West Midlands FCEM Course

January 2010

Clinical SAQ Paper

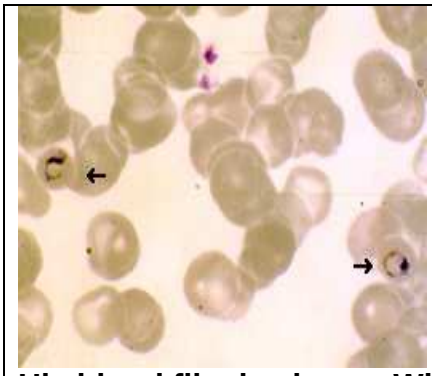
[FACULTY VERSION: ANSWERS]

West Midlands FCEM Course Jan 2010

Clinical SAQ Paper

QUESTION 1

[A] A 21 yr old British resident travelled to Bolivia and has returned unwell with fevers, chills, nausea and flu-like illness



His blood film is shown. What is the diagnosis? [1 mark]

Malaria fever

[Blood film shows plasmodium trophozoites, with characteristic ring shape]

[i] What are the four species; [ii] which one causes severe and potentially fatal disease in humans and [iii] describe how the infection is transmitted to humans? [3 marks]

The 4 species are Plasmodium vivax, ovale, falciparum and malariae

Plasmodium falciparum

Infection occurs after sporozoites introduced by female anopheles mosquito bite

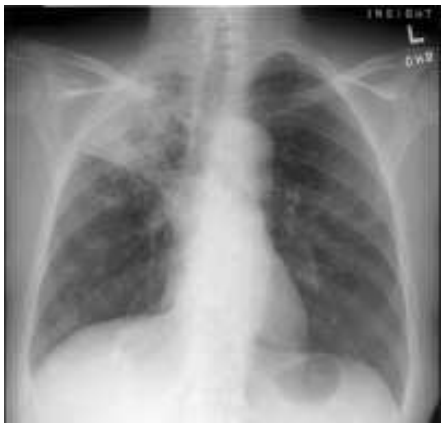
Name 4 complications [2 marks]

- **Coma (cerebral malaria)**
- **Seizures**
- **Renal failure [As many as 30% of non-immune adults infected with P falciparum suffer acute renal failure]**
- **Hemoglobinuria (blackwater fever)**
- **Non-cardiogenic pulmonary oedema [this affliction is most common in pregnant women and results in death in 80% of patients]**
- **Profound hypoglycaemia**
- **Lactic acidosis**
- **Haemolysis resulting in severe anaemia and jaundice**
- **Bleeding (coagulopathy)**

Name 2 indications for ITU admission **[1 mark]**

- **Immediate life-threatening complications present, such as coagulopathy or end organ failure**
- **Presence of signs and symptoms consistent with cerebral malaria (e.g., altered mental status, repeated seizures, coma)**
- **Patients who are non-immune with a P falciparum parasitaemia greater than 2% or who are semi-immune with a P falciparum parasitaemia greater than 5%**
- **(Presence of any other severe malarial complication)**

[B] This 48 year old Pakistani woman developed cough and haemoptysis with night sweats and weight loss



What test may be useful in determining the underlying diagnosis, and describe this test? **[2 mark]**

Mantoux test

Tuberculin is injected under the skin; if there is a strong reaction after 72 hours it means that there is a hypersensitivity to Tuberculin acquired by a previous BCG vaccination or active infection

With regards to TB status, what is the recommendation (NICE/ RCP/ HCC) regarding locum doctors? [1 mark]

Clinical students, agency and locum staff and contract ancillary workers who have contact with patients or clinical materials should be screened for TB to the same standard as new employees in healthcare environments, according to the recommendations set out above. Documentary evidence of screening to this standard should be sought from locum agencies and contractors who carry out their own screening.

QUESTION 2

A 35 year-old male with known asthma presents to the ED with acute asthma exacerbation. In the past 12 months, he had been admitted twice to ITU with life-threatening asthma, the last being within the previous month. He is known to have good compliance with his multitude of asthma control medications. His GP has re-commenced him on Prednisolone 40 mg o.d. the previous day. In the preceding 2 hours, he has had 3 home nebulisers (Salbutamol) prior to calling the ambulance.

His respiratory rate is 35/min, pulse rate 130/min, BP 95/60 mmHg. His arterial blood gases on arrival were pH 7.1, PaO2 8.4, PaCO2 11.2, BE minus 4. Despite adequate management, including high flow oxygen, repeated nebulised β-agonist and IV Magnesium, he continues to deteriorate with his RR dropping to 7/min, HR 145/min, un-recordable BP and drowsiness. The intensivist advises immediate intubation/ventilation, but is unable to get down to ED for about an hour (and you are the most competent personnel available).

What is the usual method of pre-oxygenation prior to RSI? [1 mark]

Pre-oxygenation with high-flow oxygen via a non-rebreather mask for 3-5 minutes leading up to intubation

Following Preoxygenation, what are the three treatment (medication) steps? [1.5 marks]

Pre-treatment – opioid analgesia
Induction agent
Paralysis agent

What is the correct head / neck positioning in such patients, how is this position achieved and why? [1.5 marks]

Place the patient in the sniffing position for adequate visualization
Flex the neck and extend the head.
This position helps to align the oral, pharyngeal, and laryngeal axes and facilitates visualization of the glottic opening

What are the four steps to ensure / confirm correct tube placement? [2 marks]

Visualise passage through the vocal cords

Auscultation – 3 or 5 point auscultation
CO2 – end tidal colorimetric or waveform capnometer
CXR

How long should cricoid pressure be maintained [1 mark]

Cricoid pressure should be maintained until correct placement of the endotracheal tube is confirmed

After three failed attempts at intubation, you are unable to adequately oxygenate with BVM (despite correct head & neck positioning). What would be your next step (you are still the most competent personnel available)? [1 mark]

LMA ventilation

What would the next step if the above step failed, and you are unable to ventilate or oxygenate the patient? [1 mark]

Needle (cannula) cricothyroidotomy

What would this patient require if the above step proves inadequate? [1 mark]

Surgical cricothyroidotomy

QUESTION 3

A 25-year-old woman, who is 27 weeks pregnant, has been a passenger in a high speed RTA. She was wearing a car seat belt. She has abdominal bruising and cramps. She has no PV bleed, but is known to be rhesus negative.

Her RR is 16/min, pulse 100/min, BP 100/70mmHg and temperature 36.3°c.

