

OTHER TOXIC AUSTRALIAN ANIMALS

AUSTRALIAN SCORPIONS:

SYMPTOMS USUALLY LIMITED TO TEMPORARY PAIN AT THE STING SITE

CLINICAL PRESENTATION AND COURSE:

- Venom contains excitatory neurotoxins
- Severe local pain is common and usually lasts 6-12 hours (may persist)
- Systemic effects in 10% → mild, non-specific and self-limiting

MANAGEMENT:

- PRE-HOSPITAL:
 - No PIB
 - Apply ice and simple analgesia
 - Most do not require referral to hospital unless pain is refractory to simple analgesia

BLUEBOTTLE JELLYFISH:

RESPONSIBLE FOR THOUSANDS OF STINGS EACH YEAR, CHARACTERISED BY INTENSE LOCAL PAIN AND DERMAL ERYTHEMA. NO SYSTEMIC ENVENOMATION

TOXINS:

- Contained within nematocysts on the tentacles and released on contact

CLINICAL PRESENTATION:

- Immediate burning pain, lasting up to 2 hours with erythematous welts
- Non-specific systemic symptoms can occur

MANAGEMENT:

- Stings are mild and most respond to first aid
- HOT SHOWER for 20 minutes (45 degrees, hot but not scalding)
- No PIB or vinegar as this may worsen symptoms
- Simple analgesia

DIFFERENTIAL DIAGNOSIS:

- Irukandji syndrome → pain is delayed, severe and generalized → no welts
- Box jellyfish → immediate pain, adherent tentacles and large welts

STONEFISH:

FOUND IN WATERS OF NORTHER AUSTRALIA. DORSAL SPINES CONTAIN VENOM THAT IS INJECTED WHEN EXTERNAL PRESSURE IS EXERTED

TOXINS:

- Contains pre and post-synaptic neurotoxins, vascular permeability factors, hyaluronidase and a vasodilator → some components may be denatured by heat

CLINICAL PRESENTATION AND COURSE:

- Immediate severe pain at the sting site
- Local swelling, bruising and puncture marks
- Systemic envenoming rare → no reported deaths
- Cardiovascular signs are rare → hypotension, bradycardia, collapse, pulmonary oedema and cyanosis

MANAGEMENT:

- **PRE-HOSPITAL:**
 - Simple analgesia
 - Immerse BOTH limbs in hot water to denature toxins → unaffected limb to ensure temperature tolerable
 - No PIB
 - Transport if pain refractory to above
- **HOSPITAL:**
 - Very painful but rarely life-threatening → reassurance
 - Hot water immersion continues
 - Treatment supportive
 - Aliquots of morphine until comfortable, consider regional anaesthesia
 - Antivenom for severe pain refractory to IV opioids/regional anaesthesia → one ampoule for every two spine puncture marks
 - X-ray/US for retained foreign body

BOX JELLYFISH:

FOUND IN TROPICAL AUSTRALIA, MOST STINGS ARE BENIGN

SEVERE ENVENOMING HAS OCCURRED WITH AT LEAST 70 DEATHS, THE LAST 12 BEING CHILDREN

DEATHS OCCUR EARLY (FIRST 5 MINUTES) PROBABLY DUE TO DIRECT CARDIAC TOXICITY

TOXINS:

- The lethal component appears to affect calcium channels → pore formation on cell membranes is associated with a rapid rise in cytosolic calcium levels in myocytes
- There are also haemolytic and dermatonecrotic components

CLINICAL PRESENTATION AND COURSE:

- IMMEDIATE SEVERE PAIN
- Tentacles may still be adherent
- Systemic envenoming heralded by collapse or sudden death within a few minutes of the sting

- CVS effects → hypertension/hypotension, tachycardia, impaired cardiac contraction and arrhythmias
- Delayed hypersensitivity 7-14 days

MANAGEMENT:

- **PREHOSPITAL:**
 - If cardiac arrest occurs, it will happen on the beach → immediate and prolonged resuscitation
 - Generous application of vinegar to inactivate undischarged nematocysts
 - No PIB → promotes systemic envenomation
- **HOSPITAL:**
 - Rarely life-threatening (life threats from ↓BP, arrhythmia, cardiac arrest) → if they are alive at the hospital, they will survive
 - In arrest → undiluted antivenom may be life saving (can give up to 6 ampoules) Consider magnesium if no response to antivenom
 - Give 1 ampoule for pain refractory to IV opioids

