

**CR**

**Name:** Ms. X

**Reporter:** Ms. X, who was very reliable

**ID:** This is a 42 year old woman

**Chief Complaint:** Pain and swelling in the lower right leg.

**HPI:** This is a 42 year old lady who travels frequently, has a history of melanoma, and h/o traumatic splenectomy who comes in today with a 4 day history of intermittent, stabbing pain in the right leg near the calf. On Friday she returned from a business trip in Ireland. On Saturday morning she was running when she fell and abraded her right lower leg. She thinks that she tripped, as this was early in the morning and it was dark. She cleaned the wound and applied Neosporin. The pain developed that day in her calf, in an area of the leg close to but not within the abraded area. She describes the pain as stabbing and sometimes throbbing, with a 3-5 pain rating on a scale of 1-10. It seems to be ameliorated by elevation, ice and Ibuprofen. The pain comes more frequently with walking, and has interfered with both her exercise and her work. It is also worse when she presses on the area. The pain is getting worse. She says the scraped area appears to be healing. She denies any feeling of tiredness, fever, chills, paresthesia, numbness and is able to walk on the leg. She also denies any chest pain or shortness of breath. swelling in the leg. She has never been previously diagnosed with a blood clot. She is a smoker, 20 pack years. She is not on birth control. She has no history of hypertension. 12 years ago she had a splenectomy following an accident, and says she has had the vaccinations her doctor recommended. 10 years ago she had a melanoma of unknown stage removed from her left arm, and continues to follow up with her dermatologist.

**PMH:**

1. Splenectomy following a ruptured spleen from a car accident
2. Melanoma of unknown stage, removed 10 years ago
3. High cholesterol, under control
4. She has never been pregnant, and continues to have her period regularly
5. She is up to date on her pap smears, mammograms and colonoscopies.
6. Pneumonia at 7 years old

**Current Medications:**

Lipitor, for high cholesterol

Multivitamin

Baby aspirin every day

**Allergies:** None known

**Social History:** The patient is a single, never married, woman who lives alone. She is the vice president of a small pharmaceutical company, a job that has involved travel to Europe, Africa and Asia within the last year. She smokes 1 pack of cigarettes a day, 20-pack year, and drinks alcohol 2-3 times a week.

**Family History:**

Father: MI at 72, hypertension, still living

Mother: Colon cancer, hypertension, diabetes, still living

**Physical Exam:**

Vital Signs: BP 124/66, HR 88, RR 12, Temp. 37.3 C

General: Pleasant and intelligent 42 year old female in no immediate distress

Skin: There is an area of abrasion on the right lower leg, no erythema over painful area

Lymph Nodes: There is no inguinal lymphadenopathy

Musculoskeletal: The right leg is swollen about 1 cm more than the left leg. Positive Homans' sign.

**Problem List:**

1. Painful lower right leg
2. Abraded lower right leg
3. Melanoma
4. High cholesterol, controlled with Lipitor
5. Smoking
6. Splenectomy
7. History of melanoma
8. Familial History of Colon Cancer

**Differential Diagnosis:**

1. Deep Vein Thrombosis: This patient's history of smoking, recent stasis with travel and a possibility of cancer recurrence make DVT a possible diagnosis. DVT is also the most immediately fatal possibility, and so it must be considered first. It is not the DVT itself that is dangerous, for there is usually enough compensating veins to return the blood eventually, but rather the pulmonary embolism that can result when a DVT moves from its original position. 5-20% of Calf DVTs progress to pulmonary embolism, and 20-30% progress to the thigh, which increases the chances of pulmonary embolism to 50%<sup>1</sup>. According to Harrison's Principle of Internal Medicine, a DVT in the calf is difficult to diagnosis from physical examination alone. Symptoms may include "calf pain... posterior calf tenderness, warmth, increased tissue turgor or modest swelling... Homans' sign is an unreliable diagnostic sign."<sup>2</sup> By Wells' Pretest Probability

criteria of suspected Deep Vein Thrombosis, this patient has a score of -2, giving her a Low pretest probability. Even if she does have an undiagnosed active cancer, her score would be in the same probability with a score of -1. Therefore, a negative ultrasound of the area is enough to rule out a DVT. In addition, a D-Dimer result of less than 200 to 500 ng/mL with a Low Wells score has a 99% negative predictive value for ruling out DVT. However, these scores were developed in secondary care centers, and patients presenting to primary care have a higher rate of missed DVT.<sup>3</sup> Therefore, an ultrasound should be done, regardless of the D-Dimer score.

2. Stress Fracture of the Tibia: Many of the patient's symptoms are suggestive of a stress fracture: she has a sharp, localized pain and tenderness, some swelling without erythema, and the pain is exacerbated with walking. Stress fractures often occur in athletes such as runners from overuse, but other causes can include poor footwear, running on uneven terrain, and nutrition problems such as anorexia and osteoporosis. An x-ray could confirm a stress fracture, but confirmation occurs less than 50% of the time in the first two weeks following the injury. Mild stress fractures are treated with elevation and ice, and switching or avoiding the exercise that caused the fracture for 6 weeks.<sup>4</sup>
3. Muscle Strain: It is possible that this lady has pulled a muscle in her leg. Diagnosis of a muscle injury when there is no restriction in movement is difficult, and the treatment is the same as for a stress fracture.
4. Cellulitis: Cellulitis in a lower limb is always a differential diagnosis for DVT. I think an infection of the skin is unlikely in this patient because there is no erythema, local lymphadenopathy, abscesses or lesions. Also the pain is coming from deep in the leg, not the upper skin and fat layer. Her history of splenectomy makes the possibility of infection by encapsulated bacteria worrisome, but at this point her symptoms suggest a different diagnosis.<sup>5</sup>
5. Ruptured Baker's Cyst: A Baker's cyst is a popliteal bursitis that results from overuse of the knee. This patient has no history suggestive of a Baker's Cyst, since there was no pain, swelling, or movement restriction of the knee prior to her fall. A ruptured Baker's Cyst can result in pain in the posterior calf muscles, and treatment is directed to the underlying cause or disease.<sup>6</sup>

### **Plan:**

**Diagnostic:** I recommend immediate duplex venous ultrasonography of her right lower leg. The sensitivity of this test for calf DVT is 75%. I would not do a D-Dimer test, since both a positive and a negative D-Dimer will lead to an ultrasound as the next step. Her pre-test probability of DVT is low, so provided the D-Dimer test is negative, I would

**Therapeutic plan:** advise this patient to continue to let the leg rest as she has been doing, with elevation and ice. An x-ray for a stress fracture of the tibia is positive less than 50% of the time in the first two weeks following an injury, so I would get an x-ray but treat even if negative. If a stress fracture is diagnosed, we would need to talk about footwear, proper running technique, nutrition, etc. Crutches might be helpful if walking continues to be a problem. She may return to work provided she not doing any strenuous activity

while there. If she noted any changes in the pain or in the wound, I would advise her to come back in for further examination. If she has any shortness of breath, she should go immediately to the emergency room.

Patient Education: Move around more when flying to avoid DVT

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<sup>1</sup> Harrison's Manual of Medicine, 16<sup>th</sup> Ed. p. 1492

<sup>2</sup> Ibid

<sup>3</sup> UpToDate "Diagnosis of suspected deep vein thrombosis of the lower extremity"

<sup>4</sup> UpToDate "Stress fractures of the tibia and fibula"

<sup>5</sup> UpToDate "Epidemiology, clinical features, and the diagnosis of cellulitis"

<sup>6</sup> UpToDate "Evaluation of the Adult patient with knee pain"