What treatment is necessary during a sensitising incident in known rhesus-D negative women and within what time frame should it be given? [2 marks]

Give anti-D (Rh_0) Immunoglobulin
Immediately or within 72h of the sensitising episode

Radiological investigation - how would pregnancy change your threshold or interpretation for radiological investigation? [1 mark]

Essential radiological investigation should be done, but every attempt should be made to protect the foetus

After 48 hour admission under the care of Obstetricians, she was successfully discharged, fit and well. She presents to the ED again at 35 weeks, with shortness of breath, pleuritic chest pain, normal 12-lead ECG, respiratory rate of 22/min and is haemodynamically stable.

In order to consider the patient for anticoagulation, what would be your first line radiological investigation (not a plain CXR whose main role is excluding alternative diagnosis)?

Explain how the result of this test would influence your further management [2 marks]

Leg USS (bilateral)

If positive; treat for VTE with anticoagulation therapy
If negative; proceed to other radiological investigation(s)

CTPA, V scan and Q scan are all reported as well below the upper limit considered unsafe for foetal radiological absorption. What are the relative foetal radiological absorption risks of –
(i) CTPA versus V scan
(ii) CTPA versus Q scan

[1 mark]

(i) CTPA and V scan are similar
(ii) CTPA is lower than Q scan

She is confirmed as having PE, but remains haemodynamically stable

What anti-coagulant agent would you commence –
Name and route [1 mark]
Dosage guidance [1 mark]

Enoxaparin (LMWH); sc
Dose based on early pregnancy body weight and given twice daily

For how long would you expect her to be on anticoagulants (including post puerperal period)? [1 mark]

3 months post delivery (ESC PE Guideline 2008)

She tells you that she intends breast feeding. How does this influence the choice of post-puerperal anticoagulant? [1 mark]

It does not, she can breast feed whilst on Warfarin, which is the recommended anti-coagulant

QUESTION 4

A 44 year-old man presents to the Emergency department with fever, rigors and dysuria

Name four features that will indicate the presence of systemic inflammatory response. [2 marks]

Hyperthermia > 38.3℃
Hypothermia < 36℃
Tachycardia > 90 bpm
WCC > 12 or < 4 x 10^9/l
Hyperglycaemia in the absence of diabetes
Tachypnoea > 20/min
Acutely altered mental state

Apart from dysuria, what other signs and symptoms would suggest new infection; name four [2 marks]

Cough / Sputum / Chest pain
Abdominal pain / distension / diarrhoea
Line infection
Endocarditis
Headache with neck stiffness
Cellulitis / wound infection / Septic arthritis

Name four features that would indicate organ dysfunction [2 marks]

SBP > 90mmHg or MAP < 65mmHg
Urine output < 0.5ml/kg for 2 hrs
INR > 1.5 or aPTT > 60s
Bilirubin > 34 µmol/l
Lactate > 2mmol/l
New need for Oxygen to keep SpO_2 > 90%
Platelets <100 x 10^9/l
Creatinine > 177mmol/l

You have confirmed the presence of severe sepsis. Outline the 6 components of his management in the ED. [3 marks]

1. **Oxygen high flow 15L via non rebreath mask – target O2 sats >94%**
2. **Blood cultures**
3. **IV antibiotics (as per local guidelines)**
4. **Fluid resuscitate – If hypotensive consider boluses of 0.9% saline or hartmann's solution (20ml/kg to max 60ml/kg)**
5. **Serum lactate and Hb – ensure Hb >7g/dl**

6. **Catheterise and commence fluid balance**

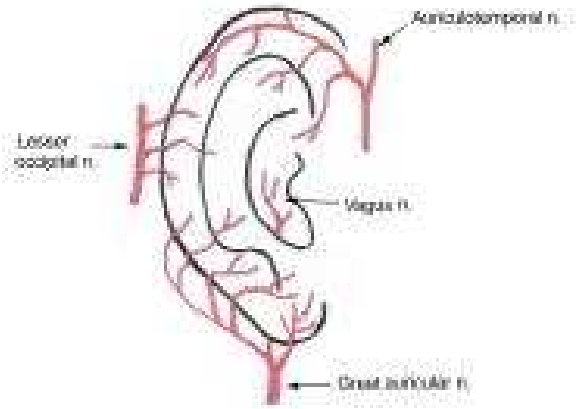
His arterial blood gas results are as given: pH 7.15; pCO2 3.5; pO2 8.5; HCO3 15; BE -6; Lactate 2.5; Na 142; K 4.5; Chloride 98.
Calculate the anion gap? [1 mark]

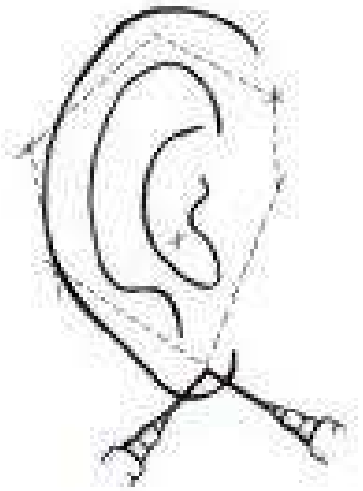
AG = (Na + K) – (Cl + HCO3); Normal = 8-16mmol/L

QUESTION 5

A 27 year-old female weighing 69kg attends the ED with the butterfly from her ear-ring stuck in her lobe.

Draw the ear, its sensory innervations and the landmarks for nerve block that would enable you to remove the butterfly [5 marks]





Physiology: Ear sensory innervation

1. **Greater auricular nerve**
2. **Lesser occipital nerve**
3. **Auriculotemporal nerve**
4. **The auditory branch of the vagus nerve**

Technique: Field Block :

1.Block forms diamond shape encompassing ear

2. Infiltrate with total of 10-20 cc of 1% Lignocaine

3. Insert needle at superior ear aspect, direct inferiorly

I) Infiltrate along ear anterior and superior aspect
II) Infiltrate along ear posterior and superior aspect

4.Insert needle at inferior ear aspect, direct superiorly

III) Infiltrate along ear anterior and inferior aspect
IV) Infiltrate along ear posterior and inferior aspect

Calculate the dose in mls of 1% lignocaine you could use for this procedure. Show your calculations [2 marks]

3mg/Kg of lignocaine, maximum dose 200mg
(1% lignocaine = 10mg/ml)

At 69 kg she would need = 200mg
≡ 20mls of 1% lignocaine

Maximum doses:

Adults: maximum of 3mg/kg of plain lignocaine or 200mg, whichever is lower; 7mg/kg if with 1:100,000 epinephrine or 500mg, whichever is lower

Children: maximum doses only 1.5- 2.5 mg/kg of plain lignocaine and 3 - 4 mg/kg of lignocaine with epinephrine.

Give 3 systems affected by local anaesthetic toxicity and how they are affected [3 marks]

[1] CNS:
- Serum level 1-5 mcg/mL: Tinnitus, light-headedness, circumoral numbness, diplopia, or a metallic taste in the mouth; nausea and/or vomiting, more talkative.

