

### Overview

Uncommon but potentially fatal. Often chronic. Inorganic toxicity more common. Greater with tri- rather than penta-valent arsenic. Therapeutic use in acute promyelocytic leukaemia.

### Toxic mechanism

As<sup>3+</sup>: Binds to many cell enzymes, inhibits cellular respiration & DNA replication/repair.

Reactive O<sub>2</sub> intermediates.

### Toxicokinetics

Abs by GIT, skin & lungs. Distributes to kidney, liver then lungs, CNS/PNS and nails. Liver met.

T<sub>½</sub>~5d

### Clinical features

- *Acute*: Rapid dev of metallic taste, hypersalivation & slight garlic odour, severe N&V & rice water diarrhoea±blood, abdo pain. Followed by encephalopathy, seizures, dysrhythmias, ARDS, RF, liver injury. Later marrow depression, alopecia & neuropathy.
- *Chronic*: Insidious onset over years of constitutional symptoms, cutaneous lesions, nail changes, painful peripheral neuropathy and skin/bladder Ca.

### Investigations

*Screening*: ECG, paracetamol, BSL

*Specific bloods*:

Spot (Norm<30µg/L or 4.0µmol/L) & 24hr (Norm<50µg/L or 6.65µmol/L) urinary arsenic, blood level if anuric, FBC, UEC, LFT, ABG, CXR/AXR

### Risk assessment

Chronic intoxication can follow long-term drinking of artesian well water. Acutely <5mg → mild GIT symptoms, but >100-300mg (child <1mg/kg) potentially lethal.

### Management

*Resus & Supportive Care*:

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

*Decontamination*: Remove source. Remove clothes & wash skin if dermal exposure.

WBI if co-operative & ingested inorganic As trioxide (shown on AXR).

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

*Antidote*: Chelation therapy (see Antidotes)

### Disposition

Depends on severity.

### Notes

*Sources*: inorganic (ground water, soil, industrial, traditional remedies), organic (fish: but in non-toxic forms, more toxic is trypanosomiasis Rx melarsoprol).