

What works for

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*For the second year running, and much to the dismay of locals and tourists alike, our beaches are infested by the Mediterranean Mauve Stinger, *Pelagia noctiluca*, so called because it is a purple coloured, open sea (pelagic) jellyfish which exhibits a weak bioluminescence and therefore shines with a faint green light in the dark. By popular account, this seems to be a particularly bad year, and jellyfish stings are increasingly being attended to by family physicians, and occasionally by dermatologists. A number of articles on the subject have appeared in the local press.¹⁻⁴*

This is by no means the first time that such infestations have occurred in recent years. Between 1980 and 1983 Axiak et al. (1991) recorded massive aggregations of this species in local waters, with densities of up to 30 individuals / m³ in the sea and 50 individuals / m² on shore.⁵

Jellyfish populations bloom whenever their food (small planktonic animals in the case of the Mauve Stinger) is in good supply. Winds then generate sea currents which propel the animals to the coast, where they may remain trapped in embayments by circular currents until the wind changes and carries them away.

The tentacles of jellyfish are equipped with stinging cells (cnidocytes). Each cnidocyte contains a stinging unit called a nematocyst. Upon stimulation, the nematocyst is activated, bursts open and fires a hollow barbed thread into the skin. A variety of toxins (including catecholamines, histamine, serotonin, collagenases, hyaluronidases, proteases, phospholipases, fibrinolysins, neurotoxins, nephrotoxins, myotoxins and antigenic proteins) are then injected into the skin through this hollow shaft. The effects of the sting vary according to the number of nematocysts that are activated, the species of jellyfish involved, the part of the skin that is stung, and the sensitivity of the victim to the toxins injected. They vary from a painful, red, raised cutaneous lesion which later vesiculates, to anaphylactic shock and death. Stings to the eyes are particularly severe.

Dead jellyfish stranded on the shore, unless desiccated, are capable of delivering stings for several days.

A number of remedies (Box 1) have traditionally been touted as first aid treatment for 'jellyfish stings', the purpose of each being to inactivate undischarged nematocysts and prevent further injection of toxin into the body.

Box 1: First Aid Treatment of Jellyfish Stings

Sea water
Sterile saline
Vinegar (5% acetic acid)
Baking soda
Isopropyl alcohol
Papain (meat tenderizer)
Urine

Do any of these remedies work?

Very few scientific studies on the effect of any of these agents have in reality been carried out, so the data is mostly anecdotal and handed down from one generation to another. Most studies

originate from America and Australia, and many deal with Australian species of jellyfish. Jellyfish from other regions respond differently to different measures because they have different physiologies and elaborate different toxins. For example, vinegar effectively inactivates nematocysts from potentially deadly Cubozoan jellyfish (unlikely to be encountered in Maltese waters) but triggers them off in other species.⁶ First aid measures to prevent additional nematocyst rupture

appears to be species specific.⁷ In this case at least, what is good for the goose is not necessarily good for the gander. The question 'what is good for a jellyfish sting' would therefore appear to be as inane as asking 'what is good for a bacterium'

without specifying whether it is Gram-negative or Gram-positive, coagulase negative or positive and so forth. Isopropyl alcohol tends to make matters worse, and urine has fallen out of favour.

Do any of these remedies work for *Pelagia noctiluca* stings?

Again, no proper studies have been carried out, so the bottom line is that we do not know. In this situation, the best strategy is to employ an evidence based, minimalistic approach which at best alleviates the symptoms and does not make them worse. To my knowledge, anaphylaxis has never been reported with *Pelagia noctiluca* stings, although they may be severe, painful and complicated (Box 2).



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Box 2: Complications of *Pelagia noctiluca* stings

Secondary infection
Scarring, including keloid formation
Pigmented striae
Ulceration and necrosis
Granuloma formation
Lichenification from persistent rubbing

What then, does one do - or not do?

Management of jellyfish stings is targeted towards nematocyst inactivation, pain control and local wound care.

Rubbing the skin over the affected area will cause further nematocysts to discharge and should be avoided. Similarly, fresh water (or ice) will enhance nematocyst activation and should not be used on the wound.

Any adherent tentacles should first be lifted off, ideally with a pair of forceps, and not scraped. The area should then ideally be copiously irrigated with sterile saline which will inactivate any nematocysts still adherent to the skin. Since not everybody packs sterile saline into their beach bags, sea water may have to do, but this risks introducing marine pathogens into the wound.

In the event that nematocysts still adhere to the wound after

jellyfish stings?



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irrigation, then it probably does no harm to cover the area with an aerosol spray shaving cream and shave them off with a razor blade or credit card edge.

Ice packs, firmly applied to the wound and held there for 10 minutes are effective in relieving pain. Condensation on the surface of the pack must not be allowed to accumulate, as this effectively delivers fresh water to the wound. Ice should not be applied to the wound, as the fresh water from the melting ice will activate undischarged nematocysts. There is no evidence that topical anaesthetics, like benzocaine or lidocaine, reduce pain more than ice packs do. Heat should not be applied to the wound as this increases systemic absorption of toxin.

After care

It is reasonable to expect a combined topical steroid/antibiotic combination to reduce inflammation and prevent secondary

bacterial infection. Tetanus prophylaxis should be given. Oral analgesics are effective in reducing pain, and oral antibiotics should be used if secondary bacterial infection supervenes. On no account must the wound be exposed to sunlight, as this will almost certainly result in severe, persistent post-inflammatory hyperpigmentation which is very difficult to treat. ☒

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need a gentle touch



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