- Serum levels 5-8 mcg/mL: Nystagmus, slurred speech, localized muscle twitching, or fine tremors may be noticed; Hallucinations

- Serum levels 8-12 mcg/mL: Focal seizure activity occurs; this can progress to generalized tonic-clonic seizures.

- Respiratory depression occurs at extremely high blood levels (20 - 25 mcg/mL) and can progress to coma

[2] CVS:
- High blood levels of LA directly reduce cardiac contractility.
- Hypotension, Atrioventricular blocks, bradycardia, and ventricular arrhythmias

[3] Skin:
- rash, itching, swelling (allergic reaction)

QUESTION 6

[A] A 27 year-old male presents to your ED following a rugby tackle injury; he went into a tackle hitting the opponent with his right shoulder/neck/head. He presents with his right arm hanging limply by his side with the forearm pronated and the palm facing backwards (like a porter hinting for a tip).

You make a diagnosis of Erb-Duchenne paralysis.

What plexus is injured? [0.5 mark]

Brachial plexus
[roots of C5 & 6]

Which muscles are injured; name at least three [1.5 marks]

Deltoid
Short muscles of the shoulder
Brachialis
Biceps

[B] A 21 year-old-female presents to your ED with laceration on the volar surface of he right wrist.

Assuming that the median nerve is divided at the wrist, which two groups of muscles would you expect to be paralysed?
[1 mark]

Thenar muscles (excluding adductor pollicis)
Radial two lumbricals

Describe the relation of the median nerve in the carpal tunnel; with regards to its position and its radial, ulna, overlying and underlying structures
[2 marks]

Lies in midline, volar surface of wrist
Radially – Flexor carpi radialis
Ulna side – Palmaris longus
Overlying – Flexor retinaculum
Underlying – Flexor digitorium superficialis

[C]

What is the maximum adult doses/kg (or other lower maximum dose) for the following local anaesthetics? [2 marks]

Lignocaine (plain): 3mg/Kg or 200mg (whichever is lower)

Lignocaine (with adrenaline): 7mg/kg

Prilocaine: 5mg/kg or 400mg (whichever is lower)

Bupivacaine: 2mg/kg

Give 3 organ systems affected by local anaesthetic toxicity and how they are affected

[3 marks]

[1] CNS:
- Serum level 1-5 mcg/mL: Tinnitus, light-headedness, circumoral numbness, diplopia, or a metallic taste in the mouth; nausea and/or vomiting, more talkative.

- Serum levels 5-8 mcg/mL: Nystagmus, slurred speech, localized muscle twitching, or fine tremors may be noticed; Hallucinations

- Serum levels 8-12 mcg/mL: Focal seizure activity occurs; this can progress to generalized tonic-clonic seizures.

- Respiratory depression occurs at extremely high blood levels (20 - 25 mcg/mL) and can progress to coma

[2] CVS:
- High blood levels of LA directly reduce cardiac contractility.
- Hypotension, Atrioventricular blocks, bradycardia, and ventricular arrhythmias

[3] Skin:
- rash, itching, swelling (allergic reaction)

QUESTION 7

A 62 year old man presents with a history of sudden loss of speech whilst he was driving. His partner says he was getting his words muddled up, and this went on for about 90minutes, but this has now completely resolved. He also had transient loss of vision in his right eye lasting 5 minutes. He did not suffer any weakness of his limbs. He feels back to normal now and wishes to go home.

PMH: Type I diabetes. He is not known to be hypertensive or have high cholesterol. His BP is 150/90mmHg. All other vital signs are within normal limits.

What is his risk for a major cerebro-vascular event? [1 mark]

Risk score 6 (high risk) – 8% risk of CVA in 2 days

Outline the ABCD2 criteria for risk assessment of TIA [2 marks]

The ABCD2 TIA assessment scale Points

- **Age 60 or over 1**
- **BP > 140/90 1**
- **Unilateral weakness 2**
- **Speech impairment without weakness 1**
- **Duration > 60 minutes 2**
- **Duration 10-59 minutes 1**
- **Diabetes 1**

[ ]

ABCD2 Risk of stroke (%)

Points	% of patients	2-day	7-day	90 day risk
High risk (6-7)	21	8	12	18
Moderate risk (4-5)	45	4	6	10
Low risk (0-3)	34	1	1.2	3.1

What two mandatory tests should be done within the first 24 hours (excluding blood tests? [2 marks]

1) **12 lead ECG**
2) **CT Brain**

Regarding treatment:
1) What is the target cholesterol level for this type of patient?
2) If he is already on aspirin, what other medication should be considered?
[2 marks]

3.8 mg/dl
Dypiridamole 200mg daily

If he had presented with an established ischaemic stroke, what is the time scale for thrombolysis? [1 mark]

Within 3 hours

What agent is licensed in the UK and what is the dose/kg? [1 mark]
Alteplase
0.9mg/kg (maximum 90mg) over 1 hour

Patients with this eye presentation have a higher risk of two main systemic sequelae. What are these? [1 mark]

Stroke
Death from AMI

QUESTION 8

A 32 week pregnant lady presents with a headache and BP of 160/100

Apart from headache and HT, list 6 symptoms/signs of pre-eclampsia [3 marks]

Oedema (facial, pedal)
Visual disturbance
Hyper-reflexia
Abdominal pain / Epigastric tenderness
Tremor
Reduced urine output
Proteinuria

List 3 or more risk factors for pre-eclampsia [3 marks]

Primiparity
Maternal systemic disease – DM, renal disease, hypertension
Low socioeconomic status
Maternal age <20 or >35 years
Previous eclampsia
Family history
Multiple gestations
Overweight (>30% BMI)
Change of partner
Antiphospholid syndrome
10 years between pregnancies
Pregnancy from donor eggs

How would you reduce the blood pressure? [1 mark]

Hydralazine 5mg IV over 20mins to max. 20mg
Labetalol

Her condition deteriorates and she starts to fit. What definitive drug treatment would you give (<u>one drug</u>: name, dosage and route)? [2 marks]

Magnesium Sulphate

Initial: 4-6 g bolus IV over 15-20 min; if convulsion occurs after initial bolus, an additional 2 g IV over 3-5 min may be administered

Maintenance: 2 - 4 g/h IV maintenance

What are the signs of magnesium toxicity? **[1 marks]**

Loss of deep tendon reflexes and respiratory depression.

QUESTION 9

A) Ambulance crews attended a two-year-old child who was floppy and unresponsive and had difficulty breathing. Her 15 year old sister and her mum are also feeling unwell with tiredness. They have recently been using stand-alone gas heaters and you suspect Carbon Monoxide poisoning (CMP).