IRUKANDJI SYNDROME:

A DISTRESSING ENVENOMING DUE TO JELLYFISH FOUND IN COASTAL WATERS OF TROPICAL AUSTRALIA

LIFE-THREATENING HYPERTENSION AND PULMONARY OEDEMA IS RARE (TWO FATALITIES)

TOXIN:

- Not properly characterized, but thought to induce massive catecholamine release

CLINICAL PRESENTATION AND COURSE:

- Initial sting is usually not felt and local signs are absent
- Multiple systemic symptoms at 30-120 minutes:
 - Impending doom
 - Agitation
 - Dysphoria
 - N+V
 - Generalised sweating
 - Severe back, limb or abdominal pain
 - HT and ↑HR common
- Symptoms usually settle within 12 hours
- Severe envenoming in 4 hours → risk for cardiomyopathy, cardiogenic shock and pulmonary oedema
- ICH occurred in two patients within 3-4 hours of the sting (uncontrolled HT)

MANAGEMENT:

- **PRE-HOSPITAL:**
 - Vinegar to all visible sting sites
- **HOSPITAL:**

- Immediate life threats:
 - Severe hypertension → IV opioids, IV GTN
 - APO → consider CXR
- No antivenom available
- TTE required for all with ↑d troponin, APO, or hypotension requiring inotropic support
- Patients with no evidence of Irukandji syndrome at two hours may be discharged

BLUE-RINGED OCTOPUS:

FOUND IN COASTAL WATERS AROUND AUSTRALIA

NOT AGGRESSIVE, BITES USUALLY OCCUR WHEN HUMANS “PLAY” WITH THIS ANIMAL

ENVENOMATION CAUSES RAPID PARALYSIS → TIMELY SUPPORT OF AIRWAY AND VENTILATION ENSURES A GOOD OUTCOME

TOXIN:

- Tetrodotoxin → potent sodium channel blocking neurotoxin

CLINICAL PRESENTATION AND COURSE:

- Bite may not be painful with minimal local symptoms
- Systemic envenomation characterized by **RAPIDLY PROGRESSIVE SYMMETRICAL DESCENDING FLACCID PARALYSIS** → within minutes
- Early signs → ptosis, blurred vision, diplopia and difficulty swallowing → left untreated, generalised paralysis ensues with respiratory failure and secondary hypoxic cardiac arrest
- Institution of advanced airway support, paralysis resolves spontaneously within 24 hours

MANAGEMENT:

- **PRE-HOSPITAL:**
 - PIB
 - Expired air resuscitation if required
- **HOSPITAL:**
 - If respiratory failure is present → provision of an airway and mechanical ventilation is life saving → transfer to ICU
 - Remember to provide sedation as the paralysed patient is fully aware

TICKS

ONLY THREE OF THE IXODES SPECIES’ CAUSE PARALYSIS. THESE ARE FOUND IN A COASTAL STRIP ALONG THE EAST COAST

TOXINS:

- Multiple haemostatic and anti-inflammatory agents to facilitate attachment and feeding
- Toxin is thought to act at the presynaptic region of the NMJ and inhibit release of ACh

CLINICAL PRESENTATION AND COURSE:

- Tick paralysis is rare and usually occurs in kids under 3
 - Presents as non-specific prodrome that includes drowsiness and unsteadiness of gait → followed by progressive ascending symmetric flaccid paralysis
 - Cranial nerves frequently involved with ocular paralysis, ptosis and facial paralysis
 - Death occurs from respiratory paralysis
 - Recovery in survivors is slow
 - Local complications occur

MANAGEMENT:

- If respiratory failure develops, provision of airway and ventilation is life-saving
- If mechanical ventilation is required, it is likely to be needed for weeks
- Careful search of the scalp, inside auditory canal, nose, perineum and natal cleft → there may be more than one!
 - Grip as close to the skin with fine forceps and gentle outward traction
- Antivenom not available for use in humans

DIFFERENTIAL DIAGNOSIS:

- Guillain Barre → major differential in ascending flaccid paralysis. Ocular signs are generally NOT a feature of GBS
- Infant botulism
- Ascending paralysis can occur after snake and blue-ringed octopus → but these are much more rapid in onset