1) 3 pictures: Mallet finger
Boutonniere deformity
Swan neck deformity

Explain the mechanism for these deformities.

Mallet: avulsion fracture at dorsal aspect of base of terminal phalanx or avulsion of terminal portion of extensor tendon.

Boutonniere: rupture or laceration of central slip of extensor tendon, remaining lateral parts of extensor tendon slip along side of finger producing characteristic deformity.

Swan neck: damage to volar plate of the PIP joint either by trauma or degeneration as in RA.

2) Other possible rheumatology questions:

i) Ankylosing spondylitis.

Usually presents as chronic low back pain in men aged 15-30. There is progressive spinal fusion and immobility. Other features include iritis, apical lung fibrosis and plantar fasciitis. There may be a normochromic anaemia and ↑ ESR. X-ray shows bamboo spine, obliterated SI joints.

ii) Reiter's syndrome.

Triad of urethritis, conjunctivitis and seronegative arthritis. May cause monoarthritis, typically of larger lower limb joint. Other features include psoriaform skin lesions (keratoderma blenorrhagicum), circinate balanitis and plantar fasciitis. May progress to give aortic incompetence, heart block, pericarditis.

iii) Behcet's syndrome.

Polyarthritis (± erythema nodosum) with painful orogenital ulceration and iritis.

iv) Felty's syndrome.

A variant of RA characterised by RA, splenomegaly, leucopenia and recurrent infections. Splenectomy may improve the WCC.

v) Enteropathic arthropathies.

Associated with inflammatory bowel disease.

vi) Gonococcal arthritis.

Genital infection may be silent.

3) A 24 year old woman presents with this appearance 2 days after a minor laceration of her right leg.

Give 2 differential diagnoses.

i) Necrotising fasciitis

ii) Gas gangrene

Which organisms are involved for each differential?

i) Group A haemolytic Strep. pyogenes, may also be Staph. aureus and anaerobes.

ii) Clostridium perfringens (anaerobic Gram +ve bacillus, produces exotoxins).

Treatment involves analgesia, resuscitation, IV antibiotics (penicillin with metronidazole), surgical debridement of affected tissues. Sometimes hyperbaric oxygen is used and gas gangrene antitoxin may be useful if Clostridium is suspected.

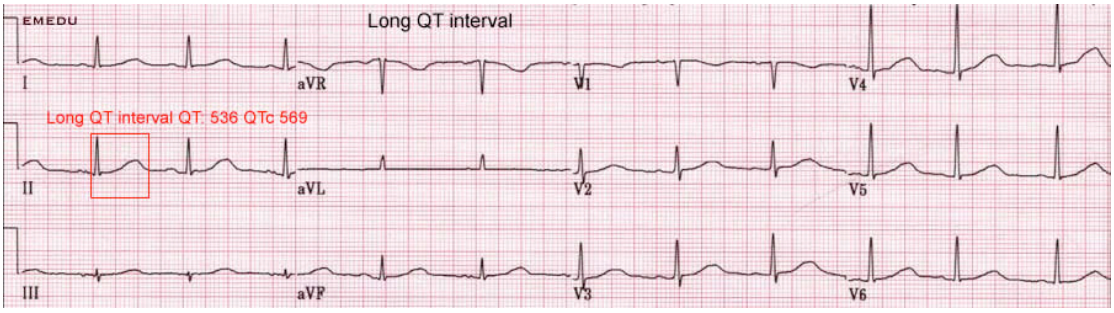
4) An 18 year old patient collapsed at school whilst playing football. On arrival in the ED GCS is 15. Haemodynamically stable. Physical examination is normal. A sibling had died in similar circumstances 10 years earlier.

What are the differential diagnoses?

i) Vasovagal episode.

ii) HOCM

iii) Hereditary long QT interval (Lange-Nielsen (high-tone deafness) and Romano-Ward syndromes). Both carry risk of ventricular arrhythmias and are associated with torsades de pointes and sudden cardiac death.



The 12 lead ECG is shown.

List some causes of a prolonged QT interval.

i) Hereditary (described above).

ii) Hypocalcaemia: clinical features include paraesthesiae, tetany, fits and psychiatric disturbance.

Look for Trousseau's sign (carpal spasm when brachial artery occluded with BP cuff) and Chvostek's sign (twitching of facial muscles when tapping facial nerve) and papilloedema.

iii) Drugs: antiarrhythmics (quinidine, amiodarone, sotalol), antihistamines, antimalarials, organophosphates.

iv) Hypomagnesaemia

v) Hypokalaemia

vi) Intrinsic heart disease (IHD, myocarditis).

vii) SAH

viii) Hypothermia

Congenital long QT syndromes may be treated with long-term propranolol or an ICD. Other family members should be screened for disease.

5) Question about infectious diseases of childhood.

