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1. Myatt T, Nguyen BJ, Clark RF, Coffey CH, O'Connell CW. A prospective study of stingray injury and envenomation outcomes. J Emerg Med 2018;55:213–7.

☐ STINGRAY ENVENOMATION

☐ To the Editor:

We appreciate Dr. O'Malley's and Dr. Mark's comments on our prospective case series of stingray injuries and envenomations (1). As stated in the methods, this was an on-site observational study at a local Southern California beach. Our study group was not involved in the direct management of the study enrollees. Lifeguards have been managing stingray injuries for decades in this manner on the beaches of San Diego. It was the intent of this study to characterize these injuries and determine the natural course and outcomes of these sting injuries.

Foreign-body retention with stingray injury is a real risk and can have serious infectious consequences. We agree that injuries with retained spines or foreign bodies need to be identified. Local wound exploration is certainly a reasonable approach in the acute care medical professional setting, but is beyond the scope of practice of local lifeguards. However, we do not necessarily agree with the recommendation that all injuries warrant x-ray evaluation. There does not seem to be sufficient literature to support this practice. Clark et al. have published the largest retrospective series on record and found x-ray studies to have very limited utility and diagnostic yield (1,2). There are certainly case reports, such as O'Malley et al., that have shown identification of a barb after stingray injury with use of radiographs (3). When positive, these images are helpful, but we do not believe radiography has the sensitivity to be an effective routine screen.

The acute health care setting likely sees a biased sample, with more severe stingray injuries in individuals seeking pain control and wound evaluation. It can be presumed that more-severe injuries will likely have a higher incidence of retained stingray barbs or infectious complication. Our population was composed of all beachgoers who sought on-site lifeguard assistance immediately after their injury and were treated with hot water submersion. Albeit a small sample size, all 22 of these on-site stings were managed without serious, long-term wound complication without the use of radiographic imaging. Only 1 patient sought professional medical care after developing subsequent soft-tissue infection. It was managed successfully without imaging, but it would certainly be reasonable to obtain imaging in that scenario.

We believe in a thoughtful case-based approach and taking into account the appearance, size, severity, and location of the wound, foreign-body sensation, and comorbidities. Minor superficial injuries likely need basic wound care, and more severe, deeper penetrating injuries warrant further investigation to rule out retained spine. There is growing support for the use of ultrasound and magnetic resonance imaging to identify small foreign bodies in the soft tissue, and we advocate for these modalities, perhaps with the addition of x-ray studies if there is reasonable concern to diagnostically evaluate for the presence of retained stingray spine.

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3. O'Malley GF, O'Malley RN, Pham O, et al. Retained stingray barb and the importance of imaging. Wilderness Environ Med 2015;26:375–9.

☐ IN RESPONSE TO: "A PROSPECTIVE STUDY OF STINGRAY INJURY AND ENVENOMATION OUTCOMES"

☐ To the Editor:

We read with interest the recent paper by Myatt et al. (1). We commend the authors for their work on the underreported topic of the management of stingray envenomation. We would like to point out some limitations of the paper that challenge the author's assessment.

The study design and data collection could have been either more rigorous or more rigorously reported. While it is true that all victims were immersed in hot water, there was no mention of the technique of heating or confirmation of the water temperature achieved, and neither rationale nor control for the large variation in immersion time. The authors failed to entertain the possibility that ongoing symptoms or development of a complication may be associated with shorter submersion duration or failure to maintain an adequate water temperature. It would be valuable to know whether there was any difference in submersion time or temperature between the group that had a complication or had ongoing symptoms compared to the group that did not.

In addition, the observational case series is not designed to detect any significant difference between the groups, as demonstrated by a lack of clear statement of hypothesis or sample size calculation. Subjects could have been easily randomized to 2 groups (such as use of povidone wipes or not) and the samples powered to detect a significant difference.

In conclusion, the authors suggest that on-site management of stingray envenomation is safe and has a low rate of complications. However, it is challenging to draw any conclusions from the paper as the analysis suffers from limitations in methodology, data collection, and the small sample size. A more rigorous prospective study with a larger sample size is needed for readers to benefit from the author's geographically unique exposure.

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☐ REPLY

☐ To the Editor:

We thank Harmouche et al. for their review of our article. We are glad a common problem on the West Coast is generating attention nationally, especially this underreported problem. Prospective studies on stingray stings are uncommon for several reasons. First, other than in the southern part of the West Coast and perhaps the Gulf of Mexico, stings only occur in a short season, and only when stingrays are common near popular beaches. Second, many of these injuries do not rise to the level of requiring attention in a health care facility—we specifically located our study at the shore because the vast majority of people with stingray stings are treated at the beach by lifeguards, who know from interacting with local health care providers that hot water immersion is most often effective for treatment (1). Health care facilities typically see these patients only when a retained foreign body is suspected, there is ongoing bleeding, a gaping wound occurs, or an infection ensues. Interestingly, only a few studies have tried to validate this "well-known" hot water immersion treatment, and most have been retrospective (2,3).

Our intent was to go to the beach to begin to validate what is already considered the standard of care among our lifeguards. We hoped to enroll multiple subjects each day based on communications with lifeguards. The number of stingray injuries can range from 0 to over 30 on any given day at our chosen study location. We were surprised by our limited number of enrollments, but unfortunately our convenience sampling occurred on days that were inconveniently low for stingray injuries