

Overview

Potentially lethal poisoning depending on dose, characterised by local GI & systemic toxicity.

Toxic mechanism

Direct corrosion of GI mucosa and systemic toxicity from direct cellular effects.

Toxicokinetics

Abs from GIT. Normal elimination is negligible.

Clinical features

Overlapping phases of clinical manifestations

Time	Phase description	Features
30min-6hr	GI direct toxicity	Abdo pain, D&V, haematemesis, melaena, lethargy, shock, met acidosis
6-12hr	Latent period	Some improvement in GI symptoms, \pm poor perfusion, \uparrow RR, \uparrow HR
12-48hr	Shock	Shock (vasodilation, 3 rd spacing, cardiogenic) & met acidosis, multiorgan failure (coagulopathy, RF, pulmonary dysfunction/failure, CNS dysfunction)
2-5d	Hepatotoxicity	Jaundice, coma, coagulopathy, hypoglycaemia. Severity is dose-dependent
2-6wk	Bowel obstruction	Vomiting, dehydration, abdo pain, often gastric outlet obstruction

Investigations

Screening: ECG, paracetamol, BSL

Specific bloods: Serum [Fe] 4-6hr post-ingestion (8hr for extended release), ABG

AXR for radiopaque pills

Others as indicated: UEC, LFT, FBC, coags

Risk assessment

- Elemental Fe dose. [Iron forms: Ferrous sulfate (dried 30% Fe, heptahydrate 20% Fe), gluconate (12% Fe), fumarate (33% Fe), chloride (25%) & ferric chloride (28%)]

Dose	Effect
<20mg/kg	asymptomatic
20-60mg/kg	GI symptoms
60-120mg/kg	Systemic toxicity expected
>120mg/kg	Potentially lethal

- Confirmation of ingestion (AXR)
- 4-6hr iron level > 90micromol/L (500 μ g/dl) \rightarrow systemic toxicity predicted.

Management

Resus & supportive care: Secure airway & breathing. Treat volume depletion aggressively (10-20ml/kg crystalloid boluses). Full monitoring.

Decontamination: WBI if ingested >60mg/kg and AXR shows many pills.

Antidotes: **Desferrioxamine** (See Antidotes) if:

- Systemic toxicity: \downarrow LOC, shock, metabolic acidosis
- 4-6hr serum iron > 90micromol/L (500 μ g/dl)
- Significant number of pills on AXR

Disposition

If ingestion <60mg/kg (child <40mg/kg) and asymptomatic at 6hr \rightarrow D/C

If systemic toxicity \rightarrow ICU.

Notes

Low serum bicarbonate can act as surrogate for Fe level if latter unavailable.