Journal of the British Global and Travel Health Association, vol 28 2017 1
doi: http://dx.doi.org/10.21864/jbgtha.2017.31

Case study: Beware of Sea Urchins.

Dr Iain McIntosh

A 13-year-old boy attended surgery complaining of a swollen foot which was painful when he walked. On examination, the dorsum of the foot was markedly swollen with reddening of the skin extending over most of the foot. There were about 20 puncture marks on the dorsum of the foot with a foreign body palpable in each of the wounds. Five days previously he had attended a nurse for treatment in Mauritius after injuring his foot while paddling in the sea. He said he had some spikes removed and had been given penicillin and had completed the course.

It transpired that he had stood on a sea urchin (Phylum Echinodermata) and the spines penetrated the skin of his foot. There are about 700 species of sea urchin with spines venomous to humans. The spines are fragile and easily break off on the skin surface when removal is attempted, and this boy still had remnants of the spines in the dermis. Unwary sea paddlers, swimmers and water sport enthusiasts can easily step on a sea urchin and embed the spines in feet. A common culprit is the long spined black urchin found in the Canary Islands, Caribbean and along the South American coast line. Its' spines are 10 to 12 cm long whereas in many of the other species, spines are merely1 to 3 cm long.

Affected feet often show blue/black marks in the punctured area which does not necessarily mean the spike has been retained. However, if the mark persists for more than 72 hours it is likely that retention has occurred and the spine is buried in the skin. Spines are coated with marine bacterial flora including the Vibrio species which can cause bacterial infection at the site of entry. If there is any suspicion that spines have penetrated nerve, bone, or blood vessels, or if pain persists after 48 hours, especially if it limits walking, surgical removal is appropriate. Initial pain can be excruciating.

Appropriate immediate management after spine injury is to soak the foot for 60 to 90 minutes in warm vinegar which dissolves the calcium-based spines. This should be repeated a few times daily until there are no longer any palpable spines. If treatment is effective a grit like powder remains in the vinegar at the end of each treatment. If there is marked localised infection a course of ciprofloxacin is advised. This lad soaked his foot in vinegar for a few days and had a course of ciprofloxacin. The spines, redness and swelling had disappeared, when he returned for review one week later.

Advice for travellers

A wise precaution for travellers is to wear plastic footwear which resists entry of spines. This is not guaranteed as, by chance, a few days after his visit, a 10 year old girl presented for treatment. She had been wearing plastic sandals while paddling on a Tenerife beach. She stood on a sea urchin and two of the spines had pierced the tough plastic and had just penetrated skin and set up localised inflammation.

Management Plan for spinal penetration

Immediate: remove any spines visible above the skin; soak the injured area in very hot water for at least an hour to reduce pain and swelling and de-nature the spine toxins. Clean the affected area with antiseptics and provide analgesia.

Follow-up management: soak the foot in vinegar several times a day. If infection is obvious, commence an antibiotic. Arrange surgical removal of spines if complications arise.