An unknown stinger of the deep

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Envenomation, marine animals, toxins, first aid, case reports

Abstract
An experienced diving instructor reported an unidentified sting received whilst diving in Malaysia, and her self-care for this. Despite the wide differential diagnosis, careful questioning of the diver suggested this was most likely due to a colonial hydroid. A brief review of the Order Hydroida is given. The principles of first aid care are outlined. Topical anti-inflammatory creams generally control ongoing symptoms. Protective clothing whilst diving is important but may leave the extremities and the head and neck exposed.

Case report

JB is an experienced dive instructor with thousands of logged dives. Whilst ascending from a dive on the USS Salute at Labuan, Malaysia, she felt a number of stings on her right hand and a couple on her neck. Without thinking, her reaction was to rub her hand. After leaving the water, her hand became extremely itchy and as the day wore on, she felt a severe burning sensation. Her neck itch did not bother her so much and seemed to disappear overnight. The itching and burning sensation continued throughout the night and she awoke on a number of occasions scratching. Next morning she had inflamed, tender, blister-like sores on her hands (Figure 1).

JB then used hydrocortisone cream as required, the initial application only relieving the itching for approximately one to two hours. Overall, she needed three applications. The following day the itching was less. She used two applications of tea tree oil and the itching ceased.

Ten days later, she could still see marks, especially if her hands were cold but no other after effects. JB has been stung in a similar way before, with a similar reaction each time, but usually the itching lasted much longer, at times up to two weeks. Previously, she had used other treatments such as 'Stingose', which did not appear to help.

Marine stingers

The sea is full of a huge diversity of life forms, many of which have developed weapons for hunting and/or protection. There are over 13,000 marine stingers. The differential diagnosis includes sea lice, fire coral, sea nettles, sea wasps, jellyfish and hydroids. Even the most innocuous looking sea creatures may have a hidden supply of stingers just waiting for something or someone to rub against them, eg. nudibranchs.

JB reported that she was stung whilst close to the bottom and she noted strings of fine hair-like structures floating in the water. This observation aids the diagnosis.

HYDROIDS (ORDER HYDROIDA)

Hydroids are plant-like organisms, but are in fact animals. They are related to jellyfish, sea anemones and corals but may often look like algae. There are two major sub-orders. In Anthomedusa, the polyp is not protected by the exoskeleton, which stops at the base of the polyp (gymnoblastic hydroids or Athecata). In Leptomedusa, both polyp and gonadal structures are protected by exoskeleton cups (calyptoblastic hydroids or Thecata).

Marine hydroids usually exist as colonies of animals living interconnected with specialised functions. They have a complicated life cycle with a fixed plant-like asexual generation, where they attach to all types of surfaces including rocks, kelp, crabs, and wrecks. These develop into a free-swimming jellyfish-like (corbulae) generation, where they produce the medusa stage of the hydroid. These produce eggs and sperm, which fertilize and develop into planulae and start new hydroid colonies. Some trail tentacles that normally secure them to the ocean floor. All hydroids are carnivorous filter feeders. They catch prey in the water column with the aid of grappling and stinging nematocytes. When scuba diving, exhaled bubbles can dislodge hydroids from their fixed place into the water column.

Symptoms

JB felt an initial "electric shock" and then a burning sensation. The pain and itch settled whilst in the water. During the night, she woke scratching incessantly. Next day, she noted blisters some of which were blood filled.

The initial sting gave the "electric shock" sensation, and the toxin and inflammatory reaction resulted in the burning sensation and itch. JB rubbed her hands and released more toxins from the nematocysts, hence this was the area which developed the greatest reaction and blisters. Whilst in the water, the itch settled. This could be due to the coolness of the water. When hot in bed, the urge to scratch was much greater and the inflammatory reaction was aggravated. Once this was appropriately treated, her symptoms settled. Steroid cream was more potent than previous measures used.

FIGURE 1. HAND LESIONS ON THE MORNING AFTER THE STING

First aid

Obviously, prevention is the first step. The best prevention is to avoid contact and avoid stingers' areas. In the diving industry, this would exclude some fantastic diving areas. It is important to avoid rubbing and scratching. If available, pour vinegar over the area for 30 seconds as this helps inactivate any remaining stinging cells. Alternatively, run cold water over the area. Cold compacts help to relieve pain and itching and also help settle the inflammatory reaction.

Topical anti-inflammatory creams are usually sufficient. JB found the steroid cream the best and this is very appropriate. I do not know of any randomised clinical studies concerning the use of tea tree oil, but there are a lot of anecdotal accounts of its anti pruritic effects.

Some victims may develop a more systemic reaction, particularly if they are subjected to repeated stinging events, and may require more supportive and systemic treatment.

Skin protection

Protective clothing whilst diving is recommended to prevent stings in areas where stingers are highly populated. This is usually in the form of some sort of wetsuit, or lycra-like suit. The minimum that is required is a couple of layers of pantyhose material. This often leaves the head, neck and hands exposed. Hoods and gloves can be worn to protect these areas. Gloves are in some areas discouraged from being worn, to try to prevent people damaging sea life including corals, hence common sense needs to prevail. If a diver is sensitive to hydroids, or is diving in a known area of high hydroid population, lycra-like gloves may be tried. Carry vinegar and containers of cold fresh water.

Recommended reading and web sites

1 Edmonds C. *Dangerous marine animals*. 2nd edition. Sydney: Reed, 1995
2 Marine stingers. <www.e-travelbug.com>
3 Hydroids. <www.fishingnj.org/arthydro.htm>

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