



RESEARCH ARTICLE

SEA-URCHIN ENVENOMATION AND NEAR-DROWNING IN A SNORKEL DIVER CASE REPORT

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ABSTRACT

Sea urchin belongs to the echinoderm family, with globular or flat, calcified spines covered bodies. There are more than 1000 species of sea-urchins and about 80 poisonous potentially to human. Sea-urchin poisoning symptoms comprise systemic and local effects such as severe pain, syncope, respiratory distress and paralysis. We report a snorkel diver case with near-drowning accident and sea-urchin stung. He was evacuated to our hospital, required mechanical ventilation support and renal replacement therapy due to his rapidly deteriorating conditions, until the sea-urchin spines removal. He had a full recovery and was discharged two weeks after the accident.

INTRODUCTION

A 56-years-old man, from Canada, with no significant medical history, was snorkeling at Ixtapa Zihuatanejo. After been submerged for approximately two minutes, he hit a sea urchin. He was rescued by paramedics, who found him with dermabrasion wounds in hands and pelvic limbs, and respiratory distress signs. He was taken to the Zihuatanejo General Hospital; medical personnel decided to perform endotracheal intubation with mechanical ventilation support and he was transferred to the ABC Hospital at Mexico City.

On arriving in the ABC Hospital department, he was hemodynamically stable, with mechanical ventilation support, represented dermabrasion wounds in pelvic limbs, with hyperemia and hyperthermia, predominantly left pelvic limb, from which sea urchin spines were removed.

INVESTIGATIONS: Relevant laboratory results are shown in table 1. Thoracic CT scan evidenced bilateral pleural effusion, lower lobes collapsed, air bronchogram, extensively thickened lung parenchymal, and bilaterally diffuse increased density predominantly at upper lobes (Image 1). Tetanus-diphtheria toxoid vaccine was applied; blood cultures are requested, and broad-spectrum antibiotic with Linezolid, meropenem and levofloxacin is initiated.

TREATMENT: The patient was evaluated and hospitalized in the intensive care unit to continue ventilator support, with pain control and blood pressure in goals, oliguria, metabolic acidosis (Ph 7.3 – HCO₃: 22.4) with acute renal failure

induced by rhabdomyolysis with no response to adequate fluid management, continuous renal replacement therapy was initiated. An episode of fever on day 2 occurred with involuntary diaphragmatic contractions and ventilator asynchrony, distal hypoperfusion with cold extremities, and marble-like appearance with reduced of capillary filling, negative blood cultures and no elevation of markers of acute inflammation. A suspicion of sea urchin spines inside the skin, led to a dermatological evaluation; another 20 spines in hands and lower extremities was found, they were removed, and local treatment with fusidic acid was initiated.

OUTCOME AND FOLLOW-UP: His daily renal function and CK were monitored, gradual improvement in his urine output was noted (after five HD); extubating was decided and he was discharged on day 10 from ICU. Antimicrobial management was de-escalated, his clinical condition improved, no new fever episode was reported. He was discharged on day 15 of admission.

DISCUSSION

Sea urchin injuries are commonly seen on saltwater coast, belonging to the echinoderm family (Hsieh, 2016; Hornbeak, 2017; Solis, 2014). In Mexico there are approximately 119 species of the class Ochinoidea reported in the Pacific and Atlantic Ocean, ⁵ being 1000 species in the world, of which approximately 80 species are venous to humans. Sea urchin are covered by calcium carbonate spines, which contain glucosides, steroids, hemolysins, proteases, serotonin and cholinergic substances (Nakagawa, 2003; Hornbeak, 2017; Dahl, 2010) which when in contact with the skin penetrate and are released from the sea urchin, the most common areas being the hands and feet. Reactions to sea urchin injury can be classified (Al-Kathiri, 2019).

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LEARNING POINTS

- In the presence of lesions produced by sea urchin bites, the immediate removal of these is the treatment of choice, either for mild or severe injuries, preventing associated complications.
- In view of the persistence of the symptoms, it is important to rule out the presence of lesions due to unidentified thorns.
- An exhaustive and meticulous exploration of all the skin should be performed and even image studies should be used to identify those thorns that are found in deeper locations, in order to reverse the effects of the same, and therefore, decrease the sequelae that may be present in the long term.

- Primary, which consists of localized pain, discoloration, erythema, edema, myalgias, symptoms that refer to the hours of the extraction of the spines;
- Secondary; corresponding to the formation of granulomas, neuropathies, sinusitis and arthritis, due to the presence of thorns in the skin. Multiple sea urchin injuries can cause systemic reactions with paresthesia, nausea, lymphadenopathy, paralysis, abdominal pain, syncope, hypotension, respiratory distress (King, 2014; Aloma).

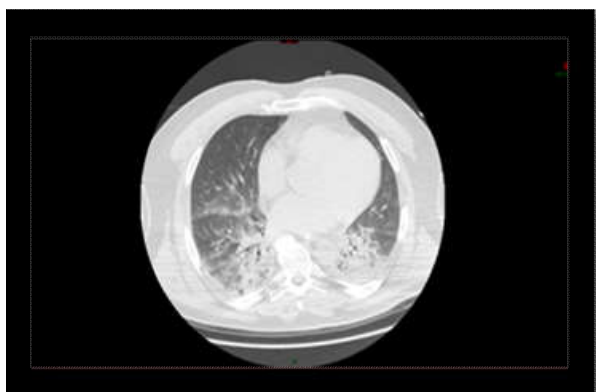


Figure 1. Admission CT scan

The treatment for sea urchin injuries is established according to the severity of the injuries:

- Mild: lesions in which there is no evidence of a systemic inflammatory response. Immediate treatment is the application of a salicylic acid local heat for a certain time or even significant pain relief.
- Severe: when presenting systemic inflammatory response and/or organic failure, in which multidisciplinary management with administration of intravenous solutions, antibiotic therapy, airway protection, and even amenergic support is required.

In either case, the most successful management is the individual removal if the spines directly or under vision guided by imaging studies (Sjøberg, 2010). Depending on the severity of the injury, sequelae and/or secondary reactions may be considered, in which, as in the case of reactive neuropathy management with systemic steroids is most indicated (Aloma; Gallagher, 2017).

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