Measles

Viral infection, droplet spread. Incubation 10-14 days.
Features ~ fever, malaise, coryza, conjunctivitis, cough. Koplik's spots. Spreading maculopapular rash.
Treatment is symptomatic unless complications ensue e.g. otitis media, bacterial pneumonia, encephalitis. Mortality low in UK.

Mumps

Viral infection, saliva and droplet spread. Incubation 14-18 days.
Features ~ fever, pain and swelling of parotids, orchitis (10%). Aseptic meningitis may occur. Treament is with analgesia and possibly steroids for orchitis.

Rubella

Viral infection, airborne spread. Incubation 2-3 weeks.
Usually a mild disease with rash, mild fever, occipital lymphadenopathy and arthralgia. Infection during pregnancy may cause severe congenital disorders. If any concern take blood for viral antibody levels.

Pertussis

Bordetella pertussis. Notifiable disease. Incubation 5-14 days.
Features ~ coryza wirth worsening cough, may persist for weeks. Risk of apnoeic episodes in infants. Treat with erythromycin.

6) A 25 year old man attends after returning from a diving holiday that day. He complains of mild headache, lower back pain and painful (non-tender) knees.

Give 4 important points in the history.

i) Time of onset of Sx related to the dive.

ii) Dive profile (depth, duration, activity, speed of ascent, water temp. etc).

iii) Previous medical history.

iv) Did he fly back? (decompression illness may be precipitated if insufficient time is left between diving and flying).

If suspected, discuss with Duty Diving Doctor. Treatment is recompression, pending this give high-flow O_2, IV fluids and aspirin (to prevent sludging).

7) This girl is 5 years old. Capillary refill time is 5 seconds.

What is the diagnosis?

Meningococcaemia.

What organisms are responsible and what is appropriate initial management?

Meningitis may be bacterial, viral or rarely, fungal. Usual bacteria are Neisseria meningitidis or pneumococcus. Other bacteria (e.g. TB, Listeria) may cause meningitis in the elderly, the immunosuppressed and neonates.

Initial management consists of A/B/C and:

i) cefotaxime or ceftriaxone 80mg/kg.
ii) look for signs of shock or raised ICP (decreasing or fluctuating level of consciousness, unequal or poorly reacting pupils, focal neurological signs, abnormal posturing or seizures).
iii) if shocked give colloid bolus (20ml/kg 4.5% HAS) and repeat if necessary; observe closely, may require inotropes, intubation etc. on PICU.
iv) if evidence of ↑ ICP, give mannitol (0.25g/kg bolus) followed by frusemide (1mg/kg) and steroids (dexamethasone 0.4mg/kg bd). Treat seizures as usual. Will require intubation and PICU.

What risks are there to healthcare workers?

Minimal; prophylaxis is unnecessary unless mouth-to-mouth resuscitation has occurred. Household contacts should be given rifampicin (warn about orange discoloration of urine and interaction with OCP).

Remember to inform the Public Health Department.

8) This patient was cleaning masonry when he received this burn.

What is the causative agent?

Hydrofluoric acid. HF acid rapidly crosses lipid membranes and penetrates tissues deeply where it releases the highly toxic fluoride ion. These ions may gain access to the circulation producing a variety of systemic problems, notably hypocalcaemia.

What is the immediate management?

i) Analgesia.
ii) Copious lavage.
iii) Calcium gluconate gel may be applied to the burn.
iv) Check serum Ca^{2+}, U&E and Mg^{2+}.
v) Record ECG and monitor.
vi) Treat hypocalcaemia.
vii) Call plastics team at an early stage.

9) This lady has a temperature of 38.5°.

What is the diagnosis?

Erysipelas. This is a skin infection typically caused by Group A β-haemolytic streptococci. It is a more superficial infection than cellulitis. It is characterised by intense erythema, induration and a sharply demarcated border. The lower limbs are commonly affected, the face in 5-20%.

What is the appropriate management?

Analgesia and antibiotics; penicillin or erythromycin.

10) Picture of elderly female hand with inability to extend thumb.

Rupture of EPL may occur a few weeks after (usually undisplaced) fracture of the distal radius. Tendon ruptures are also associated with RA, OA, CRF and SLE.

11) This patient has swallowed a button battery.

What is the appropriate course of action?

NPIS advice:

i) Batteries lodged in the oesophagus require immediate retrieval by endoscopy.
ii) Batteries in the stomach require review at 48 hours to ensure that they have passed through the pylorus; if not then they require endoscopic removal.
ii) If the battery has passed through the pylorus and remains asymptomatic then stools should be monitored for up to one week and the patient reviewed if the battery has not passed.
iv) If at any time the patient develops symptoms or signs of GI bleeding or obstruction then the battery should be retrieved.

12) This patient has been bitten on the hand during a fight.

What treatment is indicated?

i) Analgesia.
ii) History regarding tetanus status.
iii) X-ray.
iv) Wound irrigation/ exploration.
v) Augmentin.
vi) Counsel regarding HIV and hep. B transmission: if thought to be high-risk then give prophylaxis.