Prescribed Psychostimulants (Methylphenidate, Dexamphetamine, Lisdexamphetamine)

Prescribed psychostimulants can cause sympathomimetic toxicity akin to their illicit counterparts including hyperthermia, agitation & multi-organ failure

Toxicity / Risk Assessment

Doses greater than 1mg/kg are likely to cause sympatho-mimetic stimulation. Likelihood of toxicity increases if co-ingested with other sympathomimetic or serotonergic agents

***Immediate release**: Dexamphetamine, methylphenidate*

***Extended-release**: Lisdexamphetamine (Vyvanse®), Methylphenidate (Concerta®)- both can have delayed onset of toxicity and prolonged effects once established*

Clinical features:

- **CVS:** ↑HR+BP, arrhythmias, pulmonary oedema, acute coronary syndrome (ACS) – vasospasm +/- thrombosis, aortic dissection
- CNS: Anxiety, agitation, aggression, euphoria, seizures
- **Metabolic:** lactic acidosis
- **Excited delirium:** (delirium, psychomotor agitation, marked physiological excitation)= **medical emergency**
- Severe toxicity: **Hyperthermia & multi-organ failure**
- **Other**: Diaphoresis, tremor, mesenteric ischaemia, intracranial haemorrhage, rhabdomyolysis, priapism

Management

Decontamination: Offer activated charcoal to all patients presenting within 2 hours of ingestion (4 hours if an extended-release preparation)

Rapid titration of benzodiazepines (& rapid cooling if hyperthermic) is the mainstay of treatment.

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

Excited 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

Hypertension/Tachycardia – *Beta-blockers are contra-indicated due to unopposed alpha effects*

- Diazepam: if refractory – IV GTN infusion +/- calcium channel antagonist (seek expert advice)

Acute Coronary Syndrome

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

Disposition:

Admit all symptomatic patients until signs of toxicity have resolved

Asymptomatic patients can be discharged 4 hours after ingestion of an immediate-release preparation or 12 hours after ingestion of an extended-release preparation pending psychiatric evaluation if self-harm

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