

Medical History :

1. PC - **Present Chief Complaint**
2. HPC - **History of present illness** (SOCRATES : Pain Assessment : Site, Onset, Character, Radiation, Associated Symptoms, Time, Exacerbating / Relieving factors, Severity)
3. PMH - **Past Medical History** (+ surgery if any)' (Common - MJ THREADS : Myocardial infarction, Jaundice, Tuberculosis, Hypertension, Rheumatoid arthritis, Epilepsy, Asthma, Diabetes mellitus, Stroke).
4. DH - **Drug History / Allergies** (NKDA = no known drug allergies)
5. FH - **Family History**
6. SH - **Social History**
7. **Psychiatric History** - optional
8. FE/SE - **Functional / System Enquiry**
 1. **CVD/Respiration** :
 - Dyspnea, Cough (diurnal variation, character, wheeze sound, haemoptysis),
 - Sputum (amount, color , texture),
 - oedema,
 - palpitations
 - chest pain
 2. **GI** :
 - dysphagia
 - nausea
 - vomit
 - haematemesis (vomit w blood)
 - bowel habit, stool (color, consistency, blood, mucus, difficulty flushing away, urgency)
 - abdominal pain
 3. **UG** :
 - Urine (incontinence / dysuria)
 - Nocturia (urine @night)
 - Abnormalities (hesitancy, terminal dripping, color, frothy, haematuria)
 - Menses (frequency, regularity, duration, volume, color, texture, pain, Last Menstrual Period=LMP, Menarche / Menopause)
 4. **Neurological** :
 - 5 senses
 - seizures
 - faints
 - headaches
 - balance
 - speech problem
 - sphincter disturbances
 5. **Musculoskeletal** : diurnal variation of symptoms
 - pain,
 - stiffness
 - swelling of joints, pattern of joint involvement,
 - functional deficit impacting life
 - malaise
 6. **Thyroid** :
 - Hyperthyroidism (bad temper, sweaty, diarrhoea, decrease weight, gain in appetite, tremor, palpitation)
 - Hypothyroidism (depressed, dry skin, constipation, thin hair, heavy period, croaky voice)
 7. **Endocrine** :
 - alopecia, hirsutism, abnormal secondary sexual features, sweat, hair
 8. **Skin** :
 - rash, pruritus, acne

Vital Signs (adult)

1. Body Temperature (BT) : ~ 98.6 F / 37C
2. Respiratory Rate (RR) : 12 - 18 /min
3. Blood Pressure (BP)
 1. Systolic 90 - 140 mmHg
 2. Diastolic 60 - 90 mmHg
4. Pulse (HR) : 60 - 100 bpm
5. Oxygen Saturation (measured by Pulse oximetry) : 95 - 100%

3C : Chaperones, Consent, Curtains * Wear Mask

IPPA : Inspection, Palpitation, Percussion, Auscultation

Introduction : **WIPER** (Wash Hands, Introduce ourselves + greet patient, Permission - explain, consent, pain check, Expose, Reposition)

IV Solution Cheat Sheet

| Type | Description | Osmolality | Use | Miscellaneous |
|-----------------------------------|--|--|---|---|
| Normal Saline (NS) | 0.9% NaCl in Water Crystalloid Solution | Isotonic (308 mOsm) | Increases circulating plasma volume when red cells are adequate | <ul style="list-style-type: none"> Replaces losses without altering fluid concentrations. Helpful for Na⁺ replacement |
| 1/2 Normal Saline (1/2 NS) | 0.45% NaCl in Water Crystalloid Solution | Hypotonic (154 mOsm) | Raises total fluid volume | <ul style="list-style-type: none"> Useful for daily maintenance of body fluid, but is of less value for replacement of NaCl deficit. Helpful for establishing renal function. Fluid replacement for clients who don't need extra glucose (diabetics) |
| Lactated Ringer's (LR) | Normal saline with electrolytes and buffer | Isotonic (275 mOsm) | Replaces fluid and buffers pH | <ul style="list-style-type: none"> Normal saline with K⁺, Ca⁺⁺, and lactate (buffer) Often seen with surgery |
| D₅W | Dextrose 5% in water Crystalloid solution | Isotonic (in the bag) *Physiologically hypotonic (260 mOsm) | Raises total fluid volume. Helpful in rehydrating and excretory purposes. | <ul style="list-style-type: none"> Provides 170-200 calories/1,000cc for energy. Physiologically hypotonic - the dextrose is metabolized quickly so that only water remains - a hypotonic fluid |
| D₅NS | Dextrose 5% in 0.9% saline | Hypertonic (560 mOsm) | Replaces fluid sodium, chloride, and calories. | <ul style="list-style-type: none"> Watch for fluid volume overload |
| D₅ 1/2 NS | Dextrose 5% in 0.45% saline | Hypertonic (406 mOsm) | Useful for daily maintenance of body fluids and nutrition, and for rehydration. | <ul style="list-style-type: none"> Most common postoperative fluid |
| D₅LR | Dextrose 5% in Lactated Ringer's | Hypertonic (575 mOsm) | Same as LR plus provides about 180 calories per 1000cc's. | <ul style="list-style-type: none"> Watch for fluid volume overload |
| Normosol-R | Normosol | Isotonic (295 mOsm) | Replaces fluid and buffers pH | <ul style="list-style-type: none"> pH 7.4 Contains sodium, chloride, calcium, potassium and magnesium Common fluid for OR and PACU |

Inspection

Peripheral Examination :

1. End of Bed (RHS) :
 1. **CVD/Respiration** : Breathlessness, Ventilatory support, Oxygen Cannula 氧氣插管, Cardiac monitors, Collection bottles (sputum), chest / pleural drainage
 2. **GI** : nasogastric tubes (Ryle's tube), PN - Parenteral nutrition - (nil by mouth), TPN - Total PN, PPN - Partial PN, Intravenous Fluid therapy
 3. **UG**: fluid restriction signs, Foley catheter (urinary), peritoneal dialysis -> abdomen examination required
 4. **Musculoskeletal** : walking aids, wheelchair

