Neurology of Heavy Metal Poisoning

Lead

Lead neuropathy

* occurs almost exclusively in **adults**\* – ***axon loss*** neuropathy.

\*infants develop encephalopathy ± *demyelinating* neuropathy.

* bilateral motor mononeuritis multiplex:
  + affects **upper extremities** first, esp. radial nerve - focal weakness of extensor muscles of fingers and wrist (wristdrop!!!!!), sparing brachioradialis.
  + later weakness may extend to arms (n. medianus) and occasionally to legs (n. peroneus communis).

***Sensory symptoms & signs*** are usually absent.

* **CSF protein** - slight elevation.
* **nerve conduction velocities** – normal (LMN disorder rather than neuropathy?).
* when lead exposure ceases, recovery is gradual (over several months).

Mercury

Two forms of mercury:

1. **Organic** mercury (methyl- and ethyl-mercury) - most toxic to CNS; dorsal root ganglion degeneration → prominent distal paresthesias; ventral roots are spared.
2. **Elemental** mercury - prominent motor manifestations (weakness and wasting), mild sensory symptoms.

Arsenic

Acute exposure - large dose of arsenic (e.g. 100 mg of arsenous oxide):

***in few hours*** – hemorrhagic *gastroenteritis* (vomiting, diarrhea) and circulatory collapse;

***in 1-3 days*** – serious *renal & liver failure*;

***in 3-8 weeks*** – painful burning ***axon loss*** *polyneuropathy* (worsens over 1-3 weeks → plateau phase → recovery over months).

Chronic exposure - *arsenic neuropathy* (most common of all heavy metal-induced neuropathies!).

* slower evolution than in acute cases.
* prominent sensory symptoms (pain and paresthesias, impaired sensation in *stocking-and-glove* distribution) → areflexia, weakness progresses to complete flaccid paralysis of legs.
* absent GI symptoms.

Thallium

* used as rodenticide.
* **children** develop *encephalopathy*.
* **adults** develop ***axon loss*** *neuropathy*:
  + primarily sensory (severe disturbing dysesthesias) and autonomic (tachycardia and hypertension).
* *alopecia*, **Mees lines** (horizontal white bands of nails) as in arsenic poisoning.

*Panaudota literatūra*: see PN1 p.