Amphetamines and amphetamine-type substances (includes 'ice', MDMA/ecstasy)

Methamphetamine, MDMA, and cathinones are examples of amphetamines. Toxicity includes hyperthermia, neurological, CVS, and metabolic disturbances.

Toxicity / Risk Assessment

Dose-dependent sympathomimetic +/- serotonergic stimulation

Amphetamines can be ingested, snorted, injected or smoked

Clinical features:

- Clinical effects of amphetamines occur rapidly
- **CNS**: Anxiety, agitation, aggression, euphoria, seizures
- **CVS**: ↑HR+BP, arrhythmias, pulmonary oedema acute coronary syndrome (ACS) – vasospasm +/- thrombosis, aortic dissection. NOTE: vascular complications in any age group in absence of risk factors
- **Hyperactive Delirium:** agitation, delirium, extreme sympathomimetic system activation, psychomotor agitation **= medical emergency**
- **Hyperthermia** and secondary multi-organ failure
- **Metabolic**: lactic acidosis
- **SIADH/Hyponatraemia**: more likely with MDMA
- **Other**: Diaphoresis, tremor, mesenteric ischaemia, intracranial haemorrhage, rhabdomyolysis

Management:

Decontamination: There is no role for administration of activated charcoal

Benzodiazepines are first line Rx. Aggressive Rx of agitation and hyperthermia is paramount.

Diazepam 5-10 mg IV every 5-10 mins to achieve sedation; less severe cases: use oral diazepam q30 mins

Agitation - Droperidol 10 mg IM / 5-10 mg IV initially. Continued agitation may require titrated doses of droperidol 5 mg IV increments or diazepam 5 mg IV increments to achieve gentle sedation

Hyperactive Delirium – *MEDICAL EMERGENCY. Treat aggressively as extreme catecholamine excess can lead to death. Consider ketamine sedation or RSI / general anesthetic / intubation.*

Hyperthermia - *treat aggressively as temperatures > 40^0 C can rapidly lead to death*

- If T > 39^0 C rapid cooling measures (fanning, tepid sponging, ice). May require intubation and paralysis.

Seizures - Diazepam 5-10 mg IV every 5-10 mins

Continued seizures or altered mental status

- Check sodium concentration for possible hyponatraemia (treat as below). CT brain to exclude ICH.
- General anesthetic sedation with propofol, midazolam or barbiturates

Hypertension/Tachycardia – diazepam is first line. If refractory – IV GTN infusion or calcium channel antagonist. Beta-blockers are relatively contraindicated (please discuss with toxicologist).

Acute Coronary Syndrome

- Manage along conventional lines, but avoid beta blockers; PCI is preferred over thrombolysis

Hyponatraemia – *usually secondary to SIADH +/- excess H_2O intake*

Fluid restrict unless signs of dehydration. If Na^+ conc. < 120 mmol/L, consider 3% NaCl. (1-2 mL/ kg IV)

Discharge can occur when clinical toxicity resolves.

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