

JELLYFISH ENVENOMATION - PHYSALIA PHYSALIS



Physalia physalis

Introduction

In Australia there are 3 principal venomous Jellyfish:

- **Chironex fleckeri (the Box Jellyfish).**
- **Physalia Physalis (the Portuguese Mar of War)**
- **Carukia Barnesi (produces the Irukandji Syndrome)**

Children in general are at greater risk of significant envenomation because of their smaller body sizes.

Important aspects of reducing the risk of jellyfish stings include:

- Observing any local warning signs of the seasonal and/or geographical risk of the presence of dangerous species

- The wearing of full body lycra swimsuits (or equivalent) in regions where danger is present.

The **Physalia physalis** is also commonly known as the “**Portuguese Man of War**”, (named for the famous Fifteenth century Portuguese Caravels)

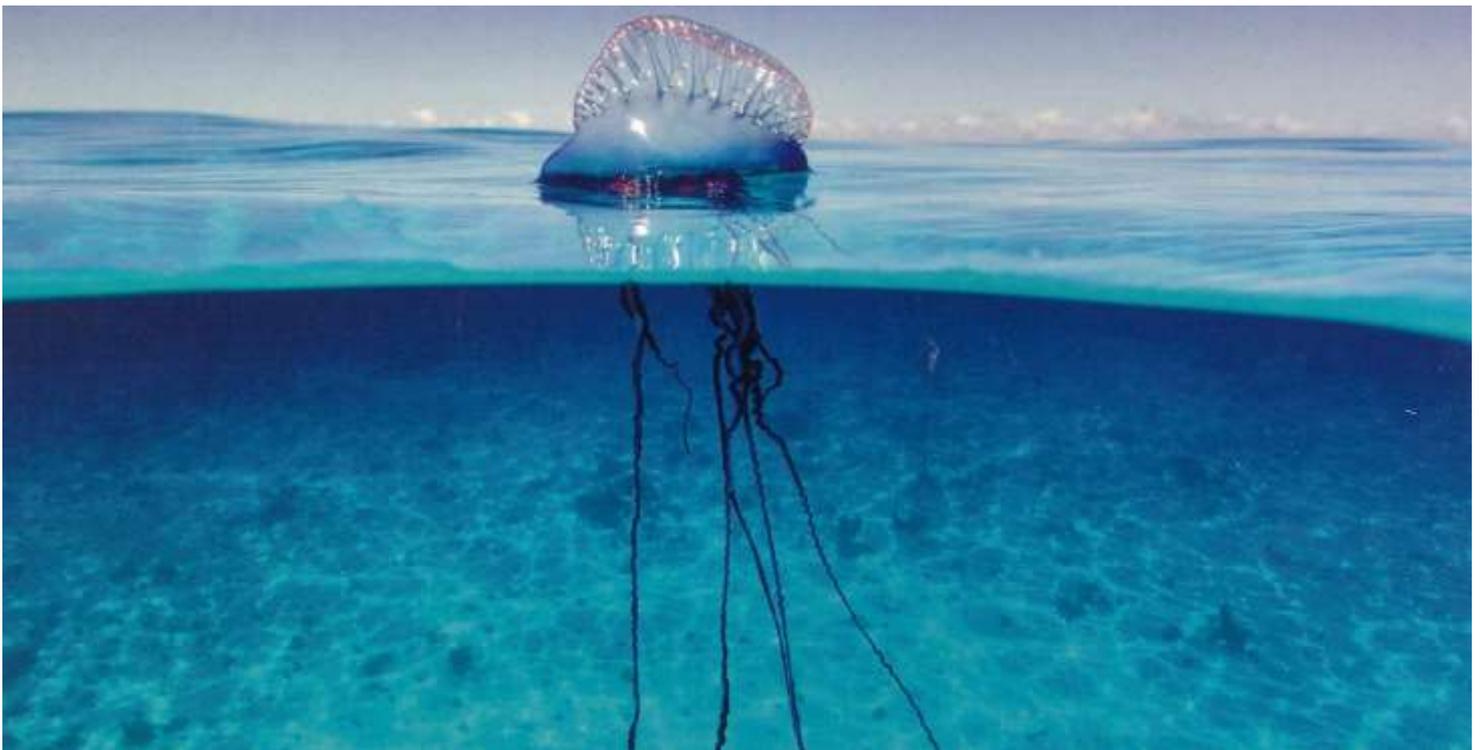
Is it also commonly referred to as the “**Bluebottle**”, although this term more correctly refers to a less ferocious related species, the **Physalia utriculus**.⁵

The **Physalia physalis** species may deliver a very painful sting, but this is not usually fatal.

Physalia physalis floats on the surface of the water, (hence “Portuguese Man of War”) and so poses a significant hazard to swimmers.

They are found in tropical and temperate regions around the world, including all coastal regions of Australia.

