



University Hospital Galway

EMERGENCY DEPARTMENT
GalwayEM.ie

Tricyclic Poisoning

(<https://galwayem.ie/index.php/guidelines/medical-emergencies/tricyclic-poisoning>)

Category

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

Tricyclic Poisoning

Common Tricyclics Antidepressants

Amitriptylline, Dothiopen, Anafranil

Toxic dose approximately 10mg/kg

Symptoms and Signs

Hot dry skin, dry mouth and tongue, dilated pupils and urinary retention.

CVS features - sinus tachycardia, hypotension and broad complex tachycardias

ECG features include prolongation of the PR and QRS intervals and in very severe poisoning the ECG may be bizarre. A tall terminal R-wave in aVR is characteristic of Na⁺ channel blockade. QRS >100ms is predictive of seizures, QRS >160ms is predictive of VT.

CNS features include ataxia, nystagmus and drowsiness which may lead to deep coma and respiratory depression. Increased tone and hyperreflexia with extensor plantar reflexes may be present. Seizures occur in >5% of cases.

During recovery confusion, agitation and visual hallucinations may occur.

Management

1. Put patient in Resus, monitor, give high flow oxygen and call ED Registrar or Consultant.
2. Ensure a clear airway and adequate ventilation. Check arterial blood gases and correct any hypoxia. If hypercapnia is present contact ITU Registrar as intubation and ventilation is indicated.
3. Consider activated charcoal 50g (1g/kg in child) by mouth if patient alert and presents within 1 hour of ingestion of a toxic dose. See [toxbase \(<https://www.toxbase.org/Chemical-incidents/Miscellaneous/Tricyclic-antidepressants---toxic-doses/>\)](https://www.toxbase.org/Chemical-incidents/Miscellaneous/Tricyclic-antidepressants---toxic-doses/).
4. Observe for 6 hours if asymptomatic. Patients who remain asymptomatic and have a normal ECG by 6 hours are unlikely to develop late complications.
5. Perform 12 lead ECG and monitor cardiac rhythm. Repeat ECG if symptomatic.
6. Check urea and electrolytes and monitor urine output.

Cardiac Arrhythmias

7. **Resist the temptation to treat arrhythmias with drugs.** Arrhythmias are best treated by correction of hypoxia and acidosis. Even in the absence of acidosis, 50 mmol sodium bicarbonate should be given IV to an adult with arrhythmias or significant ECG abnormalities. Further doses may be required depending on clinical response. Target pH 7.50-7.55, and narrow QRS.
8. If ventricular arrhythmias were preceded by a prolonged QT give Magnesium 2g (25 -50mg/kg in child) If unresponsive consider lignocaine 1.5mg/kg IV, if pH is established >7.5.

Seizures

9. Control seizures with intravenous diazepam 10-20mg (0.1-0.3 mg/kg in children) or lorazepam 4 mg (0.05mg/kg in children). Phenytoin is contraindicated in tricyclic overdose (because in common with TCAs it blocks sodium channels and may increase the risk of cardiac arrhythmias).
10. If seizures persist consider the need for paralysis, intubation & ventilation and further specific anticonvulsants.

Hypotension

11. If severe hypotension persists IV crystalloid and sodium bicarbonate, consider use of inotropes. Discuss with [NPIS \(https://www.toxbase.org/Poisons-Index-A-Z/D-Products/Dothiepin/\)](https://www.toxbase.org/Poisons-Index-A-Z/D-Products/Dothiepin/).
12. Glucaagon has been used to correct myocardial depression and hypotension. A 10mg bolus should be given. [NPIS \(https://www.toxbase.org/Poisons-Index-A-Z/D-Products/Dothiepin/\)](https://www.toxbase.org/Poisons-Index-A-Z/D-Products/Dothiepin/).
13. High dose insulin and dextrose has also been shown to improve myocardial contractility. [NPIS \(https://www.toxbase.org/Poisons-Index-A-Z/D-Products/Dothiepin/\)](https://www.toxbase.org/Poisons-Index-A-Z/D-Products/Dothiepin/).

Delirium and agitation

14. Control delirium with oral or IV diazepam 0.1-0.3 mg/kg. If ineffective consider haloperidol.

Hyperthermia

15. < 39°C use normal cooling measures
16. ≥ 39°C aggressive cooling with ice packs and sedation progressing to paralysis and intubation if no response.
17. If the patient is hypothermic, rewarm slowly using conventional means.
18. Monitor for rhabdomyolysis if the patient has been unconscious for a considerable time.

Cardiac arrest

19. Prolonged resuscitation is indicated after cardiac arrest. Defibrillation may be ineffective before sodium bicarbonate is administered. Amiodarone is unhelpful, use lignocaine 1.5mg/kg.

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