: 141 mmol/L (133–146 mmol/L)

Potassium: 4.2 mmol/L (3.5–5.3 mmol/L)

Calcium (adjusted): 2.4 mmol/L (2.2-2.6 mmol/L)

Magnesium: 0.9 mmol/L (0.7–1.0 mmol/L)

Urea: 4.5 mmol/L (2.5 – 7.8 mmol/L)

Creatinine: 80 μmol/L (Female: 45–84 μmol/L)

eGFR: 92ml/min/1.73m3 (>90ml/min/1.73m3)

Liver Function Tests:

ALT: 25 iu/L (3-40 iu/L)

AST: 22 iu/L (3-30 iu/L)

ALP: 72 umol/L (30-100 umol/L)

Gamma GT: 30 u/L (8-60 u/L)

Bilirubin: 12 umol/L (3-17 umol/L)

Albumin: 42 g/L (35-50 g/L)

Thyroid Function Tests:

TSH: 3.5 mu/L (0.4-4.5 mu/L)

Free T3: 5.2 pmol/L (3.5-7.8 pmol/L)

Free T4: 16 pmol/l (9-25 pmol/l)

Imaging Tests:

Echocardiography: Evidence of thickened mitral valve leaflets with restricted motion; mitral regurgitation observed.

Patient Questions:

1. "Could you explain what mitral valve disease is and how it can affect me?"

- "Mitral valve disease involves your mitral valve, which is one of the valves in your heart that helps regulate blood flow. When it doesn't work properly, it can lead to symptoms like breathlessness and fatigue as well as potentially more serious heart conditions if not managed properly."

2. "What are the treatment options for this condition?"

- "Treatment can range from medications to control symptoms and prevent progression, to surgical procedures to repair or replace the valve if necessary."

3. "Will I be able to continue my normal activities or work?"

- "It will depend on your specific situation and how well you respond to treatment. We usually aim to keep you as active as possible, but we might need to adjust your activities based on your symptoms."

4. "What are the risks if I don't get treatment?"

- "Without treatment, mitral valve disease can lead to heart failure, arrhythmias, or clots which could result in a stroke. It's important to manage it effectively."

Examiner Questions:

1. What is the typical presentation of mitral valve disease?

- "Patients with mitral valve disease may present with symptoms of heart failure such as dyspnoea, orthopnoea, and fatigue. They may also report palpitations or signs of systemic embolism."

2. Which echocardiographic findings are indicative of mitral valve disease?

- "Echocardiography might show mitral valve leaflet thickening, calcification, prolapse, flail leaflet, or regurgitation, depending on the underlying pathology."

3. How does mitral valve disease affect cardiac haemodynamics?

- "Mitral valve disease can lead to changes in the pressure gradient across the mitral valve, increased left atrial pressures, and as a consequence, can lead to pulmonary hypertension and left ventricular dysfunction."

4. What are the goals of treatment in mitral valve disease?

- "The goals of treatment are to relieve symptoms, prevent complications like heart failure and stroke, slow disease progression, and improve survival and quality of life."

5. Which patients with mitral valve disease are candidates for surgery?

- "Surgery is considered for symptomatic patients with severe mitral regurgitation or stenosis, and for asymptomatic patients with certain risk factors for disease progression or complications."

6. What is the role of primary care in the management of mitral valve disease?

- "Primary care can monitor and manage mild cases, adjust treatments, educate patients, and refer to cardiology when symptoms worsen or complications arise."

Treatment:

- Begin treatment with diuretics to manage symptoms of congestion, prescribing Furosemide 40 mg once daily and monitor diuresis.

- If patient is symptomatic with pulmonary hypertension or atrial fibrillation, consider beta-blockers (e.g., Bisoprolol) or rate-limiting calcium channel blockers for rate control (e.g., Verapamil or Diltiazem).

- For patients with atrial fibrillation and an additional risk factor for stroke, commence anticoagulation according to NICE guidelines using an appropriate agent such as warfarin or a direct oral anticoagulant (DOAC).

- Endocarditis prophylaxis is not routinely recommended for mitral valve disease unless the patient is undergoing invasive procedures.

- In cases of severe mitral regurgitation or stenosis, refer to cardiology for surgical evaluation, which may include mitral valve repair or replacement.

- If the patient has contraindications to certain medications or if initial therapy is ineffective, closely monitor and adjust the treatment plan in consultation with a cardiologist.

Alternative treatments for patients with drug intolerance may include different classes of diuretics or different anticoagulants.