Biology



Physalia physalis lives at the air-water interface, so poses a particular problem to swimmers. Their blue colour provides them with a degree of camouflage.

Taxonomy:

Kingdom: Animalia

Phylum: Cnidaria

Class: Hydrozoa
Order: Siphonophora
Family: Physaliidae
Genus: Physalia
Species: Physalia physalis (Linnaeus, 1758)

Morphology:

The **Physalia physalis** floats on the **surface of the water** via a gas filled float, 2 - 15 cm across.

It has a bunch of short tentacles and a much longer trailing tentacle which may measure up to 10 meters and is responsible for most stings.

The float and tentacles are bright blue in colour and usually quite visible on the water, (in contrast to the Box Jellyfish and Carukia Barnesi which can be virtually invisible in the water).

Physalia physalis are as fascinating as they are dangerous!

- Bright blue colour is an evolutionary camouflage survival trait for species that live at the air-water interface.
- Physalia physalis is not actually a single organism - rather it is a **colony** made up of numerous polyp forms attached to the float, that send out tentacles that provide for both defence and food collection for the colony as a whole.
- During the summer months these creatures can be blown ashore in vast armadas, where they become beached and die. Interestingly the crest of the float - which acts as a sail can take one of two forms - a left handed one or a right handed one. Each form appears in approximately equal numbers. This 50 - 50 distribution is thought to be a survival adaption as only those with the sail facing a certain way will be beached, thus at least 50 % of the colony will always survive these unpredictable “trade winds”

Pathophysiology

The toxin causes severe local pain, but has not been shown to be fatal to date

Note that the toxin may remain active, even after the jellyfish has been lying on the beach for several days.

The toxin is a complex mixture of glycoproteins, that have not been well characterized.

Clinical Features



Linear erythematous welts following a Physalia sting, (MJA 2006 184, 329-333)

1. Pain:
 - Local pain is **immediate** and **severe**, lasting several hours.
2. Dermal reaction:
 - Linear erythematous papules are generally seen with resolution over 1-2 days.
3. Significant systemic symptoms are not generally seen with this species, but may occasionally include:
 - GIT upset
 - Malaise
 - Headache
 - Myalgias
 - Respiratory distress is seen very occasionally.

Investigations

No routine investigations are necessary.

Management

1. Pressure bandage & immobilization is **not** recommended
2. Heat:

Both heat and cold treatments have traditionally been advocated for first aid management for physalia stings.

There is **no** good evidence for cold packs.

There is **some good evidence for heat** (hot water) treatment. ³

- Many marine venoms are heat labile in vitro. It is feasible that heat penetrates the human dermis to the estimated depth that nematocyst inject toxins (100-1000 microns).
- If heat is to be used it needs to be applied continuously.
- The risk of superficial burns is temperature and time dependent, usually at water temperatures greater than 46 degrees Celsius for a period of greater than one hour. Therefore the recommended heat treatment has been quoted as **45 degrees Celsius for a 20 minute period, (this can be via a hot shower).**

3. Vinegar should **not** be used as this may increase nematocyst discharge in this species.

- If the sting occurred in a tropical region where there is a danger of Box jellyfish envenomation and uncertainty exists as to the species, then it **should** be used.

4. Tentacle removal:

- Remnants of tentacles should be peeled off the patient as soon as possible.

Ideally this may be done with gloves or with tweezers, as some literature suggests, however these implements are unlikely to be at hand on the beach! And removal of tentacles should not be delayed.

In fact tentacles can be carefully removed by hand without risk to the rescuer. The reason for this is that the skin over the fingers and hands is relatively thicker and significant envenoming requires a relatively *large* amount of tentacle contact which is not going to happen peeling off tentacles with minimal fingertip contact.

The risk of ongoing significant envenomation of the patient outweighs the minor stinging sensation a rescuer may experience by picking off the tentacles, (*personal communications Dr Geoff Isbister and Professor Bart Currie, 28 July 2016*).

5. Analgesia:

- The majority of stings will be mild and self-limiting, and so simple oral analgesics will suffice.
- For more severe envenomations IV titrated opioid analgesia can be given as required.

6. There is no anti-venom available.

Disposition

The majority of patients will not require any further treatment or observation beyond the initial pain management.

Specialist Advice

For further specialist advice:

- **National Poisons Information network 13 11 26**

References

1. ARC Guidelines, Guideline 9.4.5, July 2010.
2. eTG - March 2016.
 - Toxicology & Wilderness Therapeutic Guidelines, 2nd ed 2012.
3. Loten C et al, A randomised controlled trial of hot water (45⁰ C), immersion versus ice packs for pain relief in bluebottle stings. MJA vol 184 (7), 3 April 2006, p.329-333.
4. Physalia Jellyfish in L. Murray et al. Toxicology Handbook 3rd ed 2015.
5. Lisa-Ann Gershwin, "Jellyfish, A Natural History", Ivy Press, 2016.

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