

Stingray Spine Envenomation Impalement in the Foot: A Case Report

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INTRODUCTION

In the US 750 to 2,000 stingray injuries are reported each year (1,2). Stingray “attacks” are often defensive and result from the victim accidentally stepping on the creature while it is buried beneath the sand in shallow waters (3). Stingrays display whip-like tails, which contain a spine that is plunged into their victims when they attack. The spine is made up of a bone-like cartilaginous material enveloped in an integumentary sheath that contains glands that secrete a heat-labile venom (1). To date, there is limited literature available regarding stingray injuries to the lower extremity. We report a case of an adolescent who was successfully treated for a stingray injury at Mercy Hospital, Miami in May 2015.

CASE REPORT

A 15-year-old male presented to our emergency department with a history of wading in shallow waters off of Elliot Key just south of Miami, Florida. The patient abruptly felt a stabbing pain to his left foot, and immediately recognized a stingray barb lodged in the lateral aspect of his foot. At the moment of being stung the patient related that he felt an intense throbbing pain that was localized to the area where the barb entered his foot. The patient related that he

could see the barb released from the stingray in one intact piece. The patient denied any irritation, itching, or hives around the puncture site or elsewhere, and also denied any constitutional symptoms. The patient presented to the emergency department within two hours of the injury and his parents reported his tetanus status was complete and up to date (Figure 1).

Upon physical examination a serrated barb measuring approximately 14 cm was lodged in the lateral aspect of the patient’s left foot. The area surrounding the barb was mildly erythematous and edematous, but did not display any allergic reaction, toxic reaction, active bleeding, or drainage. Nonweight-bearing radiographs taken in the emergency department demonstrated a foreign body penetrating the lateral aspect of the left heel in close proximity to the lateral wall of the calcaneus (Figure 2).

Based on the patient’s medical history and physical examination, the decision was made to remove the foreign body at bedside as soon as possible to minimize the potential for reaction, infection, and wound healing complications. The left foot was prepared in the usual aseptic manner, and a local anesthetic block consisting of 9 mls of 1% plain lidocaine was administered. A #15 blade was utilized to make a 1 cm co-axial incision along both sides of the foreign body to release the barbs from the adjacent tissue. The barb was grasped with a straight hemostat and withdrawn from the entry portal with a slight rotation maneuver to release the barbs. The spine was removed intact without any complication



Figure 1. Initial presentation in the emergency department.



Figure 2. Radiographs taken in the emergency department.

(Figure 3). The area was then thoroughly irrigated with a 1:1 mixture of normal saline and Betadine and inspected for any residual foreign bodies. The area was primarily closed with one 2-0 nylon horizontal mattress suture. A surgical dressing was applied utilizing Betadine-soaked gauze and dry sterile dressings. The patient was placed in a surgical shoe and was dispensed crutches with instructions to partially bear weight to the left lower extremity. The patient was prescribed oral Augmentin 500 mg twice a day for 10 days, and Motrin 600 mg as needed for pain.

The patient presented to our clinic 5 and 12 days after the injury for follow-up (Figure 4). Radiographs taken at the first follow-up appointment did not demonstrate any evidence of residual foreign bodies, increased soft tissue edema, or cortical disruption. The suture was removed at the second follow-up appointment and at that time the patient was instructed to return to normal shoe gear and to resume his normal level of activity. The patient recovered without any complications and to date has no reported deficits resulting from this injury.



Figure 3. Stingray barb, 14 centimeters.



Figure 4. Clinical view, 12 days post-injury, after suture removal.

DISCUSSION

Envenomation from stingrays is associated with intense local pain and soft tissue edema that peaks at 30 to 60 minutes following the injury, and may linger for up to 2 days. Most minor punctures in the extremities are typically not associated with systemic signs of envenomation, which include vomiting, seizures, generalized edema, paralysis, hypotension, and bradycardia (3). This is consistent with the presentation of our case, as the patient did not report or display any of the systemic findings mentioned previously. Additionally, it has been reported that the stingray barb may often lacerate and tear its own integumentary sheath, resulting in a puncture wound without any envenomation taking place (4).

Much of the literature describing stingray injuries and treatment is limited to case reports and low-powered retrospective studies. Hot water immersion therapy is often described as a first-line treatment option and some authors describe that this is due to the heat-labile nature of the stingray venom. This treatment has not been verified through randomized controlled trials, and has the obvious risk of causing thermal injuries if not properly performed (1). Our treatment protocol is nearly identical to a recent case series that documented 3 cases in which patients were treated without any hot water immersion therapy (5).

We conclude that the surgical management of an acute stingray injury to the lower extremity may be successfully accomplished with the treatment protocol as described in our case report. Physicians living in coastal regions should be aware of such injuries and considerations in treatment.

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