Monitoring:

- Regularly assess heart rate and rhythm, and signs of heart failure or pulmonary hypertension.

- Monitor renal function and electrolytes due to diuretic use.

- Review anticoagulation therapy by checking INR for warfarin or renal function for DOACs.

- Schedule regular follow-ups every 3-6 months or sooner if symptoms increase.

- Refer to a cardiologist for any changes in symptoms or if the patient's condition warrants specialist assessment.

Prognosis:

- The course of mitral valve disease is variable, with some patients suffering from a stable condition for years, while others may progress to more severe disease or complications.

- Treatment and monitoring may slow the progression of the disease and relieve symptoms.

- Factors affecting prognosis include age at diagnosis, severity of valve dysfunction, the presence of comorbid conditions such as atrial fibrillation, and the patient's response to treatment.

- The outcome of surgical intervention is generally good, though risks are associated with surgery and individual patient factors must be considered.

Differential diagnoses:

1. Aortic Valve Disease - Less likely due to the absence of symptoms and signs like the presence of a systolic murmur and slow-rising pulses.

2. Coronary Artery Disease - It could present with exertional breathlessness, but angina or evidence of ischaemia is absent.

3. Pulmonary Hypertension - Could cause dyspnoea but would typically show additional signs such as loud P2, which are not evident.

4. Heart Failure - It is a potential consequence of mitral valve disease, yet isolated right-sided heart failure is less likely given the absence of peripheral oedema and raised JVP.

5. Chronic Obstructive Pulmonary Disease (COPD) - Can cause dyspnoea but would usually have a chronic cough and wheezing, which are not present in this case.

Keyword Filters:

Speciality Filter:

Cardiovascular

Presenting Complaint Filter:

Breathlessness; Fatigue; Heart Murmurs

Condition Filter:

Mitral Valve Disease

Location Filter:

Clinic

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_49\_Mitral Valve Disease

Homepage Vignette:

## A 48-year-old male called Kazuhira presents with breathlessness and fatigue.

Individual Page Vignette:

You are a General Practitioner, and Kazuhira, a 48-year-old Flight Engineer, comes to your clinic complaining of increasing breathlessness and fatigue.

Patient Name:

Kazuhira Adebola (kah-ZOO-hee-rah ah-DEH-boh-lah). Prefers to be called "Kaz."

Age:

02/04/1976

Location:

General Practice

Personality:

Kaz is articulate and expresses himself thoughtfully, often pausing to find the correct words. He is well-educated and prefers to get straight to the point, avoiding any unnecessary chit-chat.

Presenting Complaint:

Kaz reports experiencing progressive breathlessness on exertion, which has been interfering with his normal daily activities and ability to perform his job.

Quote:

"I've found myself getting out of breath much quicker than I used to, even when just climbing the stairs."

Symptoms:

SOCRATES:

Site: The breathlessness is felt throughout the chest.

Quote: “It feels like my whole chest is tight and I can't get enough air, especially when I'm climbing up to the cockpit.”

Onset: The symptom began insidiously over the past few months and has been progressively worsening.

Quote: “This shortness of breath has been creeping up on me for months now; just seemed to get worse over time.”

Character: Describes the breathlessness as a sensation of tightening across the chest.

Quote: “It's like a band squeezing around my chest when I'm trying to breathe deeply.”

Radiation: Does not radiate to other areas.

Quote: “The tight feeling stays in my chest; it doesn't move anywhere else.”

Associated Symptoms: He has also noticed palpitations, particularly when the breathlessness is severe.

Quote: “Sometimes my heart races when I'm struggling to catch my breath.”

Timing: Symptoms are primarily exertional and are relieved with rest.

Quote: “If I stop what I'm doing and sit down for a bit, I can breathe easier after a while.”

Exacerbating and Relieving Factors: Exacerbated by physical exertion and relieved by rest.

Quote: “Walking up a slight hill can set it off, and I need to sit down to feel better.”

Severity: Finds it significantly disrupting his daily activities.

Quote: “It's getting to a point where I'm worried whether I can do my job.”

- Chest pain or discomfort: Negative

- Shortness of breath: Positive

Quote: "It sometimes feels impossible to get a full breath of air, even when I'm just carrying some groceries."

- Palpitations: Positive

Quote: "My heart sometimes feels like it's pounding out of my chest, especially after carrying something heavy."