Give the commonest symptoms and signs, in order of frequency in CM poisoning cases: [2 marks]

Headache – 90% of cases
Nausea and vomiting – 50%
Vertigo – 50%
Alteration in consciousness – 30%
Subjective weakness – 20%

Outline your management if CoHb levels in a patient were 20%. [2 marks]

Management

- **Remove patient and co-habitants from source of CO**
- **Give 100% oxygen – a tightly fitting mask with an inflated face-seal is necessary for the administration of 100% oxygen**
- **Consider referring for hyperbaric oxygen therapy.**
- **Contact your local Health Protection Unit (HPU). They will co-ordinate Environmental Health, Safety, Social and other services to protect your patient and others**.

What are the indications for hyperbaric oxygen therapy (HBOT)? [2 marks]

Indications:

- The patient has lost consciousness at any stage;
- The patient has neurological signs other than headache;
- Myocardial ischaemia/arrhythmia has been diagnosed by ECG; and/or
- The patient is pregnant.

B) A 60kg weight, 15 year old girl attends the ED claiming to have taken 30 Paracetamol tablets 5 hours ago. She is asymptomatic. Your SHO has taken levels and immediately commenced Parvolex

Which patients are at greater risk of toxicity from Paracetamol OD; name two groups [1 mark]

- **Alcoholics (Alcohol ingestion in excess of currently recommended limits)**
- **Patients on drugs which induce hepatic enzymes e.g. anticonvulsants, rifampicin, St John's Wort**
- **Patients who have depleted glutathione stores due to e.g. cystic fibrosis,**

malnourishment

What are the four phases of Paracetamol overdose? [2 marks]

1) **Within hours: anorexia, nausea, vomiting, sweating.**
2) **24-72 hours: RUQ pain, abnormal LFTs, prolonged INR.**
3) **3-5 days: advanced hepatotoxicity, renal failure, jaundice, hypoglycaemia, coagulopathy, and encephalopathy.**
4) **1 week: if phase 3 not lethal, there is a gradual return of LFTs to normal.**

Can NAC treatment be used in pregnant patients, and why? [1 mark]

Yes; NAC does not carry any risk to the foetus and may protect the foetal liver from damage

QUESTION 10

[A] A 14 year old girl comes to the ED with lower abdominal pain. She is here without her parents and pregnancy test is positive. She is requesting a termination. She is in a relationship with a 19 year old partner.

How do you assess someone has capacity [BMA]? [2 marks]

- **Understand and retain relevant information (e.g. purpose of the treatment)**
- **Understand risk and benefit of alternative(s)**
- **Understand consequence(s) of refusal**
- **Retains the information**
- **Makes a free choice**

What three points must you think about regarding Gillick competence? [3 marks]

A minor can consent if have sufficient understanding + intelligence

A Gillick competent child may request & receive certain treatment without the parents knowledge

When there is patient/parental disagreement about consent, refusal of the patient does not carry the same weight as agreement

[B] A 75-year-old with left lobar pneumonia has presented to Emergency Department with a temperature of 38.9C, respiratory rate of 32 breaths /min, BP of 130/70mmHg. PR 110/min. His wbc was 15 $X10^9$/L, Hb 12.5g/dL, Platelets 250 X 10^9/L, urea 24mg/dL, Creatinine 140µmol/L, Na 142mmol//l, K 3.8mmol/L.

He was alert on arrival and presented a personally signed “advance directive” stating that he has prostate cancer and he does not want treatment.

He suddenly deteriorated whilst in the department and went into shock, with reduced level of consciousness. The daughter tells you that he should not be admitted to ITU or ventilated according to his “advance directive”.

What are the principles of the Mental Capacity Act 2005? [3 marks]

- **A person must be assumed to have capacity unless it is established that he lacks capacity.**
- **A person is not to be treated as unable to make a decision unless all practicable steps to help him to do so have been taken without success.**
- **A person is not to be treated as unable to make a decision merely because he makes an unwise decision.**

- **An act done or decision made, under this Act for or on behalf of a person who lacks capacity must be done, or made, in his best interests.**
- **Before the act is done, or the decision is made, regard must be had to whether the purpose for which it is needed can be as effectively achieved in a way that is less restrictive of the person's rights and freedom of action.**

Under the Mental Capacity Act 2005, would you consider him for ITU admission and cardio-respiratory resuscitation? [1 mark]
Yes

Give a reason for your answer [1 mark]

He has to specifically indicate that he does not want life saving (resuscitating) treatment

QUESTION 11

[A]
An 18 month old child is brought into the ED by his mother. He has been playing with a few 10p coins and she thinks she saw one in his mouth.

What two methods of investigation could be carried out in the ED? [1 mark]

Erect CXR
Metallic detector

Describe 3 sites and the vertebral level at which foreign bodies are most likely to get stuck. [3 marks]

site: upper oesophageal sphincter (cricopharyngeus) **level: C6**

site: Aortic arch **level: T4**

site: lower oesophageal sphincter **level: T10**

[B]
A three year old child presents to the ED with coryza and a barking cough.

What is the commonest causative organism for this condition? [1 mark]

Parainflunza virus

Name four of the features used in the Westley modified croup score? [2 marks]

Intercoastal Recessions
Inspiratory Stridor
Cyanosis
Air entry
Level of consciousness

In a child with severe croup, apart from corticosteroids name one other drug that you are likely to use, giving dose and route of administration. [1 mark]

Nebulised adrenaline (1:1000) 0.5mg/kg to a maximum of 5mg.

[C]

A previously well 10-month old baby boy presents to the ED with about 6 hours history of vomiting and paroxysmal abdominal pain (about 10 – 20 min frequency). He also has loose and watery stools. On examination, he appears well between the episodes of abdominal pain, his abdomen is soft and non-tender, but appears to have a palpable vertical mass in the RUQ. His stool shows occult blood.

What is the most likely diagnosis? [1 mark]

Intussusception

What is the investigation of choice? [1 mark]

Contrast enema

QUESTION 12

A)

A 2 year old boy is brought into your Paediatric ED with a fever of 38.5 deg C and vomiting of 2 days duration. He has had no coryza or cough. He has no rash.

The nurses have done a urine dipstix which is positive for leucocytes esterase and nitrites. According to the NICE guidelines for management of UTI in children:

Give two indications for sending the urine sample for culture? [1 mark]

• in infants and children who have a diagnosis of acute pyelonephritis/upper urinary tract infection
• in infants and children with a high to intermediate risk of serious illness
• in infants and children younger than 3 years

Give two indications for referring to a Paediatric Specialist? [2 marks]

- Infants and children with a high risk of serious illness
- Infants younger than 3 months with a possible UTI
- Infants and children 3 months or older with acute pyelonephritis/upper urinary tract infection: consider referral.