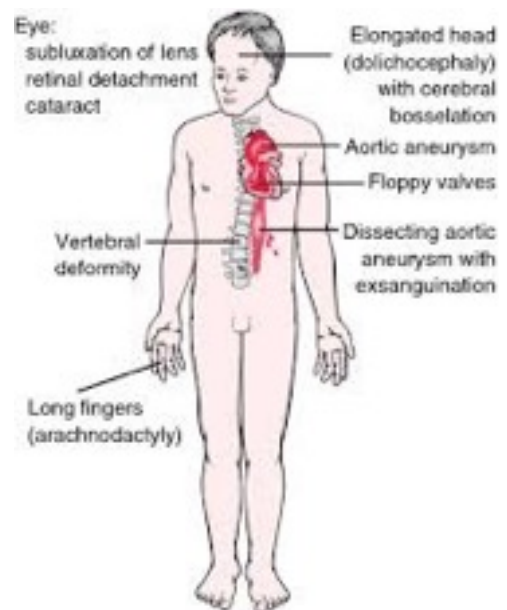
General Examination

1. **Body habitus** = physique/ body type. Parameters : weight, height, BMI , waist-hip ratio.
Normal BMI : 18.5 - 24.9. Waist : M < 94 cm / 37", F < 80 cm / 32"
 1. ectomorphic = underweight,
 2. mesomorphic = normal weight
 3. endomorphic = overweight
2. **Sounds** :
 1. Hoarseness (change in quality of voice. Dysphonia 發音困難 -> Aphonia 失音) : infective laryngitis 喉炎, heavy smoking, neurological)
 2. Stridor (harsh, croaking crowing noise on inspiration, aggravated by coughing) 喘鳴 :foreign body / tumour occluding upper airway
 3. Hypothyroidism : low pitched, slow, deliberate, laboured (due to oedematous infiltration of tissue of voice production)
 4. Wheezing cough
 5. Rattling of bronchial secretions
3. **Odours** :
 1. Excessive : elderly, alcohol / drug abuse, physical disability preventing hygiene
 2. Mousy breath smell (smell of volatile amine, methyl mercaptan) : liver failure
 3. Acetone (sweetness of breath) : diabetes, keto-acidosis due to starvation
 4. Bad breath (=halitosis) : gingivitis 牙齦炎, stomatitis 口腔炎, atrophic rhinitis
 5. 萎縮性鼻炎, tumours of nasal passages, gastric obstruction, bronchiectasis 支氣管擴張
 6. Tobacco / Alcohol / Marijuana
 7. Fetid 惡臭 : Chronic suppuration 慢性化膿, skin disorders, necrotic tumours
 8. Fishy : bacteria vaginosis (BV) 細菌性阴道炎
4. **Movements** :
 1. Tremor : anxiety, hyperthyroidism, administration of beta 2 agonist salbutamol
 2. Twitching 抽搐, myoclonic jerks 肌陣攣 (sudden muscle contraction and relaxation) : uraemia, epilepsy, multiple sclerosis, Parkinson's disease, Alzheimer's disease, Creutzfeldt-Jakob disease
 3. Flapping tremor (asterixis) 撲翼樣震顫 : hepatic encephalopathy, or other metabolic encephalopathy due to chronic renal failure, severe congestive heart failure (CHF), acute respiratory failure, etc
5. **Posture & Gaits** : neurological / musculoskeletal disorders
 1. Tall stature : marfan, hypogonadism, pituitary gigantism
 2. Short stature : osteoporosis in menopause women, intestinal malabsorption / hypothyroidism in youngsters