- Syncope: Negative

- Nausea: Negative

- Vomiting: Negative

- Intermittent claudication: Negative

- Peripheral oedema: Negative

History of Presenting Complaint:

- Duration of symptoms: Symptoms began a few months ago.

Quote: “It's been a good few months since I first noticed the breathing trouble.”

- Previous treatments: No previous treatments have been sought.

Quote: “I haven't taken anything for it; thought it would just go away on its own.”

- Progression over time: Symptoms have been progressively worsening.

Quote: “It's been a slow build, but it's certainly worse now than when it started.”

- Frequency of symptoms: Occurs frequently, especially on exertion.

Quote: “Any kind of exertion, really, and I can feel my chest tighten up.”

- Impact on daily life and activities of daily living: Has significantly impacted his ability to perform day-to-day activities.

Quote: “I've had to change the way I do things; can't seem to manage what I used to.”

- Impact on work: Impacting work as a Flight Engineer, struggling with physical tasks.

Quote: “My work demands that I be agile and quick, but this breathing issue is making it hard.”

- Impact on physical and mental wellbeing: Causing distress and anxiety due to its impact on daily functioning.

Quote: “I'm physically worn out and, honestly, it's starting to get to me mentally as well.”

Systemic Symptoms:

- Fatigue: Positive

Quote: "I feel tired all the time, no matter how much I rest."

- Fever: Negative

- Night sweats: Negative

- Unintended weight loss: Negative

- Generalised weakness: Positive

Quote: "There's this overall sense of weakness; my legs sometimes feel like jelly."

- Malaise: Negative

- Bowel habits: Normal

- Urinary habits: Normal

- Changes in sleep: Positive

Quote: "My sleep has been disturbed; I wake up feeling like I haven't slept at all."

- Peripheral oedema: Negative

Past Medical History:

- Surgeries: Negative

- Hospitalizations: Negative

- Previous injuries or traumas: Negative

- Psychiatric or psychological history: Negative

- History of substance abuse or addiction: Negative

- Immunizations and vaccination history: Up-to-date with all recommended vaccinations.

Quote: “I always make sure to get my jabs; I've seen too many preventable diseases.”

- Any other relevant medical conditions or significant health events: Negative

Drug History:

No current medications. No history of medication non-compliance. Does not use any herbal supplements or alternative therapies. No use of contraception or HRT. No non-pharmacological interventions. No overdose incidents.

Quote:

"I generally stay away from medications unless absolutely necessary. I prefer to let my body handle things naturally."

Allergies:

No known allergies.

Quote:

"I'm fortunate, never had a reaction to anything really, food or meds."

Family History:

No known family history of cardiovascular diseases or other significant health conditions.

Quote:

"As far as I know, there's nothing like this in the family."

Social History:

Lifestyle: Kaz lives a moderately active lifestyle, typically involving daily routine maintenance on aircrafts.

Occupation: Works as a Flight Engineer, which can sometimes be physically demanding.

Activities of Daily Living & Hobbies: Enjoys hiking and drone photography on weekends.

Smoking: Non-smoker.

Alcohol: Social drinker, averaging about 4 units per week.

Recreational Drug Use: Negative.

Diet: Follows a balanced diet with a focus on whole foods.

Exercise: Usually hikes twice a month and has a moderate physical activity level at work.

Quote 1:

"I don't smoke and only have a pint or two on the weekend. So, nothing excessive."

Quote 2:

"I've always been quite cautious with what I eat; being a professional means I've got to look after my health."

Quote 3:

"I try to get out to the peaks when I can; nothing clears your mind like a bit of fresh air and a good view."

Ideas, Concerns, and Expectations:

Ideas:

Kaz believes that his symptoms may be a result of overwork but is becoming increasingly concerned that it might be something more serious.

Quote:

"I thought it was just stress and overworking myself, but now I'm not too sure."

Concerns:

He is worried about the progression of his symptoms and how they might affect his future career and daily life.

Quote:

"What if this doesn't stop or get better? I've got a career I love, and I don't want to lose that."

Expectations:

Kaz expects to receive a comprehensive evaluation to determine the cause of his symptoms and effective treatment to improve his condition.

Quote:

"I need to know what's going on and get it sorted; I can't afford to have this hanging over me."