What is defined as atypical UTI; give four examples? [2 marks]

Atypical UTI includes:
• seriously ill (for more information refer to 'Feverish illness in children' (NICE clinical guideline 47)
• poor urine flow
• abdominal or bladder mass
• raised creatinine
• septicaemia
• failure to respond to treatment with suitable antibiotics within 48 hours
• infection with non-*E. coli* organisms.

B)

A 2 month old child is brought into the paediatric ED by parents. They are worried he is not feeding well and has developed a temperature which they report as 39deg C at home. He has had a coryza illness for 6 days now. He appeared to be getting better after a few days

but took a turn for worse 1 day ago. He is reported to be “sleepy” at unusual times of the day.

He is pale, does not respond normally to social cues. He wakes only with prolonged stimulation. His temperature is 38.5deg C. When he cries, it is high pitched.

Give four indications for parenteral antibiotics in a child with feverish illness? [2 marks]

Give immediate parenteral antibiotics (third-generation cephalosporin, to a child with fever:
– and signs of shock
– who is unrousable
– and signs of meningococcal disease
– younger than 1 month
– aged 1–3 months with a white blood cell count less than 5 or greater than 15 x 10 9/litre
– aged 1–3 months who appears unwell.

What anti-microbials would you consider in the 2 month old child above? [3 marks]

IV Ceftriaxone (3rd generation cephalosporin)
IV ampicillin or amoxicillin (for Listeria)
IV Acyclovir

QUESTION 13

A 28 year old woman presents to the ED with lower abdominal pain for 24 hours. She has been vomiting today and has a purulent vaginal discharge. Her temperature is 38.3C

Name 2 sexually transmitted and 2 non-sexually transmitted causative organisms [2 marks]

Sexually: N Gonorrhoea; Chlamydia trachomatis; Mycoplasma Hominis

Non- sexual: Group B streptococcus; E coli; Bacteroides

How would you make a definitive diagnosis? [1 mark]

Laparoscopy

Name 4 possible sequelae of PID [2 marks]

Ectopic pregnancy
Chronic pelvic pain
Tubal infertility
Dyspaerunia
Recurrent PID

Give the dermatomal innervation for the following pelvic organs [3 marks]

Ovaries – ANS; T10 (aortic plexus)

Uterine fundus – ANS; Inferior hypogastric plexus S2 - 4 (sympathetic), pelvic splanchnic nerves S2 – 4 (para-sympathetic)

Labia and perineum – Pudendal nerve, S2 - 4

She asks you what should be done with her IUCD. What advice would you give her? [1 mark]

With mild PID IUCD should be left in-situ
With severe PID IUCD should be removed

If she was HIV positive would this influence your choice of antibiotics? [1 mark]

No

QUESTION 14

A)

A 60 year old man was brought into the ED via ambulance at 9pm. He had sustained a fall down a couple of stairs onto a pavement (concrete). He has had some alcohol, and is somewhat belligerent.

Give four indications for CT head scan within 1 hour of presentation? [2 marks]

- GCS < 13 when first assessed in emergency department
- GCS < 15 when assessed in emergency department 2 hours after the injury
- Suspected open or depressed skull fracture
- Sign of fracture at skull base
- Post-traumatic seizure
- Focal neurological deficit
- > 1 episode of vomiting
- History of amnesia or LOC, AND Coagulopathy (history of bleeding, clotting disorder, current treatment with Warfarin)

He is admitted to the Observation ward/CDU as his GCS was 15/15 at 90mins post admission, and there were no other indications for immediate CT head imaging. Outline the instructions you will give in the patient's notes that will trigger urgent reappraisal by supervising doctor; give four. [2 marks]

Call doctor urgently in event of the following happening:
● Agitation or abnormal behaviour developed
● GCS dropped by 1 point and lasted for at least 30 minutes (give greater weight to a drop of 1 point in the motor response score)
● Any drop of 3 or more points in the eye-opening or verbal response scores, or 2 or more points in the motor response score
● Severe or increasing headache developed or persistent vomiting
● New or evolving neurological symptoms or signs, such as pupil inequality or asymmetry of limb or facial movement

NICE Guidelines states that as a minimum, half-hourly observation should be done until the GCS is 15. Once the GCS is 15, outline the time interval for minimum acceptable neurological observations. [2 marks]

When GCS = 15, minimum frequency of observations is:
– half-hourly for 2 hours
– then 1-hourly for 4 hours
– then 2-hourly thereafter.

B)

Your SHO discusses a 30 year old woman with you. She presented with a 2 day history of headache and perception of left sided weakness. He cannot find any neurological loss on examination. He wonders if it is ok to discharge her, especially as she wants to get back home to her 1 week old baby who she had by Caesarean section. He has assessed her as a low risk TIA, and wishes to process her on out patient basis.

What important diagnosis should you consider and what is the investigation of choice? [2 marks]

i) Cerebral venous sinus thrombosis

ii) Magnetic resonance venography (MRI/V)

If confirmed, what is the treatment? If this treatment fails what other treatment option is available? [2 marks]

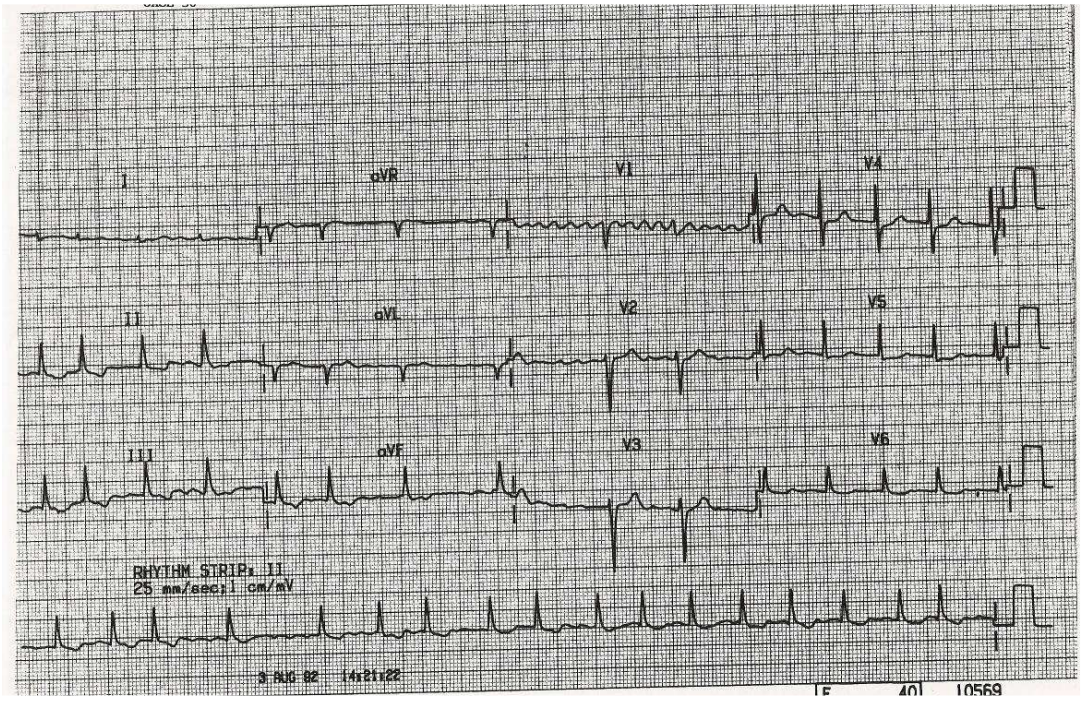
i) Heparin therapy, even in those with pre-existing haemorrhage.