SPOT DIAGNOSIS

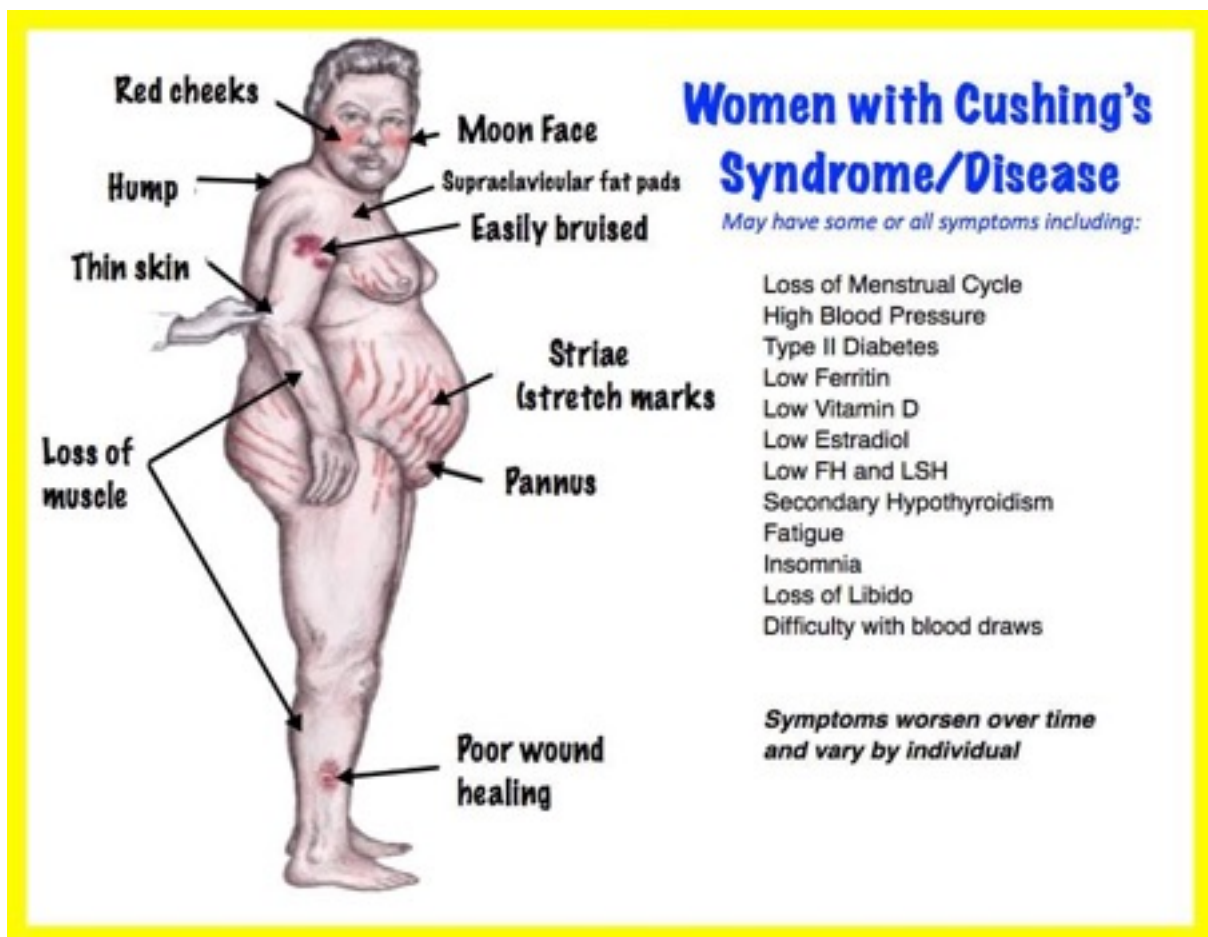
A. MARFAN SYNDROME

- Genetic disorder of the connective tissue
- Tall stature
- High arched palate
- Arachnodactyly 蜘蛛腳樣指
- Disproportionately long extremities
- Chest wall deformities - mitral valve prolapse, dilatation of aortic root with aortic regurgitation
- dislocation of lens in eye



B. CUSHING'S SYNDROME

- hypercortisolism
- Purple Striae @ abdomen & inner thigh
- Central Obesity
- Moon Face
- Buffalo Hump
- Supra-clavicular Fat Pads
- Proximal myopathy 肌病



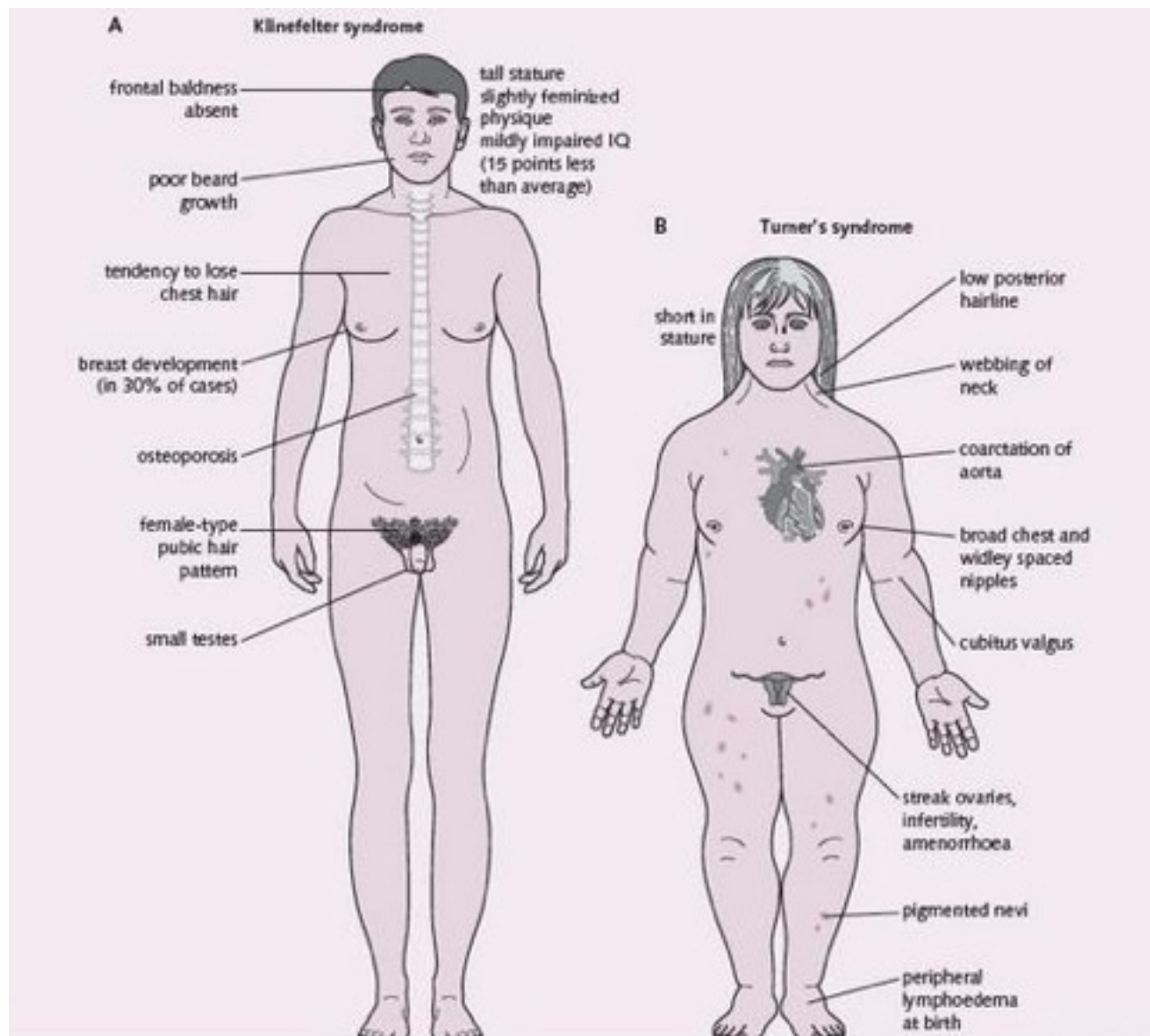
- * Symptoms maybe indicative but not conclusive.
- * Not each case shows full-blown list of symptoms.
- * Notice these symptoms, do examine further.

