Aspirin Poisoning (https://galwayem.ie/index.php/index.php/guidelines/medical-emergencies/aspirin-poisoning)

Category
Medical Emergencies (https://galwayem.ie/index.php/guidelines/medical-emergencies)

Symptoms and signs

Salicylates cause vomiting, dehydration, tinnitus, vertigo, deafness, sweating, warm extremities with bounding pulses and hyperventilation**.**

Some degree of acid-base disturbance is present in most cases. Initially a respiratory alkalosis is the rule with normal or high pH, followed by metabolic acidosis.

Less common features include: haematemesis, hyperpyrexia, hypoglycaemia, hypokalaemia, thrombocytopenia, increased INR/PTR, intravascular coagulation, renal failure and non-cardiac pulmonary oedema. These features are associated with serious toxicity.

Central nervous system signs include confusion, disorientation, coma and convulsions are less common in adults than in children.

Assessment
The severity of poisoning cannot be assessed from plasma salicylate concentrations alone and clinical and biochemical features should be taken into account.

However, salicylate intoxication is usually associated with plasma concentrations > 350 mg/L (2.5 mmol/L). Most adult deaths occur in patients whose concentrations exceed 700 mg/L (5.1 mmol/L).

Neurological features including confusion and impaired consciousness, metabolic acidosis and high salicylate concentrations indicate severe poisoning.

Risk factors for death include:

- age over 70 years or less than 10 years
- CNS features
- Acidosis
- Hyperthermia
- Late presentation
- Pulmonary oedema
- Salicylate concentrations > 700 mg/L

- >500mg/kg ingestion

Initial Management

- Give oral activated charcoal (50 g for an adult, 1g/kg for a child) to alert patients who present up to 8 hours post ingestion of more than 150 mg/kg body weight salicylate (and again after 4 hours of salicylate levels continue to rise).
- Measure salicylate levels in patients who have ingested > 125mg/kg of aspirin.

Levels should be taken at 2 hours in symptomatic patients or at 4 hours in asymptomatic patients.

- Symptomatic patients should have ABGs, U&Es, INR/ PT and blood glucose.
- Repeat levels should be taken after a further 2 hours in all symptomatic patients, in patients whose initial levels were >500mg/l and in patients who have taken enteric coated preparations.

Subsequent management is guided by salicylate level

Salicylate level between 2.5-3.6 mmol/l (350-500mg/l)

- increase oral fluids or give IV fluids if not tolerating orally
- if acidaemic give sodium bicarbonate 8.4% 50-100mls over 30 minutes

Salicylate level >3.6 mmol/l (500 mg/l)

- seek senior ED advice, refer HDU
- sodium bicarbonate 8.4% 225mls over 60 minutes provided renal function normal serum potassium $\geq$ 3.5mmol/l and no evidence of heart failure or shock

- If serum potassium < 3.5mmol / l give IV infusion of glucose 5% with potassium chloride 40mmol/l over two hours, to correct potassium before giving sodium bicarbonate

  Always use commercially produced pre-mixed bags of infusion fluid. NEVER add potassium chloride to infusion bags.

Haemodialysis

Haemodialysis (or haemofiltration) is the treatment of choice for severe poisoning and should be arranged for patients with:

- salicylate concentration greater than 900 mg/L (6.4 mmol/L), 600mg/L in elderly.
- renal failure
- congestive cardiac failure
- non-cardiogenic pulmonary oedema
- coma
- convulsions, CNS effects not resolved by correction of acidosis

In the presence of symptoms suggestive of severe salicylate poisoning, haemodialysis should also be considered in patients with:

- severe metabolic acidosis (pH less than 7.2; H^+ 63 nanomoles/L)
- persistently high salicylate concentrations unresponsive to urinary alkalinisation
- plasma concentrations greater than 700 mg/L (5.1 mmol/L)

Monitoring treatment

- aim for urine pH 7.5 to 8.5
- Measure plasma salicylate 3 hrly until clearly falling
- During alkaline diuresis, check U&E (particularly the K^+), blood glucose, acid-base hourly
- If serum potassium < 3.5mmol /L give IV infusion of glucose 5% with potassium chloride 40mmol/l over two hours, to correct potassium before giving sodium bicarbonate
- ***Always use commercially produced pre-mixed bags of infusion fluid. NEVER add potassium chloride to infusion bags.***

Hyperthermia

- < 39°C use normal cooling measures
- ≥ 39°C aggressive cooling with ice packs and sedation

Chronic poisoning

- Occurs at lower levels especially in the elderly
- Difficult to diagnose
- Nonspecific symptoms
- Unexplained confusion
- Metabolic acidosis
- Need to exclude other pathology

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