Digoxin: Chronic Poisoning

Chronic digoxin use may lead to accumulation and toxicity. Digoxin immune Fab is not always required for management.

Toxicity / Risk Assessment

Chronic digoxin accumulation and subsequent toxicity is often precipitated by other pathological processes

e.g. volume depletion, infection, renal failure

(↑digoxin concentration does not always equate to clinical findings and is a poor predictor of toxicity)

Patients at risk of digoxin toxicity:

- *Elderly with multiple co-morbidities*
- *Patients with poor cardiac and renal function*
- *Patients who are on drugs impairing renal function or K^+ homeostasis*

Clinical features:

- Can be non-specific: lethargy, confusion, dizziness
- GI: nausea, vomiting, abdominal pain, diarrhoea
- CVS: increased automaticity (ventricular ectopics, bigeminy, ventricular tachyarrhythmias), bradyarrhythmias (slow AF, AV block), hypotension,

isolated reverse tick ECG ≠toxicity

- Visual changes: ↓acuity, yellow halos

Concentration conversion (nmol/L x 0.78 = ng/mL)

Management:

Treat the underlying cause and withhold digoxin, negative inotropic/chronotropic agents and drugs that impair renal function or inhibit digoxin elimination (NSAIDS, diuretics, ACE inhibitors).

Correct fluid and electrolyte abnormalities (hypokalaemia, hypomagnesaemia)

Digoxin immune Fab (1 vial = 40 mg)

Indications: (1-2 vials in 100 mL of N/Saline and infuse over 15-30 minutes)

- Life-threatening cardiac arrhythmias (VT/VF)
- Bradyarrhythmias + hypotension
- Cardiac arrest: 2 vials q5-10 minutely as IV push AND discuss with clinical toxicologist
- May be indicated with digoxin concentration >2.0 nmol/L (>1.6 ng/mL) AND 1 or more of the following (discuss with Clinical Toxicologist): - renal impairment, increased automaticity, resistant hyperkalaemia

Serum digoxin concentration is not interpretable after administration of digoxin immune Fab

Hyperkalaemia

- Treat along conventional lines (this includes giving calcium if indicated)

Arrhythmias (if digoxin immune Fab is not immediately available)

- **Bradyarrhythmias** + hypotension - Atropine: 0.6 mg IV boluses q5 minutely up to 3 doses (child 0.02 mg/kg boluses). Persisting bradyarrhythmias unresponsive to atropine: treated with an adrenaline infusion.
- **Ventricular tachyarrhythmias** - $MgSO_4$ 10 mmol (2 g) IV or lignocaine 100 mg IV slow push.

Disposition

- Admit for treatment of precipitating cause
- Patients with ongoing arrhythmias should be admitted to critical care or monitored environment