Observations:

Respirations (Breaths/min): 20 (0 points)

Oxygen Saturation (%): 96% (0 points)

Air or Oxygen?: Room air (0 points)

Blood Pressure (mmHg): 135/85 (0 points)

Pulse (Beats/min): 88 (0 points)

Consciousness (AVPU): Alert (0 points)

Temperature (Celsius): 37.0°C (0 points)

NEWS Total Score: 0

(Respirations: 20 bpm, so 0 points. Oxygen saturation: 96%, so 0 points. Patient on room air, so 0 points. Systolic BP: 135 mmHg, so 0 points. Pulse: 88 bpm, so 0 points. Consciousness: alert, so 0 points. Temperature: 37.0°C, so 0 points. Total NEWS Score is 0.)

\*\*Physical Examination:\*\*

General inspection:

- Kazuhira appears comfortable at rest but reports exertional breathlessness.

- No medical equipment present or signs of chronic illness such as oxygen dependency or mobility aids.

Inspection of the hands:

- No cyanosis, clubbing, splinter hemorrhages, Janeway lesions, Osler nodes, or xanthomata. Normal hand coloration observed.

Pulses and blood pressure:

- Radial pulse is regular at 88 beats per minute, no radio-radial delay.

- No collapsing pulse noted, suggestive of aortic regurgitation.

- Brachial pulse volume and character within normal limits bilaterally.

- Carotid pulses are normal with no added volume or character suggestive of aortic stenosis.

- Blood pressure is 135/85 mmHg, with no significant difference between arms.

Jugular venous pressure:

- JVP not elevated, with a normal waveform.

Palpation of the chest:

- No heaves or thrills palpable.

- Apex beat located in the fifth intercostal space in the midclavicular line, not displaced laterally, which would suggest ventricular enlargement.

Auscultation of the chest:

- Auscultation of heart sounds reveals a pansystolic murmur most prominent at the apex and radiating to the axilla, consistent with mitral regurgitation.

- No additional sounds like S3 or S4, which may be indicative of heart failure or ventricular dysfunction.

- The rhythm is regular without any extra heartbeats indicative of arrhythmia at this time of examination.

- Lung fields are clear with no added sounds suggesting pulmonary edema or other pulmonary conditions.

Inspection of the legs:

- No peripheral oedema noted, which reduces the likelihood of right heart failure or severe mitral valve disease resulting in pulmonary hypertension.

Special Tests:

- Orthostatic blood pressure measurements to assess for volume status.

- ECG to look for atrial fibrillation or signs of left atrial enlargement.

- Chest X-ray to assess for cardiomegaly or pulmonary congestion.

Diagnostic Tests:

Blood Tests (Reference Ranges):

- B-type Natriuretic Peptide (BNP): To evaluate for heart failure.

- Electrolytes and kidney function: To assess baseline status and rule out electrolyte imbalances or renal implications of heart disease.

- Liver function tests: Can be altered in right heart failure and as baseline for certain heart failure medications.

- Thyroid function tests: Thyroid disorders can mimic or exacerbate heart disease symptoms.

- Lipid profile: Assess risk factors for atherosclerotic heart disease.

Imaging Tests:

- Chest X-Ray: May show signs of left atrial enlargement or pulmonary venous hypertension.

- Echocardiography: Confirms the prolapsed mitral valve leaflets and moderate regurgitation with dilated left atrium. Also assesses ejection fraction, other valve function, and presence of pulmonary hypertension.

Condition:

Mitral Valve Disease

Patient Questions:

1. "What exactly is wrong with my heart, and how serious is it?"

Possible Answer: "Your symptoms suggest mitral valve disease, where the valve doesn't close properly, allowing blood to flow backward in your heart. We will need to perform further tests to confirm this and to understand the severity."

2. "Will I need to have surgery, or are there other treatment options?"

Possible Answer: "Treatment options depend on the severity of the valve disease. In some cases, medications can manage the symptoms, but in more severe cases, surgery might be necessary."

3. "Could this have been caused by anything I've done? My job, or those weekends I spend hiking?"

Possible Answer: "Mitral valve disease can develop due to various reasons, many of which are not related to your actions. It can be related to age, congenital conditions, or other factors. Your occupation and hiking are not likely causes."

4. "Can I continue working as a Flight Engineer, or will I need to consider a career change?"

Possible Answer: "Depending on your condition's severity and treatment outcome, you may continue your current work. However, we'll discuss this further as we know more about your condition and how it affects you."

Examiner Questions:

1. What are the common symptoms associated with mitral valve disease?

Possible Answer: "Common symptoms include breathlessness, fatigue, palpitations, and sometimes chest pain."

