**Question 19 Toxicology 18 marks**

A 37yo female presents to the ED four hours after ingesting 100 ferro-gradumet (ferrous sulphate 325mg) tablets.

1. Describe two (2) local and two (2) systemic features of iron toxicity (4 marks)
2. List four (4) investigations you would perform on presentation and the justification for each investigation. (4 marks)
3. list two (2) contraindications for whole bowel irrigation (2 marks)
4. What is the mechanism of action of desferrioxamine (2 marks)
5. list two (2) indications for the administration of desferrioxamine (2 marks)
6. List four (4) criteria that must be met for safe discharge home (4 marks)

**Q19 Answer:**

A 37yo female presents to the ED four hours after ingesting 100 ferro-gradumet (ferrous sulphate 325mg) tablets. **(18 marks)**

Pass mark 13. Pass rate =50%

1. Describe two (2) local and two (2) systemic features of iron toxicity (4 marks)

LOCAL:

* vomiting, diarrhoea
* abdominal pain
* GI hameorrhage -> Haematemesis, PR bleeding
* Bowel obstruction/perforation

SYSTEMIC:

* **HAGMA / Lactic acidosis**
* **Shock**
* Acute renal failure
* Acute liver failure/injury: jaundice, coagulopathy
* CNS toxicity (coma, seizures)

Altered conscious state/depressed conscious state: not good enough for FACEM answer

‘haemodynamic instability’ best answered as shock

1. List 4 investigations you would perform on presentation and the justification for each investigation.

* **Vbg** – looking for raised anion gap or lactic acidosis
* **Serum iron** – will inform need for chelation
* Blood group and antibody screen – in anticipation of GI haemorrhage
* AXR – radio-opaque tablets - may confirm ingestion and monitor decontamination
* LFTs - hepatotoxicity
* Glucose – hypoglycaemia seen in significant ingestions
* FBE – monitor Hb. WBC may be non-specifically elevated in significant Fe poisoning
* Coagulation profile
* Paracetamol level – search for coingestants
* ECG

Ethanol level and BHCG not accepted – this question is about iron overdose – keep your answers specific to the question

1. list two contraindications for whole bowel irrigation

* signs of bowel obstruction/ileus
* GI haemorrhage
* Unable to control vomiting
* Suspicion of bowel perforation
* Uncontrolled shock/ clinical instability

Lots of candidates said ‘altered/depressed/ conscious state’ and ‘patient non-compliance/agitation/uncooperative’ or ‘inability to protect airway’. This raises an interesting point. Are these true contraindications or ‘challenges’ that you must deal with as a FACEM. If WBI is a critical intervention, maybe you need to deal with the airway and intubate the patient. (we give ketamine to the agitated resp failure patient to enable NIV, we intubate STEMIs in APO to get them safely to the cath lab).

Answers not accepted: ‘staff not trained’ – do it yourself!, ‘inadequate staffing’, ingestion not significant enough to warrant WBI – true, but then you could argue that sinus rhythm is a contraindication for cardioversion.

1. list 2 indications for the administration of desferrioxamine

* peak serum iron >90 micromol/l (5mg/L)
* significant systemic toxicity (HAGMA, shock, GI haemorrhage, altered mental status)
* A number gave a mg/kg ingestion response. Antidote administration is determined by clinical signs of toxicity and serum iron level. Dose ingested may predict severity. (we don’t treat paracetamol OD on the amount ingested)
* A couple gave indications for desferrioxamine not related to iron overdose ie haemochromatosis. In the exam, all questions relate to the stem UNLESS OTHERWISE STATED, for example if the question was “In any patient, list indications for desferrioxamine…” then haemochromatosis would be OK
* ‘severe iron overdose’ not accepted – not FACEM level
* NB peak serum iron levels can be expected at 4-6 hours post immediate release preparations and greater than 8 hours for controlled release preparations

1. What is the mechanism of action of desferrioxamine. (2 marks)

* Chelates Fe+++ -> **Binds** free iron,
* Makes a water soluble **inert** chelate that is **excreted in the urine**

1. List four (4) criteria that must be met for safe discharge home from ED (4 marks)

* Clinically well 6 hours after ingestion for IR or 12 hours after ingestion for XR iron preparation.
* Peak serum iron concentration is less than 90 micromol/L (5 mg/L),
* No evidence of metabolic acidosis
* Normal vital signs
* Mental health risk assessment undertaken (1 mark)
* Safe discharge plan (1 mark)

‘reducing iron levels’ not specific enough,

12 hours observation recommended for controlled release preparations

Main reference: eTGA