1) A 5 month old boy presents with fever, irritability and vomiting. His temperature at home was 38.0. He has vomited 5 times since yesterday. Past medical history is unremarkable.

On examination he does not focus or interact well. Anterior fontanelle is full but he is crying. PEARL. Normal muscle tone. No other abnormalities.

What is the **differential diagnosis**?

i) Meningitis.
ii) Septicaemia.
iii) Encephalitis.
iv) Shaken baby syndrome.

What **initial investigations** are appropriate?

i) BM
ii) Urinalysis
iii) FBC, U&E, CRP, clotting, blood cultures, serology.

What **initial treatment** should be given?

i) Resuscitate
ii) IV cefotaxime/ ceftriaxone

What subsequent tests should be arranged?

LP is required if meningitis is suspected but ensure CT scan is performed first if there are focal neurological signs or evidence of elevated ICP. Do not perform LP if there is coagulopathy.

The CSF was homogenously bloody and did not clear. CT scan without contrast showed a posterior inter-hemispheric **subdural haematoma.** Diagnosis of **NAI** was made.

2) A 54 year old man fell down some stairs whilst drunk. He awoke in the morning complaining of pain in his back and that he was unable to move his legs. He was still unable to stand later that day and came to the ED by ambulance.

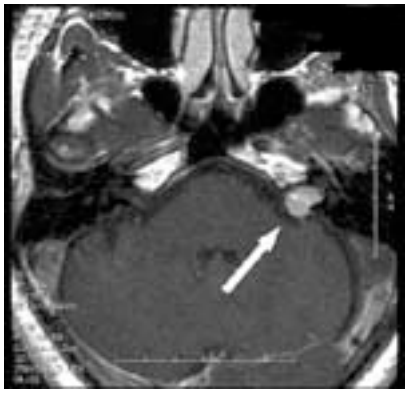
Examination of his legs revealed absent reflexes, flaccid paralysis, absent pain and temperature sensation but normal touch, vibration and joint position sense. Sensory level was T11. Bladder was distended and he had no control over micturition. He was haemodynamically stable. There was no vertebral tenderness. Urinalysis showed haematuria +++.

The answer given to this was a bit strange. My priorities would be;

A (with cspine assessment and control)/ B/ C/ D/ E
Check BM
There is no evidence of neurogenic shock but monitor BP/ pulse/ ECG
Send blood for FBC/ U&E/ clotting/ LFT/ G+S
Secondary survey
Keep patient warm
X-ray/ CT imaging of spine

This is an **anterior cord syndrome**; touch and proprioception run dorsally.

3) A 40 year old woman presents with tinnitus and deafness.



What does the scan show?

A well demarcated lesion in the left cerebello-pontine angle.

What is the most likely diagnosis?

Acoustic neuroma.

List 3 other lesions that occur in this area.

i) cholesteatoma
ii) meningioma
iii) neuromas of CN V, VII, X
iv) basilar artery aneurysm
v) medulloblastoma

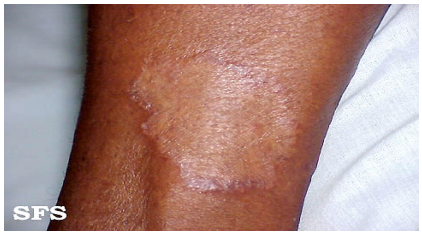
What cranial nerves may be affected by such lesions?

V-XI

Vth nerve symptoms most common; depression of the corneal reflex occurs early. Facial pain, paraesthesiae and numbness may develop.

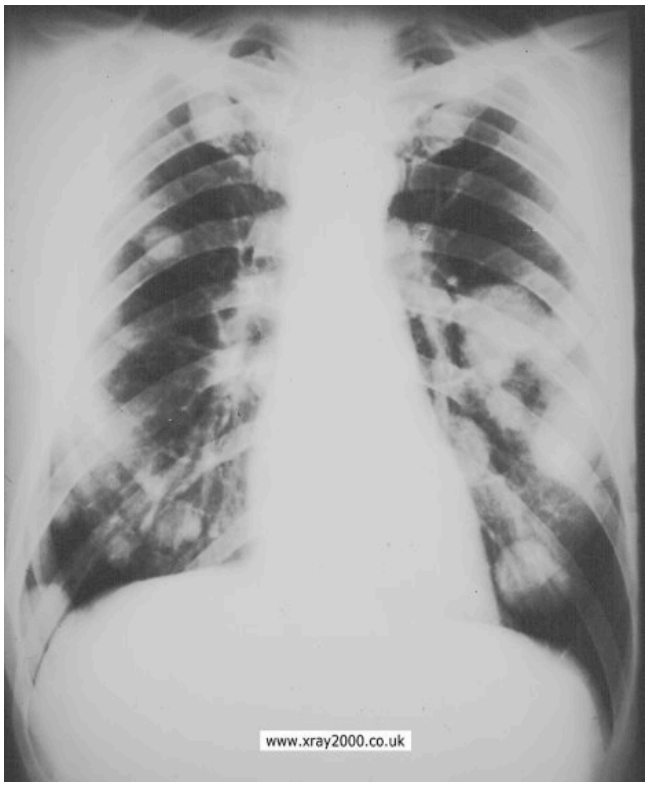
Large tumours may compress cerebellum, pons and 4th ventricle.

