Marine Exposure

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No Disclosures
Case

• A 32-year-old male is vacationing in Cabos San Lucas. As he is frolicking in the waves, he experiences a sharp stab to his heel. He immediately retreats from the water and notices a clustered group of puncture wounds with a dark central dot. He has local pain, no bleeding.
Echinodermata

- Phylum composing a group of animals with radial symmetry usually 5 pointed. All reside within the ocean
A sampling of urchin from the Sea of Cortez

There are approximately 23 species of sea urchin that reside within the Sea of Cortez. One species, *Mellita granti*, is endemic to the area

*Toxopneustes rosea*

*Diadema mexicana* next to a starfish
Venom

• Complex protein mixture that varies between species and habitats

• Venom tends to be more potent during mating season (in Norway spawn during April)

• It can be histaminergic, hemolytic, cardiotoxic, and neurotoxic

• Toxins are heat labile mid size proteins ~20 to 80 kDa

• Consumption of sea urchins can also produce toxicity in a seasonally dependent manner
There are five distinct entities that occur as the result of sea urchin exposure. These are not mutually exclusive:

- Puncture wounds
- Envenomation (toxopneustes, echinothuridae, diadematidae)
- Allergic reaction
- Synovitis
- Granulomatous reaction

Diagnosis is largely based on history and physical in the right clinical context.

X-ray imaging will reveal spines (composed of calcium carbonate).
Treatment

• Spines may cause local irritation, can consider removing
  • Spines are brittle and care must be taken, often unnecessary to explore wound. If deep the body will extrude or absorb fragments

• Venom typically causes local irritation and pain
  • Best treated with hot water immersion (40-46C as tolerated) and analgesia

• Allergic reactions are best treated in typical fashion

• Consider tetanus vaccination update

• There is no recommendation for prophylactic antibiotics unless the patient is immunocompromised, has serious wounds, or has significant comorbidities
  • Treatment is directed at Staph, Strep, Vibrio vulnificus, and Mycobacterium marinum
  • Ciprofloxacin, trimethoprim-sulfamethoxazole, or doxycycline can be given

• There is no antivenom. Treatment is supportive
Special considerations

• Initial spine insertion may effectively tattoo the skin with a pigment. This may be confused for embedded spine but typically resolves within 48 hours.

• If a spine inserts near a joint, consultation with a surgical specialist may be warranted to avoid septic complications.

• At times, retained spines may cause granulomatous reactions to form which can be painful/limiting. They may be amenable to surgical removal.

• If a patient is susceptible to infection, it is reasonable to prophylactically treat.
Thanks

• Questions?
References

• Venomous Animals and their Toxins. 4th ed. Habermehl