2. What clinical findings might you expect to find in a patient with mitral valve disease?

Possible Answer: "On auscultation, you may hear a mitral regurgitation murmur. Other findings can include an irregular heartbeat if atrial fibrillation is present, and signs of heart failure such as peripheral oedema."

3. How is mitral valve disease diagnosed?

Possible Answer: "Echocardiography is the primary diagnostic tool, which can reveal structural abnormalities and assess the severity of regurgitation."

4. What are the treatment options for mitral valve disease?

Possible Answer: "Treatment may include medications to reduce symptoms and manage heart failure, as well as surgical options such as valve repair or replacement."

5. What are the potential complications of untreated mitral valve disease?

Possible Answer: "If left untreated, mitral valve disease can lead to heart failure, atrial fibrillation, and an increased risk of stroke."

6. How would you differentiate mitral valve disease from aortic stenosis based on clinical symptoms and signs?

Possible Answer: "Aortic stenosis often presents with a systolic murmur that radiates to the carotids and can cause syncope and chest pain. Mitral valve regurgitation typically presents with a pansystolic murmur that does not radiate, and symptoms predominantly related to volume overload, such as breathlessness."

Treatment:

For the management of mitral valve disease, following the NICE guidelines, treatment options include:

- Echo...

Monitoring:

- Regular echocardiogra...

- Symptom review every...

- Advise patients to report...

Prognosis:

- With adequate treatment, many pati...

- Prognostic factors influencing...

Differential diagnoses:

1. Aortic Valve Disease: Patient's symptoms of breathlessness and palpitations are more indicative of mitral valve involvement rather than aortic valve disease which would more typically present with exertional syncope, angina, and dyspnoea.

2. Coronary Artery Disease: While this can cause breathlessness, the absence of angina diminishes the likelihood. Also, CAD-related breathlessness is not usually as progressive as in mitral valve disease.

3. Heart Failure: Could be a secondary complication due to mitral valve dysfunction, but not the primary condition given other typical signs of heart failure such as peripheral oedema are absent.

Keyword Filters:

Speciality Filter:

Cardiovascular

General Practice

Presenting Complaint Filter:

Breathlessness

Fatigue

Palpitations

Condition Filter:

Mitral Valve Disease

Location Filter:

General Practice

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

XX, XX Medical Student

Reviewed by:

XX, XX Medical Student/XX Doctor

Case Code:

# SW\_50\_Mitral Valve Disease

Homepage Vignette:

## A 57-year-old female called Ngariñe presents with shortness of breath and fatigue.

Individual Page Vignette:

You are a GP at a local clinic, and a patient named Ngariñe, a 57-year-old university lecturer, has come in complaining primarily of progressive shortness of breath and feeling extremely fatigued.

Patient Name:

Ngariñe Amadike (Nuh-REEN-eh Ah-MAH-dee-kay); prefers to be called Ngariñe.

Age:

08/11/1967

Location:

Clinic

Personality:

Ngariñe is an articulate, intellectual individual with a calm and inquisitive demeanour. She expresses concerns methodically, providing clear and detailed descriptions of her symptoms.

Presenting Complaint:

Ngariñe reports experiencing increasing shortness of breath on exertion and persistent fatigue over the past several months, which have started to interfere with her daily activities and lecturing duties.

Quote:

"I've noticed that I get out of breath much quicker than usual, even when I am just climbing a few steps or walking at a brisk pace. It's quite unlike me and frankly, it's getting in the way of my lectures as I sometimes have to pause to catch my breath.”

Symptoms:

-

Site: Shortness of breath particularly felt in the chest. Quote: "It feels like my chest just can't get enough air, especially when I'm walking or doing something active.”

-

Onset: Gradual onset over the past several months. Quote: "It didn’t happen overnight, but I’ve been feeling this way for a few months now.”

-

Character: Described as a feeling of tightness. Quote: "My breath feels tight, like I'm wearing a corset around my chest.”

-

Radiation: Does not radiate. Quote: "The tightness is really just around my chest, it doesn’t seem to spread anywhere else.”

-

Associated Symptoms: Fatigue. Quote: "Alongside the breathing, I’ve been feeling overwhelmingly tired.”

-

Timing: Symptoms exacerbated by physical exertion, persist throughout the day. Quote: "I find that any physical effort makes things worse, but even when I'm resting, I don't feel quite right.”

-

Exacerbating and Relieving Factors: Exacerbated by exercise, relieved by rest. Quote: "If I keep still and rest a bit, I manage to feel a little better.”