4) Question about Nigerian man c/o falling down stairs recently.



Tuberculoid leprosy – localised form of disease caused by **mycobacterium leprae**. Plaques may be erythematous or hypopigmented. Lesions are anaesthetic and **neural involvement** is common; it leads to tender thickened nerves with loss of function. The superificial peroneal nerve is commonly affected.

5) A 69 year old lady is brought in complaining of abdominal pain and generalised weakness. She has become increasingly unwell over the last 10 days and now appears lethargic and disorientated. She has not opened her bowels for 5 days and has started to vomit today. She appears dehydrated and there is microscopic haematuria on urinalysis.



What does the **CXR** show?

Well circumscribed circular opacities in both lung fields with prominent hilar markings. Normal heart shadow.

Give **two investigations** you would like to perform.

Biochemistry – U&E, calcium
CT chest and abdomen

What is your initial **treatment plan**?

Monitoring and ECG.
Fluid resuscitation.
Manage electrolyte abnormalities as found.

What is the underlying diagnosis?

The CXR shows cannonball metastases typical of **metastatic renal carcinoma.**

6) Question about **malignant hypertension** and retinopathy.

Retinal changes mirror the systemic circulation and their severity correlates well with the development of systemic complications and survival.

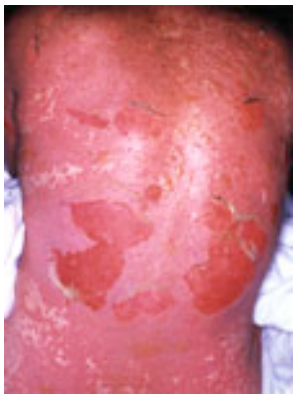
Grade 1	generalised arteriolar narrowing
Grade 2	more marked narrowing with irregular points of focal constriction
Grade 3	generalised and focal narrowing plus cotton wool spots, flame haemorrhages, hard exudates
Grade 4	as grade 3 but with swelling of the optic disc, 'silver wiring'

Diabetic retinopathy is the most frequent cause of new cases of blindness amongst adults aged 20-74 years. Diabetic retinopathy is classified as:

Background	dot and blot haemorrhages, microaneurysms, exudates
Maculopathy	macular oedema
Pre-proliferative	↑ cotton wool spots, dot and blot haemorrhages
Proliferative	new vessel formation

Remember there may be evidence of laser therapy.

7) This patient has recently started lamotrigine.



What is this rash?

Toxic epidermal necrolysis. This is an immunological disease most often caused by **adverse drug reactions** (antibiotics, NSAIDs, anticonvulsants). Non-drug causes include viral and bacterial infections, idiopathic and malignancy.

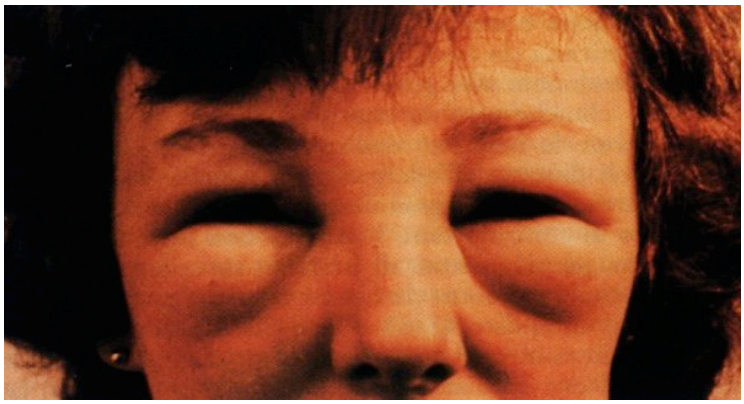
Thought to be related to Stevens-Johnson syndrome.

Needs to be distinguished from staphyloccocal scalded skin syndrome (skin biopsy).

It is a potentially life-threatening emergency as the patient may develop dehydration, eye problems, renal involvement leading to ARF, systemic infections, shock and MOF.

Management consists of treating cause, supportive care, prevent complications.

8) Question about patient presenting with facial swelling, has happened before, also family history of same.



Diagnosis – **angioneurotic oedema** (C1-esterase inhibitor deficiency).

Autosomal dominant inheritance, usually presents in 2nd decade.

May also be acquired as paraneoplastic syndrome.

Clinical features;

i) S/C oedema affecting face, limbs, buttocks, genitals (91%).
ii) laryngeal oedema (48% of attacks).
iii) abdominal symptoms.

Precipitating factors include stress, infection, OCP, ACE inhibitors

Management of severe attacks may require;

i) chlorpheniramine 10mg IV
ii) hydrocortisone 200mg IV
iii) adrenaline 0.5ml of 1:1000 S/C
iv) FFP or C1-esterase inhibitor plasma concentrate

Diagnosis made by low complement C4 levels.

9) Question about young man presenting with **spontaneous pneumothorax**.

Know BTS guidelines or else.

