Australian (& World) Marine Envenomation

A Basic Diagnostic And Treatment Guide

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Box Jellyfish (Chironex) - Deaths

- Occur in tropical / sub-tropical waters **worldwide**

- Australia – 73 deaths to date

- Deaths / serious stings: (All Indo-Pacific) ...
  - Thailand – (Phuket / southern island resorts) -approx 10
  - Philippines – 20-50 **per year**
  - Malaysia / Langkawi – at least 6
  - Indonesia – especially “Borneo” – 4+
  - Solomon Is / PNG – 4+
  - Southern Vietnam – 1+)
  - India / Sri Lanka
  - USA – south east coast (Carolina to N Brazil) – 1
  - Hawaii – no deaths: multiple stings (after full moon)
  - ?
Irukandji – Severe stings

- Occur in tropical / sub-tropical waters worldwide

- Serious stings: (All Indo-Pacific)
  - Thailand – (Phuket / southern island resorts)
  - Philippines – ??
  - Malaysia / Langkawi
  - Indonesia – ?
  - Solomon Is / PNG / Vanuatu
  - USA – south east coast (Florida)
  - Caribbean
  - West Central American region
  - Hawaii
Irukandji Syndrome - Classic

- Severe low back pain
- Excruciating and incapacitating cramping muscle pains limbs, abdomen and chest
- Sweating
- Anxiety / Restless
- Severe headache
- Nausea / vomiting
- Tremor - shaking
- SVT (“Palpitations”)
- “feeling of impending doom”
Marine Envenomation......

Assessment
Marine envenomation assessment

Painful

Tentacles

Jellyfish

Cold Packs
Heat – “Bluebottles”

Non Painful

No tentacles

Penetrating barb

Heat packs

Puncture wound

Cone Shell
Blue-ringed Octopus
Sea Snake

Pressure Immobilisation Bandage
MARINE ENVENOMATION TREATMENT

Prevention of Further Envenomation

Treatment of Pain / symptoms
Marine Envenomation......

Treatment ....
**Basic First Aid Treatment**

**Prevention of further envenomation:**

- Vinegar – for all box jellyfish stings (only) - e.g. *Chironex / Irukandji* – but world-wide
- Pressure immobilisation bandaging – Bites (snakes / sea snakes), Cone shells, Blue-ringed octopus
- DRABC !!!

**Treatment of pain**

- Cold packs or (wrapped in bag) for most jellyfish stings (except “Bluebottle”)
- Heat (hot water) for “Bluebottles” *only* & penetrating spiny injuries (fish barbs etc)
MARINE ENVENOMATION TREATMENT

Prevention of Further Envenomation

Pressure Immobilisation Bandage
  - Sea Snakes
  - Blue-ringed Oct.
  - Cone Shell

VINEGAR
  - De-activation stinging Cells
    - Box Jellyfish

COLD PACKS
  - Stops skin pain
  - jellyfish stings

Treatment of Pain

HEAT
  - Penetrating spiny injuries
    - Stonetish/Stingray “Bluebottles”
Painful?

Tentacles (Jellyfish Sting)

No Tentacles (Marine animal)
Painful?

- Tentacles
  - Jellyfish Sting
- No Tentacles
  - (Marine animal)
Jellyfish Stings ....
Jellyfish Stings

Tropical
- Pain – Tentacles present
  - Large area
- No initial pain – NO tentacles
  - Delayed severe systemic pain
    - DRABC
    - Vinegar
    - Hospital

Non Tropical
- Skin Pain
  - Tentacles sometimes
    - Heat

Hospital
Jellyfish

(Tropical)

Non-tropical
- can occur anywhere
Non-Tropical Jellyfish Stings - Australia

Mild – Strong Skin Pain – Usually “Bluebottles” (*Physalia*)

• .....
“Bluebottles” (Physalia) – “Pacific man-o’-war”
Non-Tropical Jellyfish Stings - Australia

Mild – Strong Skin Pain – Usually “Bluebottles” (*Physalia*)

- No Threat to Life!!
- Wash off possible tentacles in SEA water (or pull off with fingers)
- Heat – 45°C !! For 20 minutes !! (Japanese Hot Baths 42-43°C)
- Accurately controlled showers only
- 46°C causes scalding! (careful control essential)
- (?normal pain history of sting)
- Large percentage refused!!
- Cold – “not as effective”
Jellyfish

- Tropical
- (Non-tropical)
Tropical Jellyfish

- Painful
  - Tentacles present

- Chironex Box Jellyfish
  - Immediate severe skin pain
  - May be life-threatening

- “Non-Painful”
  - i.e. no/little skin pain
  - NO tentacles

( Irukandji )
Chironex fleckeri – Chironex Box Jellyfish

- 30 cm bell diameter
- 15 tentacles 15-300 cm
- 4 corners
- 180m tentacle contact
- Death from 1.2m!
Symptoms / Signs – *Chironex* Box Jellyfish