C. HYPOGONADISM 性腺功能減退

- Tall stature (epiphyses of long bone e.g. femur does not close at puberty)
- Disproportionately on lower limbs in relation to upper torso
- Degree of eunuchoidism variable - check external genitals

D. TURNER'S SYNDROME (45,X0)

- Hypergonadotropic hypogonadism (HH) - unresponsive gonads to pituitary secretion
- Webbed neck
- Increased carrying angle (angle between the forearm and the hip when the arm is held by the side)



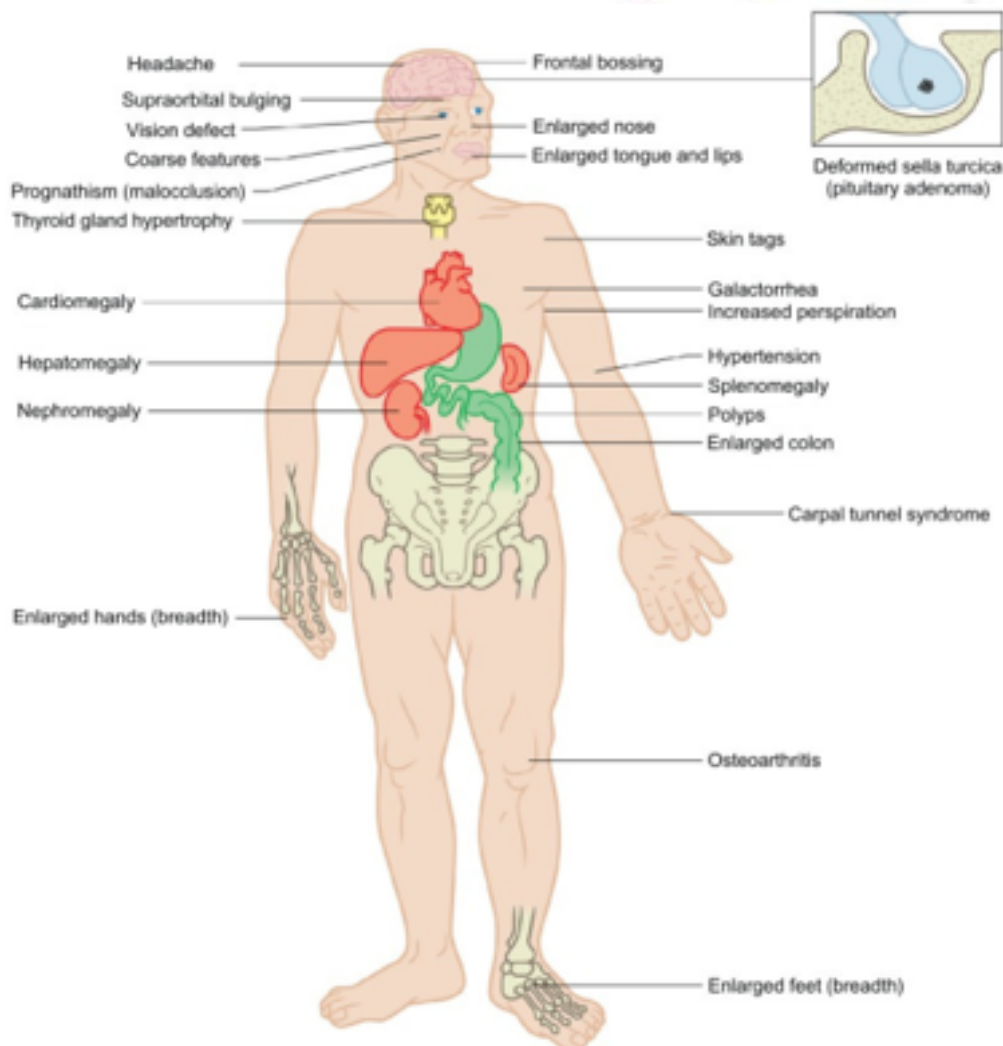
E. PAGET DISEASE (OF BONE)

- excessive breakdown and formation of bone, followed by disorganized bone remodelling
- Skull bone enlarged
- Bowing of Femur and Tibia
- Kyphotic 駝背



F. ACROMEGALY 肢端肥大症

- Excessive growth hormone after puberty (epiphyseal closure)
- Supra-orbital bulging / protrusion
- Thick Nose, Lips
- Microglossia (abnormal smallness of the tongue)
- Dental malocclusion (misalignment)
- Big Hands, Feet
- Coarsening of soft tissues