-

Severity: Moderate to severe, affecting the quality of life. Quote: "On a scale from one to ten, it's been a steady six, sometimes even edging towards eight."

-

Chest pain or discomfort: Negative.

-

Shortness of breath: Positive. Quote: "I just feel dreadfully short of breath with the simplest of tasks."

-

Palpitations: Negative.

-

Syncope: Negative.

-

Nausea: Negative.

-

Vomiting: Negative.

-

Intermittent claudication: Negative.

-

Peripheral oedema: Positive. Quote: "My ankles have definitely been swelling; my shoes feel much tighter by the evening.”

History of Presenting Complaint:

-

Duration of symptoms: Roughly six months. Quote: "I’ve been feeling this way for about half a year. It's getting progressively worse.”

-

Previous treatments: None sought yet. Quote: "I haven't taken anything for it, I wanted to speak to you first.”

-

Progression over time: Symptoms have gradually worsened. Quote: "Over the months, it's become sharper and more persistent, especially the breathlessness.”

-

Frequency of symptoms: Daily, with variations in severity. Quote: "Every day's a battle, but some are worse than others.”

-

Impact on daily life and activities of daily living: Symptoms significantly impact day-to-day tasks. Quote: "I'm struggling to get through my normal routine, and chores around the house have become quite the challenge.”

-

Impact on work: Lecturing has become more difficult. Quote: "I’ve had to pause mid-lecture to catch my breath, and it’s not like me at all.”

-

Impact on physical and mental wellbeing: Reports feeling anxious about symptoms. Quote: "It's starting to take a toll on me; I keep worrying something might be seriously wrong.”

Systemic Symptoms:

-

Fatigue: Positive. Quote: "The exhaustion is palpable, it doesn't matter how well I sleep."

-

Fever: Negative.

-

Night sweats: Negative.

-

Unintended weight loss: Negative.

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Generalised weakness: Positive. Quote: "I feel weaker overall, not just tired.”

-

Malaise: Negative.

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Bowel habits: Normal.

-

Urinary habits: Normal.

-

Changes in sleep: Negative.

-

Peripheral oedema: Positive. Quote: "My feet swell up, particularly by the end of the day.”

Past Medical History:

-

Surgeries: Negative.

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Hospitalizations: Negative.

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Previous injuries or traumas: Negative.

-

Psychiatric or psychological history: Negative.

-

History of substance abuse or addiction: Negative.

-

Immunizations and vaccination history: Complete as per schedule. Quote: "I’ve always kept up with my jabs, including the flu shots.”

-

Any other relevant medical conditions or significant health events: Negative.

Drug History:

Ngariñe reports taking an occasional ibuprofen tablet for headaches, but nothing on a regular basis. She denies any history of medication non-compliance, use of herbal supplements, or non-pharmacological interventions, and reports no overdose incidents.

Quote:

"I only take an ibuprofen when absolutely necessary. I try not to rely on medications much."

Allergies:

No known allergies.

Quote:

“Thankfully, I don't have any allergies that I know of."

Family History:

No reported family history of cardiac or autoimmune disorders.

Quote:

"As far as I'm aware, we don’t have heart problems in the family. My parents had their fair share of health issues but nothing hereditary that I should be concerned about.”

Social History:

Lifestyle: Ngariñe leads a relatively active lifestyle, balancing her work demands with a commitment to staying healthy.

Occupation: University lecturer, which requires a fair amount of standing and presenting.

Activities of Daily Living & Hobbies: She enjoys reading, walking in the park, and occasionally attending yoga classes.

Smoking: Non-smoker.

Quote: “I’ve never been a smoker – never saw the appeal, really.”

Alcohol: Drinks wine socially, approximately 4-6 units per week.

Quote: “I may enjoy a glass of wine over dinner with friends on the weekend.”

Recreational Drug Use: Negative.

Quote: “No, I stay clear of drugs; I’ve seen enough of its effects in my line of work with students.”

Diet: Follows a balanced diet with occasional indulgences.

Quote: “I try to eat a variety of foods, though I do have a bit of a sweet tooth.”

Exercise: Walks regularly, aiming for 10,000 steps a day, and attends yoga once a week.

Quote: “Walking is my thinking time, and I find yoga helps ease my mind.”

Travel History: Enjoys travelling during university breaks, most recently to Japan.

Quote: “I travelled to Japan last summer; it was quite an adventure.”

Sexual History:

Quote: “I am currently single, and I'm careful with my sexual health.”

