



Visual Case Discussion

Sea urchin spines detected using point-of-care ultrasonography

David J. Elkin*, Kay Odashima

Maimonides Medical Center, Department of Emergency Medicine, Brooklyn, NY, USA



ARTICLE INFO

Keywords:

Ultrasound
Foreign body
Sea urchin

1. Visual case discussion

A 31 year-old female with no past medical history presented to the Emergency Department with right lateral ankle redness, swelling, and pain for the past 2 days. She had been vacationing in Hawaii 8 days prior to presentation and remembers bumping her ankle against a sea urchin during a snorkeling session. She counted 11 puncture wounds into her ankle and had some initial pain but was otherwise asymptomatic until 2 days ago. She denied any systemic symptoms and was afebrile upon presentation. Her exam was significant for 11 punctate wounds along the right lateral ankle surrounded by mild erythema and swelling, tenderness to palpation with no crepitus, and full range of motion of the ankle.

AP/Lateral/Oblique plain films of the right ankle showed lateral malleolar soft tissue swelling with no evidence of foreign bodies (Fig. 1). Point-of-care ultrasound was subsequently performed and showed multiple hyperechoic linear structures with surrounding edema consistent with retained sea urchin spine fragments (Fig. 2 and video). The largest fragment measured 0.3 cm in length. The patient was discharged on a course of cephalexin and doxycycline, and was given outpatient surgery follow-up for sea urchin spine removal in case symptoms persisted despite antibiotic treatment.

The sea urchin is an echinoderm, which is known to have long, sharp spines made up of calcium carbonate which can easily penetrate flesh. Retained fragments of sea urchin spines can lead to complications such as granuloma formation, fasciitis, arthritis, bursitis, or tenosynovitis, so identifying their presence is essential. This case demonstrates the utility of point-of-care ultrasound in identifying retained foreign bodies that may not be picked up on plain radiographs. In a case series of five patients, retained sea urchin spines were not seen on any plain radiographs, whereas in a separate series, plain films identified spine fragments in 8 out of 12 patients.^{2,3} In one study, ultrasound was found

to be 94% sensitive and 99% specific in discovering the presence of foreign bodies.¹

Questions

1. For patients with wounds exposed to seawater, special consideration should be given to coverage of *Vibrio* species. Doxycycline is the first-line antibiotic of choice. True or False?
2. Which of the following foreign materials is least likely to be detected by plain radiography?
 - a. Wood
 - b. Metal
 - c. Glass

Answers

1. True. Explanation: Doxycycline is the main treatment for seawater exposed wounds to cover for *Vibrio* species. It may cause permanent tooth discoloration in children younger than 8 years of age if used repeatedly. However, doxycycline binds less readily to calcium than other tetracyclines and may be used for ≤ 21 days in children of all ages. Reference: Tetracycline. In: Red Book 2018: Committee on Infectious Diseases; American Academy of Pediatrics; 31st edition, Kimberlin D.W., Brady M.T., Jackson M.A., Long S.S. (Eds.), American Academy of Pediatrics, Itasca, IL 2018.
2. Wood. Explanation: Only about 15% of wood foreign bodies are detected by x-ray. Reference: Anderson M.A., Newmeyer W.L., Kilgore E.S. Diagnosis and treatment of retained foreign bodies in the hand. *Am J Surg* 1982;144:63–67.

* Corresponding author.

E-mail address: delkin@maimonidesmed.org (D.J. Elkin).



Fig. 1. AP plain film of the right ankle showing lateral malleolar soft tissue swelling with no evidence of foreign bodies.



Fig. 2. Ultrasound image of the right lateral ankle using a linear transducer showing a sea urchin spine fragment measuring 0.3 cm with surrounding edema.

Declaration of Competing Interest

None.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.visj.2019.100651](https://doi.org/10.1016/j.visj.2019.100651).

References

1. Bray PW, Mahoney JL, Campbell JP. Sensitivity and specificity of ultrasound in the diagnosis of foreign bodies in the hand. *J Hand Surg Am.* 1995;20(Jul (4)):661–666.
2. Guyot-Drouot MH, Rouneau D, Rolland JM, et al. Arthritis, tenosynovitis, fasciitis, and bursitis due to sea urchin spines. A series of 12 cases in Réunion Island. *Joint Bone Spine.* 2000;67:94.
3. Wada T, Soma T, Gaman K, et al. Sea urchin spine arthritis of the hand. *J Hand Surg Am.* 2008;33:398.