HYPOTHYROIDISM

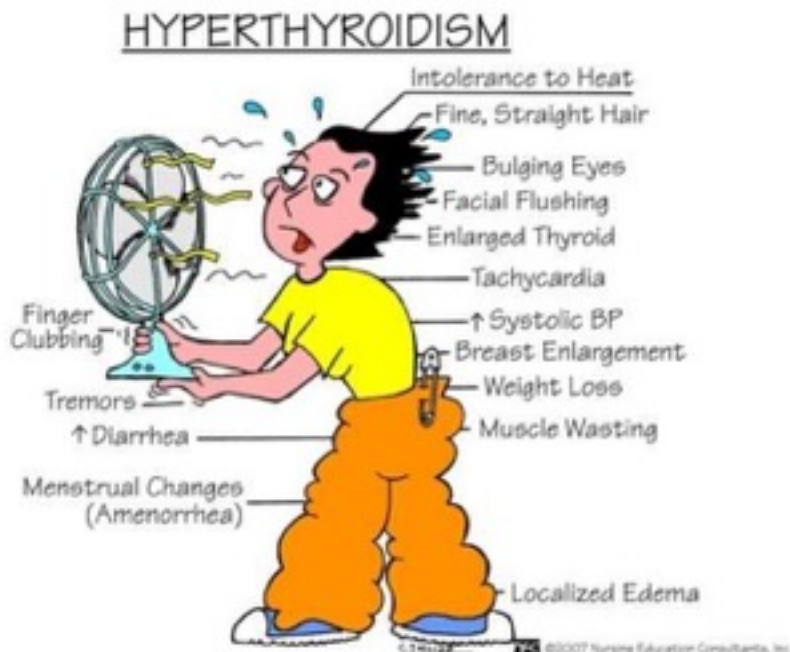


G. HYPOTHYROIDISM

- Thickened coarse facial features
- Peri-orbital puffiness
- Rough Dry skin
- Hoarseness in voice
- Slow movement
- Pulse - bradycardia

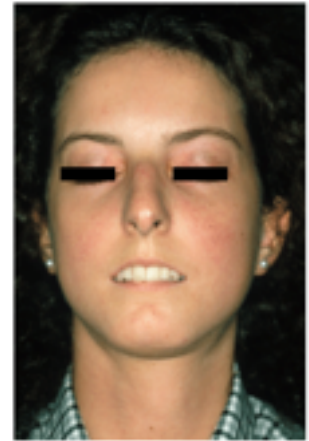
H. HYPER-THYROIDISM / GRAVES' DISEASE

- Graves eye signs (lid retraction/ exophthalmos 眼球突出 / peri-orbital swelling / eyelid erythema / conjunctival injections)



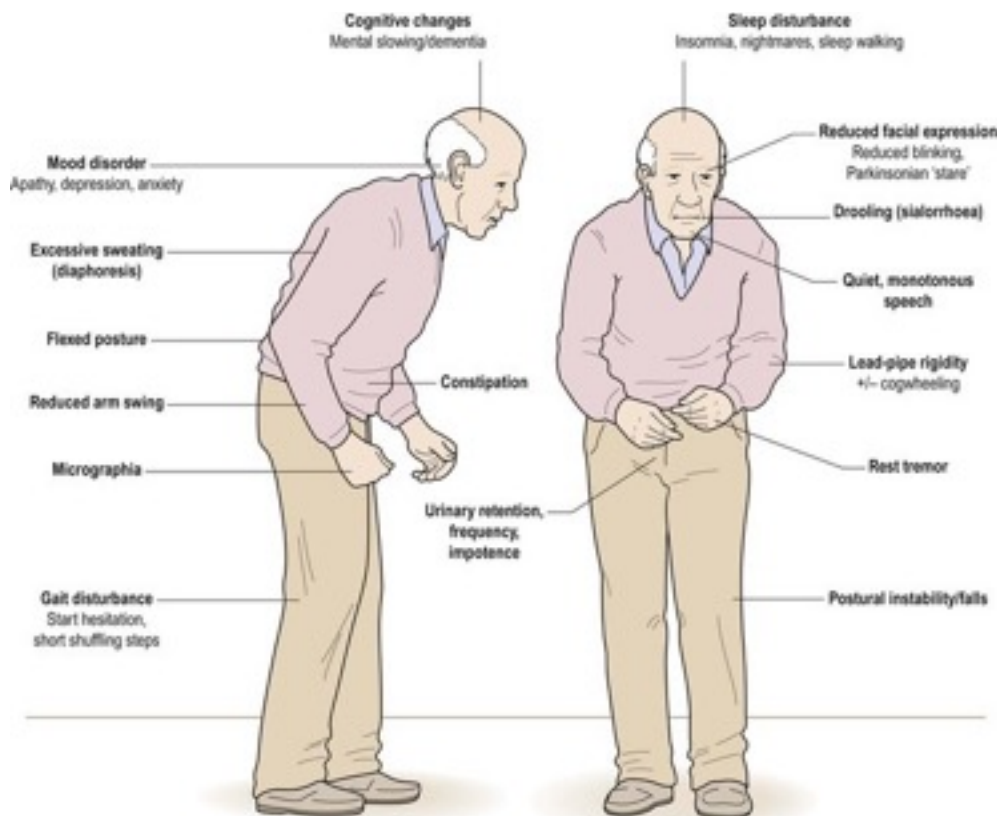
I. SCLERODERMA 硬皮病

- Connective tissue disorder: fibrosis
- Beak, pinched nose
- Tight, thickened, tethered skin with shiny appearance: “waxy”
- Telangiectasia
- Peri-oral tethering / taut skin around mouth + knuckles (pulls overlying skin reduce creases)
- Colour changes of Raynaud’s
- Tapering fingers with pulp atrophy and small finger pulp scars or “pits”; skin ulcers
- Synovitis of small joints and tendons, often with fixed flexion: positive prayer sign



J. PARKINSON’S DISEASE

- Decreased Arm Swing
- Masked Face (reduced facial expression)



6. Faces :

1. **Complexion** : 3c - Color, Consistency, Characteristic lesion

1. **Pallor** (anaemia / vasoconstriction due to faint / fright)

2. **Flushing**

1. perimenopause 圍絕經期 - if chronic -> telangiectasia 毛細血管擴張

3. **Plethoric complexion** 血症膚色 (ruddy, congested / swollen with blood)