Driving Status:

Quote: “Yes, I do drive, but lately, with the fatigue, I've been less confident behind the wheel.”

Cultural or Religious Practices: Sometimes attends a local spiritual humanism group.

Quote: “I find spiritual humanism aligns with my personal beliefs, and I attend gatherings when I can.”

Recent Life Events: Her mother recently passed away, which was a stressful period for her.

Quote: “Losing Mum was tough; it took quite an emotional toll on me.”

Exposure to Hazards or New Environment:

Quote: “There's nothing new that I've been exposed to, same old campus and home.”

Ideas, Concerns, and Expectations:

Ideas: Ngariñe believes her symptoms might be related to stress or possibly an undiagnosed heart condition.

Quote: “I'm starting to think this might be more than just stress. Could it be something like heart disease?"

Concerns: She is apprehensive that her symptoms could signal a serious underlying illness.

Quote: “I'm worried these symptoms are a red flag for something more sinister, and it might get worse if we don't find out what it is."

Expectations: Ngariñe expects a thorough examination and appropriate referrals or tests to identify the cause of her symptoms.

Quote: “I hope we can get to the bottom of this with some tests or whatever you think is necessary.”

Observations:

Respirations (Breaths/min): 22 Breaths/min (2 points)

Oxygen Saturation (%): 95% (1 point)

Air or Oxygen?: On room air (0 points)

Blood Pressure (mmHg): 145/85 mmHg (0 points)

Pulse (Beats/min): 95 Beats/min (1 point)

Consciousness (AVPU): Alert (0 points)

Temperature (Celsius): 37.0°C (0 points)

NEWS Total Score: 4

The NEWS total score of 4 points is comprised of 2 points for a respiration rate of 22 breaths per minute, 1 point for oxygen saturation of 95%, and 1 point for a pulse rate of 95 beats per minute. The remaining observations were within normal range, contributing 0 points each to the total score.

Physical Examination:

General inspection:

- Clinical signs: Mild tachypnea, no cyanosis or pallor noted.

- Equipment: No medical equipment present, normal posture and alert appearance.

Inspection of the hands:

- Observation: No tar staining, xanthomata, arachnodactyly, clubbing, splinter haemorrhages, Janeway lesions, Osler’s nodes, or koilonychia.

- Temperature and capillary refill time are normal.

Pulses and blood pressure:

- Radial pulse: Regular rate and rhythm, no radio-radial delay.

- Collapsing pulse not present.

- Brachial pulse: Normal volume and character, no radio-radial delay.

- Blood pressure is 145/85 mmHg in both arms.

- Carotid pulse: Normal volume and character.

Jugular venous pressure:

- Jugular venous pressure is not elevated.

- Hepatojugular reflux test is negative.

Inspection of the face:

- Eyes: No conjunctiva pallor, corneal arcus, xanthelasma, or Kayser-Fleischer rings.

- Mouth: No central cyanosis, angular stomatitis, or dental hygiene concerns.

Close inspection of the chest:

- No visible pulsations, normal thoracic shape, no surgical scars.

Palpation of the chest:

- Apex beat is palpable in the fifth intercostal space, mid-clavicular line, within the normal limits.

- No evidence of heaves or thrills.

Auscultation of the chest:

- Auscultation in aortic, pulmonary, tricuspid, and mitral areas reveals no added sounds or murmurs with either diaphragm or bell of the stethoscope.

Inspection of the back:

- No deformities or scars noted.

Palpation of the back:

- No sacral oedema present.

Auscultation of the back:

- Lung fields are clear, no coarse crackles or wheezes noted, and air entry is bilateral and equal.

Examination of the legs:

- Mild pitting oedema noted at the ankles.

- No evidence of saphenous vein harvesting.

Special Tests:

No special tests indicated based on the current clinical examination.

Diagnostic Tests:

Blood Tests (Reference Ranges):

Full Blood Count (FBC):

Haemoglobin (Hb): 137 g/L (Female: 115 - 165 g/L)

Mean Corpuscular Volume (MCV): 86 fL (80 – 100 fL)

White Blood Cell Count: 6.8 x10^9/L (3.6 - 11.0 x10^9/L)

Platelets: 250 x10^9/L (140 - 400 x10^9/L)

Urea and Electrolytes:

Sodium: 139 mmol/L (133–146 mmol/L)

Potassium: 4.2 mmol/L (3.5–5.3 mmol/L)

Calcium (adjusted): 2.4 mmol/L (2.2-2.6 mmol/L)