ii) Local thrombolysis with rtPA via appropriate consideration of selective catheterization of the cerebral veins.

QUESTION 15

A 60 year old man presents to the ED at 0900 with a history of rapid heart beats starting at 10pm the previous night. He gives no history of chest pains. He is normally fit and well and has no PMHx. He is not on any regular medications.

His blood pressure is 140/80; His heart rate is 140bpm. His Oxygen sats are 97% on air. His 12 lead ECG is as shown.



What are the indications for a rate control strategy in a patient with this condition? [2]

Age > 65years
Has Coronary artery disease
Has a contra-indication to anti-arrythmic drugs
Is unsuitable for cardioversion: e.g C/I to anticoagulations; Structural heart disease (enlarged LA; MS); multiple failed cardioversions or relapses; chronic AF (>12 months)

You decide he is best managed using rhythm control. Outline your management? [4]

[NICE guidelines 2006]

1. **Heparinise**
2. **Cardioversion:**
    a. **Electrical**
    b. **Pharmacological**
        i. **Amiodarone (if structural heart disease (SHD))**
        ii. **Flecainide (if no SHD)**
3. **Beta blockers**
4. **No further anti-coagulation required**

You need to know his risk for a thromboembolic event. Outline the high risk factors? [3]

Previous ischaemic stroke or TIA or thromboembolic event
Age ≥75 years with hypertension, diabetes or vascular disease
Structural heart disease: valvular, heart failure, impaired LV function on echo

Explain why the patient needs an anti-arrhythmic drug? [1]

Anti-arrythmic drugs are not recquired for those patients in whom a precipitant e.g. chest infection, fever etc has been corrected, and cardiversion has been successful.

QUESTION 16

A 45-year -old male presents to your ED with a few days history of fever, malaise, headache and vomiting.

Due to the ongong H1N1 flu pandemic, your junior doctor asks for advice regarding the appropriate face mask to use.

Given the option of the following, (1) surgical face mask, (2) FFP2 mask and (3) FFP3 mask, which one would you advice him/her to use? [1 mark]

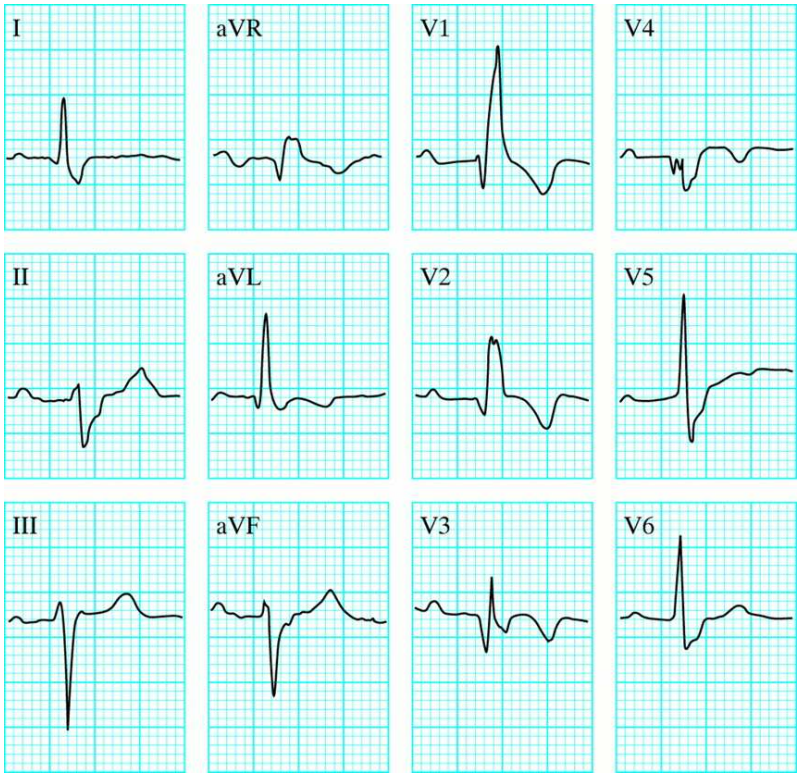
Surgical mask, unless aerosol generating procedures expected

Who and/or when is each of the above three masks indicated in suspected H1N1 infection? [1.5 marks]

Surgical face mask – entry to cohorted area, but no patient contact OR patient contact, but no aerosol generating procedures
FFP2 – where FFP3 indicated but none imediately available
FFP3 - where aerosol generating procedures are being undertaken

On further questioning he says precceding this current illness, he has had dizzy spells over the last couple of months but always with a full recovery.

This is his ECG on admission.