1. alcohol abuse
2. Cushing syndrome (skin thinning -> enhanced visibility of superficial blood vessels)
3. Polycythemia (rare)

4. **CO poisoning** : excessive pink

5. **Pigmentation** 皮膚色素沉著 - look for knuckles, skin creases easier to pick up

1. **Melanin - related**

1. Hypo-pigmentation (Deficiency, lack tyrosine -> melanin) :

1. vitiligo 白癜風 (auto-immune destruction of melanocytes - patchy skin)
2. Albinism 白化症 (genetic deficiency of tyrosinase, no melanin in skin, hair)
3. Phenylketonuria (PKU)

2. Hyper-pigmentation (Excessive) :

1. Addison's disease (adrenal deficiency -> overproduction of melanin -> brown pigmentation, buccal mucosa muddy brown patches)

2. **Iron**

1. haemochromatosis 血色病 (iron overload -> damage pancreas & liver -> diabetes -> bronzed diabetes)
2. Haemosiderin staining : e.g. EAI (erythema ab igne) 火激紅斑 (hi temp -> epidermal damage to superficial blood vessels -> vascular dilation -> hemosiderin deposition)

3. **Carotene** (carotenemia -yellowish discolouration, distinguished from jaundice as doesn't affect sclera still white)

4. **Bilirubin** (jaundice - serum bilirubin > 50umol/l , affect sclera, mucous membrane & skin)

5. **Uraemia** : (renal failure - uraemia - sallow yellow-brownish tinge, uraemic frost)

* **Erythema** 紅斑 : disappears on finger pressure=blanching, caused by hyperaemia 充血 due to injury, infection, or inflammation, SLE

* **Purpura** 紫癜 : red or purple dis-coloured spots on the skin

that do not blanch on applying pressure; caused by bleeding underneath the skin due to Vasculitis 血管炎

2. **Eye** :

1. Conjunctiva : pale - anaemia

2. Sclerae : yellow - jaundice; blue - osteogenesis imperfecta 成骨不全症

3. Cornea Acrus 角膜弓環 (white, grey, or blue opaque cholesterol ring in the corneal margin - hyperlipidemia / atherosclerosis)

4. Xanthelasma 黃色瘤 (yellowish deposit of cholesterol underneath skin - hyperlipidemia / CVD)

5. Ptosis 上瞼下垂

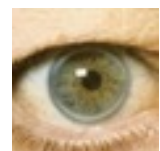
6. Proptosis 眼球突出

7. Gaze Deviation (neurological problem)

8. Graves eye signs (lid retraction/ exophthalmos 眼球突出 / peri-orbital swelling / eyelid erythema / conjunctival injections = dilation of the conjunctival vessels)

9. Puffiness (hypothyroidism)

3. **Mouth & tongue** : central cyanosis, angular stomatitis 口角炎 (iron deficiency)



7. **Neck** : pulsations, skin changes
 1. Goitre
 2. Cervical lymphadenopathy
8. **Hands** : Palmar, dorsum, handshake
 1. Arachnodactyly : Marfan's syndrome
 2. Short metacarpals (hold fist more prominent) : Pseudo-hypo-para-thyroidism
 3. Large size : Acromegaly
 4. Deformities : Rheumatoid Arthritis RA
 5. Tobacco Staining
 6. Skin creases (for pigmentation)
 7. Temperature : reflective of peripheral perfusion
 8. Hair : smooth hairless skin (hypogonadism)
 9. Linear, multiple wounds : deliberate self harm
9. **Skins** : 3c - Color, Consistency, Characteristic lesion
10. **Nails** :
 1. Clubbing - loss of angle between nail and nail bed with fluctuation of nail bed -> swelling of subcutaneous tissues over base of nail -> overlying skin become tense, shiny and red -> curvature increase especially long axis
 2. Thyroid acropachy
 3. Nail shape :
 1. Koilonychia (spoon shaped) 匙状甲，反甲 : chronic iron deficiency anaemia



2. Onycholysis (separation of nail plate from nail bed) : Trauma, Psoriasis 牛皮癬
3. Leukonychia (white nails) : hypo-albumin-aemia due to chronic liver diseases, nephrotic syndrome, protein losing enteropathy 腸病, chronic liver disease CLD, other wasting diseases, e.g. Kwashiorkor 惡性營養不良
4. Splinter haemorrhages 指甲下線狀出血 : infective endocarditis 感染性心內膜炎
4. Lines, Grooves and ridges
 1. Beau's Lines (transverse ridging, temporary arrest nail growth on all nails) : recent acute illness
 2. Pitting (Psoriasis)
 3. Thickening, Crumbling, discolouration (Fungal invasion)





11. **Joints** : Swan-neck

12. **Muscles wasting** :

1. Dorsal guttering (marked prominence of the extensor tendons on the dorsal hand when interossei wasted) : Rheumatoid Arthritis RA
2. Carpal tunnel syndrome : median nerve compression - thenar muscle wasting

13. **Feet** :

1. Large size : Acromegaly
2. Deformities : Rheumatoid Arthritis RA

14. **Oedema** :

1. Generalised oedema (distribution related to gravity) : ankle oedema; vs Localised oedema : venous / lymphatic / inflammatory /allergic cause
2. Pitting oedema (cutaneous) : hypo-proteinaemia, fluid overload due to cardiac failures, renal diseases or iatrogenic causes (excessive protein replacement)
3. Non pitting oedema : myxoedema 粘液水腫 (severe hypothyroidism), elephantiasis 象皮腫, angioneurotic 血管神經性



0+ No pitting edema

1+ Mild pitting edema. 2 mm depression that disappears rapidly.

2+ Moderate pitting edema. 4 mm depression that disappears in 10–15 seconds.