Magnesium: 0.8 mmol/L (0.7–1.0 mmol/L)

Urea: 4.6 mmol/L (2.5 – 7.8 mmol/L)

Creatinine: 80 μmol/L (Female: 45–84 μmol/ L)

Estimated Glomerular Filtration Rate (eGFR): 90ml/min/1.73m2 (>90ml/min/1.73m3)

Liver Function Tests:

Alanine transferase (ALT): 22 iu/L (3-40 iu/L)

Aspartate transaminase (AST): 18 iu/L (3-30 iu/L)

Alkaline phosphatase (ALP): 60 umol/L (30-100 umol/L)

Gamma glutamyl transferase (yGT): 26 u/L (8-60 u/L)

Bilirubin: 9 umol/L (3-17 umol/L)

Albumin: 47 g/L (35-50 g/L)

Thyroid Function Tests:

Thyroid Stimulating Hormone (TSH): 2.5 mu/L (0.4-4.5 mu/L)

Imaging Tests:

Echocardiography:

The qualitative description shows evidence of thickening of mitral valve leaflets with restricted motion during systole. There is mild mitral regurgitation and no presence of vegetations, ruling out infective endocarditis. The left atrium appears to be enlarged, and left ventricular function is within normal limits with an ejection fraction of approximately 60%.

Treatment:

Based on the guidelines from the National Institute for Health and Care Excellence (NICE), the British National Formulary (BNF), and BMJ Best Practice guidelines for mitral valve disease:

1. Medical therapy:

- Diuretics: Furosemide 20-40 mg daily to manage symptoms of congestion due to mitral regurgitation.

- Beta-blockers: Bisoprolol 2.5-10 mg daily to optimise heart rate control if atrial fibrillation is present or to manage symptoms of heart failure.

- ACE inhibitors or angiotensin receptor blockers (ARBs): Enalapril 5-20 mg twice daily or losartan 25-100 mg daily to manage heart failure symptoms.

- Anticoagulation: If atrial fibrillation is present, initiate anticoagulation therapy according to CHA2DS2-VASc scoring to prevent thromboembolism.

2. Surgical therapy (if indicated):

- Referral to a cardiologist for assessment for surgical intervention, which may include mitral valve repair or replacement.

3. Endocarditis prophylaxis:

- Antibiotic prophylaxis is not generally recommended for dental procedures unless there is a history of infective endocarditis or the presence of a prosthetic heart valve.

Monitoring:

- Regular follow-up appointments every 3-6 months to monitor symptom progression and treatment side effects.

- Echocardiograms annually or more frequently if symptoms change or increase in severity.

- Monitor renal function and electrolytes: Potassium and creatinine levels should be checked within 1-2 weeks of starting ACE inhibitors or diuretics and then regularly thereafter.

- If anticoagulation therapy is initiated, monitor International Normalised Ratio (INR) as appropriate to ensure therapeutic range is achieved and maintained.

Prognosis:

- Mitral valve disease is a progressive condition, and the prognosis depends on the severity of the valve abnormality and associated symptoms.

- With appropriate treatment and monitoring, many patients can experience symptom relief and a normal or near-normal life expectancy.

- Surgical intervention can improve symptoms and quality of life, especially if performed before the onset of irreversible ventricular dysfunction.

- Regular follow-up and echocardiographic assessment are crucial to detect progressive changes in valvular function and guide timely interventions.

Differential Diagnoses:

1. Aortic Valve Disease: Signs of aortic stenosis or regurgitation not identified on examination; echocardiographic findings are not supportive.

2. Cardiomyopathy: No significant symptoms suggestive of primary myocardial disease; echocardiography shows relatively preserved left ventricular function.

3. Pulmonary Hypertension: Would expect more pronounced exertional dyspnea, and echocardiography may show right ventricular strain or hypertrophy, not present in this case.

4. Coronary Artery Disease: Typically presents with exertional chest pain, which the patient does not experience. A stress test can be considered if suspicion is high.

5. Thyroid Disorder: Normal thyroid function test results make this a less likely diagnosis.

Keyword Filters:

Speciality Filter:

Cardiovascular; General Practice

Presenting Complaint Filter:

Breathlessness; Fatigue; Peripheral Oedema and Ankle Swelling; Palpitations

Condition Filter:

Mitral Valve Disease

Location Filter:

Clinic

Case created by:

Chew Shun Wen, Year 4 Medical Student

Reviewed by:

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XX, XX Medical Student/XX Doctor