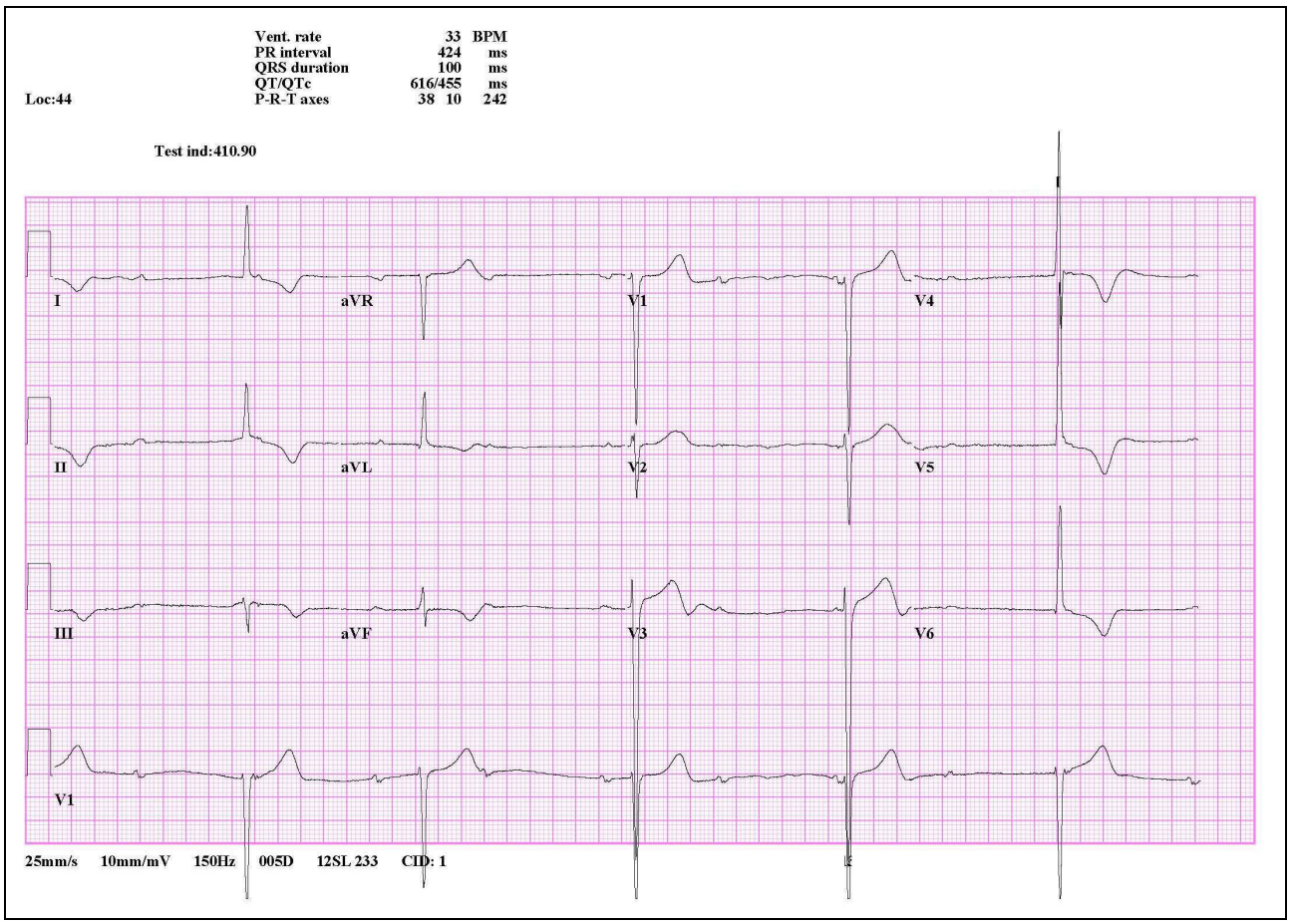
Give 3 abnormalities **[1.5 marks]**

1° heart block
RBBB
Left anterior hemiblock (LAD)

What is this group of features also known as? **[0.5 mark]**

Trifascicular block

Whilst in the department he comtinues feeling unwell unwell and was noted to have bradycardia. A 2nd ECG is recorded.



What conduction defect does it show? **[0.5 mark]**

Complete heart block

What is the most likely underlying structural pathology? [1 mark]

Fibrosis of the conducting system pathways.

The patient above resides with both his parents. 2 months after this attendance, his parents (with parental responsibility) request access to the medical record of that attendance (under Access to medical record section of the Data Protection Act 1998)

[B] Under this Act; who has the right to apply for access to their health records? - [1 mark]

This Act gives every living person, or their authorised representative, the right to apply for access to their health records to obtain copies

[C] Under this Act, what is referred to as "Personal data"? [1 mark]

Personal data are defined in the Data Protection Act, as follows:-
"data which relate to a living individual who can be identified:-
*** from those data; or**
*** from those data and other information which is in the possession of, or is likely to come into the possession of, the data controller and includes any expression of opinion about the individual and any indication of the intentions of the data controller or any other person in respect of the individual"**

Under this Act, give one of the two reasons where access could be denied or limited to a patient or their authorised representative. [1 mark]

1. Where the information released may cause serious harm to the physical or mental health or condition of the patient or any other person.

2. Where access would disclose information relating to or provided by a third person, this would not be a health professional who had not consented to that disclosure.

West Midlands FCEM Course Jan 2010

Clinical SAQ Paper

In the National Health Service, what is the role of the Caldicott Guardian? [1 mark]

A Caldicott Guardian is a senior person responsible for protecting the confidentiality of patient and service-user information and enabling appropriate information-sharing

QUESTION 17

A 45 year old man presents with a one day history of a painful, watering eye. He has had similar symptoms before but never this badly; he can recall no trauma.

Give four differential diagnoses. [2 marks]

conjunctivitis
foreign body in eye/ corneal abrasion
acute uveitis
acute closed angle glaucoma
ulcerative keratitis

Which is most likely and why? [1 mark]

Acute uveitis.

The pupil is irregular due to adhesions.

Give 4 associated diseases. [2 marks]

Ankylosing spondylitis,
ulcerative colitis,
sarcoid,
AIDS,
Behcet's syndrome.

Outline your management plan, in the ED. [2 marks]

Give analgesia / NSAID.
Check VA.
Fundoscopy, slit lamp examination
Cycloplegics, if no history of angle-closure glaucoma.

Name two complications. [2 marks]

Angle-closure glaucoma

Cataracts
Recurrent iritis

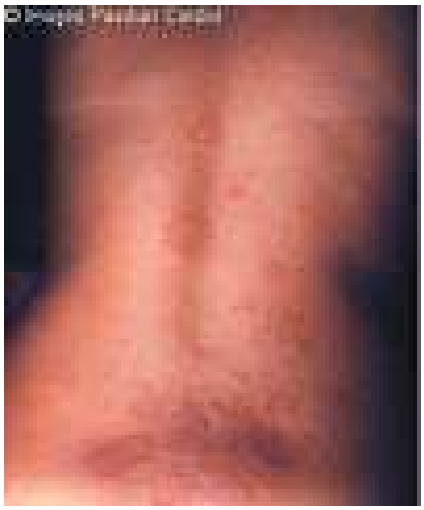
List one further management option. [1 mark]

Refer to ophthalmology [for steroid eye drops]

QUESTION 18

[A]

An eight year old boy presents with a history of painful joints, associated with a rash. He had a sore throat two to three weeks ago. You suspect he has acute rheumatic fever.



What are the principles of the diagnosis of this condition? [3]

Evidence of recent streptococcal infection
2 major revised Jones criteria OR
1 major and 2 minor revised Jones criteria

What single laboratory test is required to confirm the diagnosis [1]

Increased ASO titre - >200u/ml

Outline four principles of treatment of acute rheumatic fever [2]

1. **Bed rest until CRP normal for 2 weeks**
2. **Benzylpenicillin 600mg IM start then pen V 250mg/6h po**
3. **Analgesia**
4. **Joint immobilisation for severe arthritis**
5. **Haolperidol for chorea**

[B]

A mother brings her 6 year old child to the ED with lethargy and malaise for a few weeks. She is limping and complaining of hip pain. There is gross limitation of movements of the left hip.