- Immediate intense pain
- Large stings >50% one limb may cause:
  - Breathlessness
  - Heart – bradycardia / akinesia / asystole
- Death - within 3 mins!
Treatment

- Bystander EAR / CPR
- Vinegar – prevent further stinging 30 seconds minimum
- Ambulance – antivenom carried in Tropical Queensland
- Analgesia (Penthrane / Entenox - little help)
Chironex Box Jellyfish

Severe skin damage – severe scarring
Tropical Jellyfish

- Painful
  - Tentacles present

  (Chironex Box Jellyfish)

- “Non-Painful”
  - i.e. no/little skin pain
  - NO tentacles

  Irukandji
  Delayed.....
  Severe Muscle Cramps
  Life-threatening
  Systemic symptoms
The Irukandji...
The Irukandji - A Dangerous Tropical Jellyfish

A Small Box-jellyfish

- 1 tentacle each corner
- 12 - 20mm bell width
Irukandji – Initial Sting

- Mild skin pain
- **No tentacles on skin**
- Faint round pink mark (Australia)
- Can be severe burn marks (Asia)
- 10-30 minutes delay - “syndrome”
Irukandji Syndrome - Classic

- Severe low back pain
- Excruciating and incapacitating cramping muscle pains limbs, abdomen and chest
- Sweating
- Anxiety / Restlessness
- Severe headache
- Nausea / vomiting
- Tremor - shaking
- SVT (“palpitations”)
- “feeling of impending doom”
Irukandji - Severe Syndrome

- Hypertension – may be severe (300/180) - 1986
- Acute pulmonary oedema / toxic heart failure
- Cerebral oedema - 1981
- “Allergic-type facial swelling and wheezing – 1999
- Neurogenic pains
- “Bizarre” (Priapism / “Mucus” / Weakness / Bladder and Bowel effects)
- 2 Deaths in 2000-2001 season - ? more
Severe Syndrome

- "Allergic"
- Neurasthenic
- Basic Irukandji syndrome
- "Others" – Priapism, Cerebral oedema, "Mucus"
- Heart failure
- Hypertension
First Aid Treatment?

• No first aid treatment for pain

• Nitro-lingual spray – reduced BP from 240/130 to 160/95 after 3rd puff – 1 every 5 mins till BP settled

• Probably reduces chance of fatal CVA

• Side effects .... None really (Viagra) ...
In-Hospital Treatment

• Analgesia – Morphine / Fentanyl infusion

• Phentolamine – for “adrenergic” effects

• GTN infusion – effective for blood pressure and cardiac chest pain
“New” Treatment

MAGNESIUM INFUSION

• 10mmol bolus dose & 5mmol/hr (app 40mm/hr)
• Usually highly effective for pain and ALL symptoms
• “Instantly” effective – “magic bullet”
• Trials at present for further information – some failures - ?under-dosing
• Monitor on reflexes
Stonefish

- Mud and estuarine varieties
- Difficult to see
- East coast Australia
- 13 spines on back
Stonefish

Severe pain relieved by heat  Test water first!

local “nerve block”  Antivenom available

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Stonefish

- Buried in sand – reflex “whip” of tail from compression
- Severe pain
- Relieve pain with hot water
- No antivenom
- Severe morbidity
- 3 Australian deaths
Stingray Morbidity

- Barb – sheath with venom – muscle necrosis
- Chronic infection, including bone - osteomyelitis
- Ex-sanguination
Painful –
Penetrating Barbs
Hot Packs

- Stingray
- Stonefish
- Any Barbed Fish
  - Weeverfish
  - Bullrout etc

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Marine Animals

(Painful)  Non-Painful
Non-Painful
Pressure Immobilisation Bandaging

Blue-Ringed Octopus

Sea Snake

Cone Shell (sometimes sting++)
Sea Snake

- Painless Bite
- Low envenomation rate
- PIB
- Antivenom available
- Deaths worldwide, not Australia
Blue-Ringed Octopus

- Painless bite
- Usually children
- Never in Water!
- PIB
- EAR / Ventilate
Cone Shell

- Common species – many of them but few envenomations
- PIB – no antivenom
- EAR
- 1 Australian Death
Marine envenomation treatment

Painful
- Tentacles
  - Jellyfish
    - Cold Packs
  - No tentacles
    - Penetrating barb
      - Pressure Immobilisation
      - Heat packs

Non Painful
- Puncture wound
  - Cone Shell
  - Blue-ringed Octopus
  - Sea Snake
    - Pressure Immobilisation
    - Bandage
Prevention of Further Envenomation

PIB
Prevention further envenomation -
Sea Snakes
Blue-ringed Oct.
Cone Shell

VINEGAR
De-activation stinging Cells
– Box Jellyfish

COLD PACKS
Stops skin pain in ALL jellyfish stings

HEAT
Penetrating spiny injuries
Stonefish/Stingray

Treatment of Pain

With Thanks.

To the Secretariat

Further information?

www.marine-medic.com.au

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