Mercury (Hg)

Overview

Uncommon but potentially life-threatening. Often a chronic exposure.

Toxic mechanism

Binds to SH^- groups disrupting cell membranes and inhibiting enzymes.

Toxicokinetics

Elemental Hg abs from lungs but not GIT. Inorganic Hg by skin & GIT. Organic Hb from GIT or lungs. Large Vd, lipophilic. Elim in faeces & renally. Long $T_{\frac{1}{2}}$ 30-70d.

Clinical features

- *Acute:*
  - *Hg^0:* headache, N&V, fume fever, metallic taste, dyspnoea, pneumonitis (±ARDS)
  - *Inorg. Hg:* haemorrhagic GE, , N&V&D, metallic taste, grey mucous membranes
  - *Org. Hg:* GI upset, tremor, resp. distress, dermatitis, RF, ECG changes. Delayed neurotoxicity (psychological-conc, mem & mood disorders, cerebellar, sensory-glove-stocking paraesthesia, tunnel vision, hearing loss, speech problems, motor – tremor, weakness)
- *Chronic:* Insidious multi-organ disorder+neuropsychiatric sequelae with all features above & acrodynia (usually child) – red, oedematous rash of palms/soles/face that desquamates.

Investigations

Screening: ECG, paracetamol, BSL

Specific bloods:

Whole blood mercury level, urine mercury level, CXR/AXR, endoscopy

Blood mercury level	Interpretation
≤20μg/L (100nmol/L)	Normal
>200μg/L (1000nmol/L)	Symptomatic
>500μg/L (2500nmol/L)	In acute inorganic Hg exposure
Urine mercury level	**Interpretation**
<10μg/L (50nmol/L)	Normal
>100μg/L (500nmol/L)	Neuropsychiatric sequelae

Risk assessment

Accidental ingestion of Hg^0 & having dental amalgam are benign. Inhalation of Hg^0 aerosol or vapour, ingestion of inorganic salts, or organic Hg exposure risk toxicity.

Management

Resus & Supportive Care:

- Rarely req. Mannitol & dexamethasone if cerebral oedema. Fluid status.

Decontamination: Remove source. Remove clothes & wash skin if dermal exposure. Don't vacuum Hg^0. Give PEG if large volume Hg ingested.

Enhanced Elimination: Polythiol resin may reduce organic Hg enterohepatic circulation.

Antidote: Chelation therapy (see Antidotes)

Disposition

Depends on severity.

Notes

Sources: elemental (dental amalgam, thermometers), inorganic (industrial processes) and organic compounds (pesticides, wood preservatives, some medicines, and contaminated fish).