Full count results show:
Hb 8.4
Platelets 20
WBC 28
Reticulocytes 0.5%

Give 4 possible diagnoses (2)

i) Acute leukaemia (ALL / AML)

ii) SCD

iii) Infections; Septic arthritis

iv) Enteric fever

Give two investigations you would like to perform? [1]

i) X-Ray of the pelvis

ii) Bone marrow aspirate

iii) USS left hip

iv) ESR, CRP

v) Clotting

vi) Peripheral blood film

Comment on the blood results [1]

i) Thrombocytopenia + anaemia

ii) No blast reaction

iii) Lymphocytosis

QUESTION 19
[A]

A two week old baby from Africa presents to the ED with jaundice. He is a little lethargic.

Give four causes which should be considered in any neonate presenting with jaundice? [2 marks]

Sepsis
Breast milk jaundice
Congenital haemolytic anaemia (SCD, spherocytosis)
Physiologic
Hypothyroidism
Inherited metabolic disorders eg galactosaemia, fructosaemia

What is the physiological basis of breast milk jaundice? [1 mark]

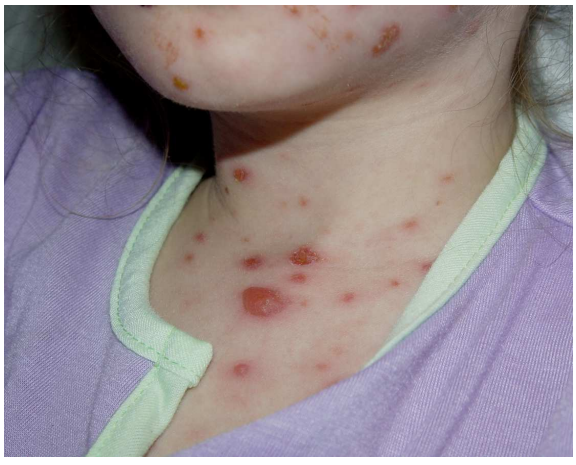
Presence of substances which inhibit glucuronyl transferase in breast milk.

What is the peak time for occurrence of breast milk jaundice? [1 mark]

Week 3

[B]

The patient subsequently develops other lesions (see picture) on the face, trunk, palms, soles, groin, mouth and eyes. He also develops a fever and becomes systemically unwell



What is the diagnosis? [1 mark]

Stevens-Johnson Syndrome (Erythema multiforme major)

Name 2 other causes? [1 mark]

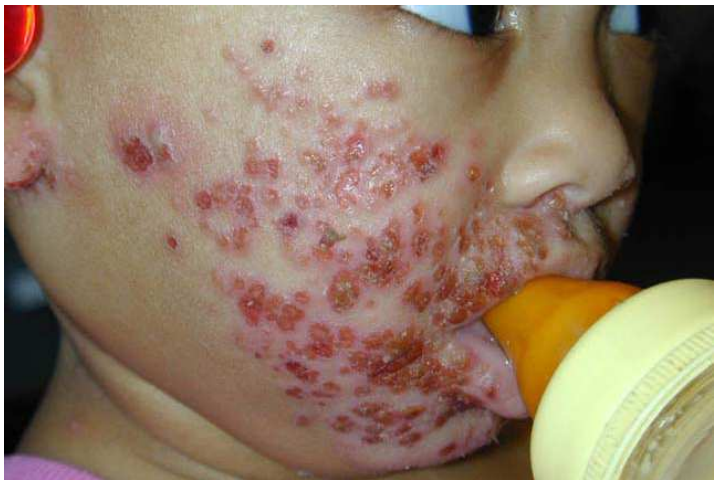
Drugs (sulphonamides, penicillin, sedatives)
Other viruses & other infection (e.g. Herpes simplex)
Neoplasm

-

What is the management principle in treating such patient; name at least two? [1 mark]

Supportive
Fluid management
Ophthalmology referral
Steroids

[C]
This 2 year old child with a strong family history of eczema presented to the ED with a 5 day history of this rash. She has been seen by GP 3 days ago and a course of Flucloxacillin commenced then has not helped. Mum thinks it is worse now.



What is the diagnosis? [1 mark]

Eczema herpeticum

What causative organism and treatment? [1 mark]

Herpes simplex virus
Acyclovir (oral or IV – if severe)

Describe the aetio-pathogenesis of this condition? [1 mark]

Patients with eczema have relatively reduced skin immunity. HSV infection can thus spread quickly.

[It is potentially life-threatening and needs urgent treatment]

Question 20

[A]

A 6 year old child had drunk colourless liquid found in garage. He was brought in by dad unconscious. He was found to have central cyanosis.

His capillary blood gas showed: Ph 7.2, pCO2 2.6, O2 normal, HCO3 12, BE -5 (minus 5)

What have they ingested? [1]

Antifreeze (ethylene glycol)

What two things assist your diagnosis? [2]

Colourless liquid "found in a garage"

Presence of profound metabolic acidosis / very low bicarbonate

What drug do you give? [1]

1. IV Sodium bicarbonate 1.26% (350ml in adult); Check dose in child!
2. Alcohol:
loading dose of 600-800 mg/kg absolute (100%) ethanol. whisky, gin or vodka (40% ethanol) in a dose of 2 mL/kg body weight

Alternatively, give a loading dose 7.5-10 ml/kg of 10% ethanol in water (or 20ml/kg of 5%), IV over 30 minutes.

3. Fomepizole:
Loading dose: 15 mg/kg IV diluted in 100mls saline or dextrose over 30 minutes.

Note:
Fomepizole thought to be better in children because it is not associated with hypoglycaemic effect of alcohol. (Although safety and effectiveness in children and pregnancy has not been established)

Explain the cyanosis despite normal O_2? [2]

It causes pulmonary oedema and congestive cardiac failure

[Amyl nitrite / Isobutyl nitrite ("Poppers") cause methaemoglobinaemia].

[B]

A three year old child presents to the ED with coryza and a barking cough.

What is the commonest causative organism for this condition? [1]

Parainflunza virus

Name four of the features used in the Westley modified croup score? [2]

Intercoastal Recessions
Inspiratory Stridor
Cyanosis
Air entry
Level of consciousness

In a child with severe croup, apart from corticosteroids name one other drug that you are likely to use, giving dose and route of administration? [1]

Nebulised adrenaline (1:1000) 0.5mg/kg to a maximum of 5mg.