10) Question about **A-a gradient** (Alveolar-arterial oxygen gradient).

In the EM setting the A-a gradient is usually used to evaluate patients with a suspected pulmonary embolus. It is a fairly reliable measure of oxygen exchange.

Unfortunately there appear to be lots of different formulae, using different units, calculating at sea level etc……

My formula, using kPa as units is:

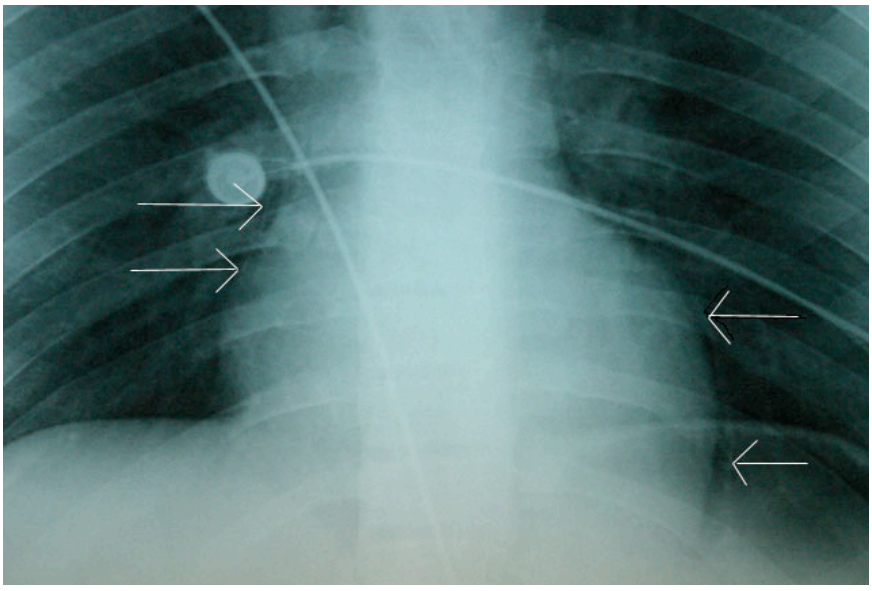
$FiO_2-(PaO_2+(PaCO_2/0.8))$

Where 0.8 is the respiratory quotient.

A normal A-a gradient is less than 2kPa when breathing air; it may reach 4kPa in the elderly. An increased A-a gradient identifies decreased oxygen in the arterial blood compared to the oxygen in the alveolus. This suggests a process that interferes with gas transfer, or in general terms, suggests ventilation-perfusion mismatch. A normal A-a gradient in the face of hypoxemia suggests the hypoxemia is due to hypoventilation and not due to underlying lung disorders.

However neither measured PaO_2 (18% normal) nor the A-a gradient (6% normal) are reliably sensitive in predicting PE.

11) A 50 year old man is brought to the ED with a sudden onset of central chest pain. He has had D&V for 3 days. No significant past medical history. On examination he is tachypnoeic, tachycardic, BP 90/40. ECG shows sinus tachycardia, no ischaemic changes.



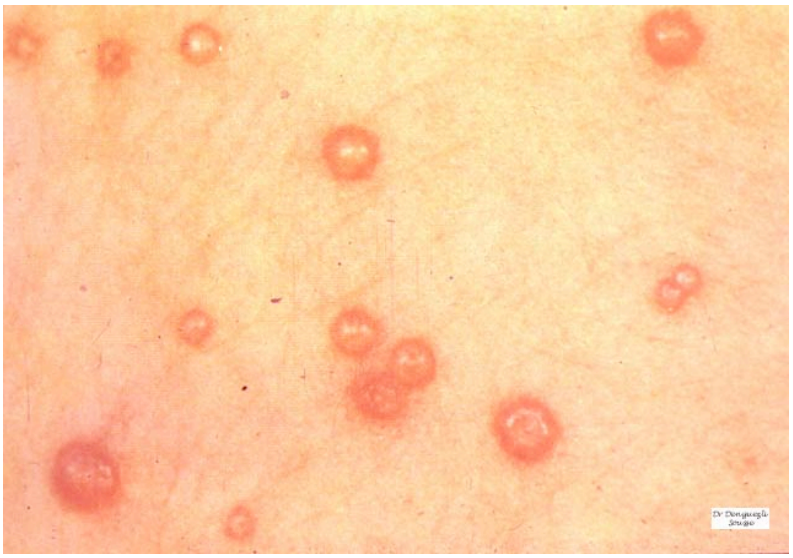
What is the diagnosis?

Boerhaave's Syndrome.

What is the **management** of this condition?

i) Oxygen.
ii) Fluid resuscitation.
ii) IV antibiotics.
iv) Refer cardiothoracics.

12) A 30 year old IV drug abuser attends the ED with a 2 month history of widespread rash over his left arm, trunk and leg. The lesions are similar to those shown in the picture.



What is the diagnosis?

Molluscum contagiosum.

What is the aetiology?

Pox virus.

What is the prognosis?

Will resolve spontaneously with time but may be removed with liquid nitrogen, curettage.

What concerns do you have with this particular patient?

Possible HIV infection.