3+ Moderately severe pitting edema. 6 mm depression that may last more than 1 minute.

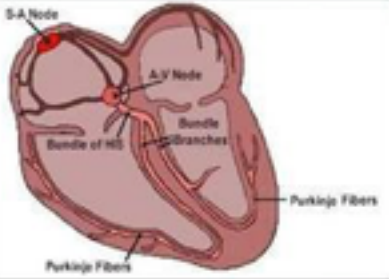
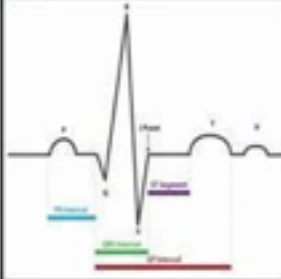

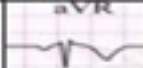


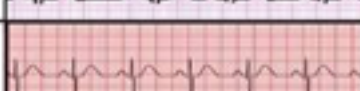
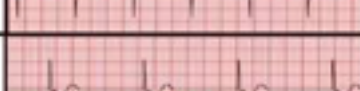
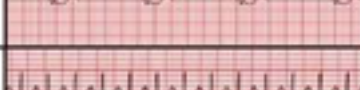
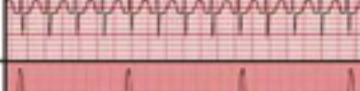

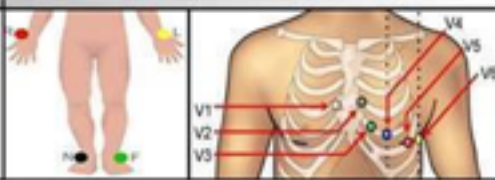
4+ Severe pitting edema. 8 mm depression that can last more than 2 minutes.

Consciousness : Stupor 麻木
 E(睜眼反應) , V(語言反應) , M(動作反應)

| TABLE 38-2 | | |
|----------------------|-------------------------------------|-----------|
| Glasgow Coma Scale | | |
| BEHAVIOR | RESPONSE | SCORE |
| Eye opening response | Spontaneously | 4 |
| | To speech | 3 |
| | To pain | 2 |
| | No response | 1 |
| Best verbal response | Oriented to time, place, and person | 5 |
| | Confused | 4 |
| | Inappropriate words | 3 |
| | Incomprehensible sounds | 2 |
| | No response | 1 |
| Best motor response | Obeys commands | 6 |
| | Moves to localized pain | 5 |
| | Flexion withdrawal from pain | 4 |
| | Abnormal flexion (decorticate) | 3 |
| | Abnormal extension (decerebrate) | 2 |
| | No response | 1 |
| Total score: | <i>Best response</i> | 15 |
| | <i>Comatose client</i> | 8 or less |
| | <i>Totally unresponsive</i> | 3 |

PHYSICAL EXAMINATION:

| | |
|--------------|---|
| General: | A well-developed, well-nourished male with pleasant affect. |
| HEENT: | <p>Head : Normocephalic / Atraumatic (頭不受傷) = NCAT Purpura over his left peri-orbital area laceration 劃破 over his forehead.</p> <p>Eye : Extra-ocular movements full. Pupils are equal and reactive to light. light reflex : present Sclerae anicteric. 鞏膜無黃疸 conjunctiva : pale (+) Hemorrhagic spot (-)</p> <p>Ear : otorrhea (-)</p> <p>Nose : Nares : patent (open) / latent (closed) - swelling, rhinitis Nasal mucosa : Discharge (-) nose bleeds (epistaxis) or crusting (-) Sinuses : non-tender (normal). crepitus 磨擦音 (if exudate +) On Endo Tracheal Tube (+)</p> <p>Throat : Oropharynx reveals poor dentition but is clear without lesions.</p> |
| Neck: | <p>Supple. No cervical or supra-clavicular lymphadenopathy. Trachea is midline Free of masses or thyro-megaly. 甲狀腺巨大 No carotid bruits 頸動脈雜音 JVE : Jugular Vein Engorgement (-) lymphadenopathy : (-)</p> |
| Heart: | <p>Regular rate and rhythm. Rhythm is sinus. No murmurs or gallops.</p> |
| Lungs: | <p>Clear to auscultation. Symmetrically expanding. Revealed decreased breath sounds at the bases. No crackles or wheezes are heard.</p> |
| Cardiac: | <p>Rhythm is sinus. No murmurs or gallops.</p> |
| Abdomen: | <p>Soft, non-tender, non-distended with good bowel sounds heard. No organo-megaly. Normoactive bowel sounds. Inguinal area is normal.</p> |
| Extremities: | Without cyanosis, clubbing or peripheral oedema. |
| Neurologic: | No focal deficits. |

| INTRODUCTION | | STEP 1 : CHECK ESSENTIALS | |
|---|--|--|---|
|  |  | speed 25 mm / s | 25mm/sec |
| | | calibration 10 mm / mv |  |
| | | placement -ve deflections in aVR |  |
| | | STEP 2 : CHECK GENERALS | |
| | | rhythm | |
| P wave | atrial depolarization | regular rhythm equal RR interval |  |
| PR interval | time before ventricular depolarization | irregular rhythm unequal RR interval |  |
| Q wave | septal depolarization | sinus rhythm upright P + narrow QRS |  |
| QRS complex | ventricular depolarization | nodal rhythm inverted P + narrow QRS |  |
| ST segment | time before ventricular repolarization | atrial rhythm no P + narrow QRS |  |
| T wave | ventricular repolarization | ventricular rhythm no P + wide QRS |  |
| U wave | repolarization of Purkinji fibres | | |
| QT interval | all ventricular action | | |
|  | positive approaching electrode negative going away from electrode | rate | |
| R right arm |  | if regular 1500 / small squares in R-R interval or 300 / large squares in R-R interval | |
| L left arm | | if irregular QRS in 10 large squares x 30 , in 20 large squares x 15 or in 30 large squares x 10 | |
| F left foot | | axis | |
| N neutral | | assume QRS in I is Lt. hand & QRS in III is Rt. hand | |
| V1 4th intercostal right to sternum | | normal I Up + III Up | |
| V2 4th intercostal left to sternum | | left I Up + III Down | |
| V3 between V2 and V4 | right I Down + III Up | | |
| V4 5th intercostal at mid clavicular line | extreme I Down + III Down | | |
| V5 horizontal to V4 at anterior axillary line | | | |
| V6 horizontal to V4 at mid axillary line | | | |
| INTRPRETATION APPROACH | | | |
| STEP 1 : CHECK ESSENTIALS | | | |
| speed → calibration → placement | | | |
| STEP 2 : CHECK GENERALS | | | |
| rhythm → rate → axis | | | |
| STEP 3 : CHECK IN DETAILS | | | |
| P → PR → Q → QRS → ST → T → U → QT | | | |

