Amphetamines & Cocaine

Overview

Amphetamines: Central & peripheral sympathomimetic effects that can lead to life-threatening complications. Repeated use can cause neuropsychiatric sequelae. Incl. Metamphetamine (crystal meth or ice), methylphenidate (Ritalin), 3,4-Methylenedioxymethamphetamine (MDMA,Ecstasy).
Cocaine: Sympathomimetic and local anaesthetic effects that can lead to lethal complications

Toxic mechanism

Amphetamines: Enhance catecholamine release and block their re-uptake and inhibit MAO. NA, D & 5HT stimulation results. MDMA may induce SIADH.
Cocaine: Blocks catecholamine re-uptake, causes vasospasm and blocks fast Na channels→.

Toxicokinetics

Amphetamines: Well abs orally or insufflation. Large Vd (lipophilic weak bases)
Cocaine: Well abs through mucosal membranes of URT & LRT & GIT.Bioavail dependent on route. Moderate Vd (lipid soluble). Rapidly metab by liver & plasma cholinesterases. $T_{\frac{1}{2}}$~30-90min.

Clinical features

May present with acute intoxication, complications of abuse or psychiatric sequelae. Acutely:
CNS/PNS: Euphoria, anxiety, agitation, aggression, paranoia (may persist), hallucinations, mydriasis, sweating, tremor, fever, serotonin syndrome
CVS: ↑HR, ↑BP, ACS, dysrhythmias, APO
Cx: Rhabdo, dehydration, RF; hypoNa/cerebral oedema (from MDMA SIADH + polydipsia), aortic/carotid dissection, SAH/ICH, ischaemic colitis, pneumothorax, pneumomediastinum.

Investigations

Screening: ECG, paracetamol, BSL
Specific: UEC, CK, Trop, CXR (dissection, aspiration), CT brain (if ↓LOC)

Risk assessment

Small doses may still produce significant intoxication. Seizures in 4%. A paediatric 1 pill can kill.

Management (see Toxidromes)

Resus: ABCs O_2. Anticipate agitated delirium & seizures, hypertension, hyperthermia, SVT, VT
Supportive Care:

- BDZ PO/IV used for initial Mx of all these except VT
- If still BP then **phentolamine**, **GTN** or **nitroprusside** IV titrated to effect.
- If hyperthermia >39.5°C intubate & paralysis may be needed.
- If SVT refractory to BDZ: **adenosine** 6-12mg IV or **verapamil** 5mg IV or DC if unstable.
- If VT(cocaine) treat with **bicarbonate** and if refractory use **lignocaine** 1.5mg/kg IV
- Careful fluid management.
- If hypoNa & fitting/LOC then give ~3ml/kg **3% Saline** over 30mins and reassess. Aim to get [Na+]>120mmol/L. If not fitting, fluid restrict, & allow slow spontaneous correction.
- Treat serotonin syndrome (see Toxidromes)
- Manage ACS as usual but BB are contra-indicated.

Decontamination: Charcoal & WBI may be considered with cocaine body packers/stuffers.

Disposition

If asymptomatic d/c after 4hr, otherwise supportive care. If SIADH, serotonin syndrome, or severe symptoms incl complications admit to HDU/ICU.