| STEP 3 : CHECK IN DETAILS : P WAVE | |
|---|----------|
| normal P wave * first +ve deflection 2.5 x 2.5 cm * monophasic in II & biphasic in V1 * upright in II & inverted in aVR | |
| absent P wave * non sinus rhythm | |
| P pulmonale * tall peaked P wave * right atrial enlargement | |
| P mitrale * wide notched P wave * left atrial enlargement | |
| double lesion * tall and wide P wave * biatrial enlargement | |
| STEP 3 : CHECK IN DETAILS : PR INTERVAL | |
| normal PR interval * 3-5 mm from start of P to start of Q | |
| short PR interval < 3 mm * with normal P in preexcitation disorders as WPW (notice Delta wave) * with inverted P in nodal rhythm | |
| long PR interval > 5 mm * fixed long in 1st degree heart block * progressive long till QRS dropped in 2nd degree heart block type 1 * fixed normal or long with sudden QRS drop in 2nd degree heart block type 2 | |
| variant PR interval * complete dissociation between P & QRS in 3rd degree heart block | |

| STEP 3 : CHECK IN DETAILS : Q WAVE | |
|---|------|
| normal Q wave * -ve deflection before R, present in left leads V5-V6 and absent in right leads V1-V3 * width < 1 mm & height < 2 mm * size < 25 % of successive R | |
| pathological Q wave * width > 1 mm & height > 2 mm * size > 25 % of successive R * in myocardial infarction | |
| STEP 3 : CHECK IN DETAILS : QRS COMPLEX | |
| normal QRS * width < 2.5 mm & height in I, II, III > 15 mm * deep S in V1 & dominant R in V6 * supraventricular rhythms | |
| wide QRS * width > 2.5 mm * ventricular rhythms & BBB | |
| high voltage * S in V1 + R in V6 > 35 mm * left ventricular hypertrophy (LVH) | |
| low voltage * height < 5 mm in limb leads * height < 10 mm in chest leads * damping states as COPD & effusion | |
| reversed pattern * dominant R in V1 & deep S in V6 * right ventricular hypertrophy (RVH) | |
| Marrow pattern * large terminal R in V1 & W shape in V6 * right bundle branch block (RBBB) | |
| WilliaM pattern * large terminal S in V1 & M shape in V6 * left bundle branch block (LBBB) | |

| STEP 3 : CHECK IN DETAILS : ST SEGMENT | |
|--|-------------------|
| normal ST segment * isoelectric or slight concave upwards, from end of S to start of T * J point is junction between QRS & ST | |
| ST elevation * > 1 mm in limb leads after J or > 2 mm in chest leads after J * STEMI, pericarditis, LVH, LBBB, with reciprocal depression if MI | ST Elevation |
| ST depression * > 1 mm in limb leads after J or > 2 mm in chest leads after J * ischemia, posterior MI, RVH, RBBB, with reciprocal elevation if MI | ST Depression |
| J wave (Obsorn wave) * +ve deflection at J point * hypothermia, hypercalcemia, CNS insults (injury & hemorrhage) | V4 |
| STEP 3 : CHECK IN DETAILS : T WAVE | |
| normal T wave * +ve deflection after QRS * height < 5 mm in limb leads * height < 15 mm in chest leads * upright in all leads except aVR & V1 | T wave |
| inverted T wave * symmetrical & deep > 3 mm * ischemia, MI & strain pattern | II |
| hyperacute T wave * tall and wide * early STMI before elevation | V2 |
| peaked T wave * tall and narrow * indicates hyperkalemia | V3 |
| flat T wave * flattened T wave * ischemia & hypokalemia | |

| STEP 3 : CHECK IN DETAILS : U WAVE | |
|--|--------|
| normal U wave * follows T in the same direction * seen in young athletes and when HR < 65 bpm best in V1 * height inversly with HR, < 2 mm or < 25 % of T wave | |
| large U wave * height > 2mm or > 25 % of T * bradycardia, hypokalemia, hypocalcemia and hypothermia | |
| inverted U wave * inverted post upright T * indicates CAD or HTN | |
| STEP 3 : CHECK IN DETAILS : QT INTERVAL | |
| normal QT interval * from start of Q to end of T, best seen in leads II, V5 and V6 * length 9-12 mm, inversly with HR | QT |
| long QT interval * length > 12 mm * congenital, antiarrhythmics, hypokalemia, hypocalcemia & ischemia | |
| short QT interval * length < 9 mm * congenital, digitalis & hypercalcemia | |
| COMMON ECG ARTIFACTS | |
| * changes of no cardiac origin, best seen in lead II * artificial pacing, lead problems, patient movement | |
| wondering baseline | |
| inverted waves | |
| pacing spikes | |
| hazing ECG | |