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Culling all adventure travelers! Marine envenomation following lionfish culling in Curacao



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Introduction

- Lionfish, family *Scorpaenidae*, are venomous fish native to Indo-Pacific waters
- Invasive species in the Atlantic Ocean^{1,2}
- Lionfish venom includes a heat-labile protein toxin
- Lionfish culling is a method to control invasive populations²
- Divers participating in culling are at high risk of injury and envenomation

Case Description

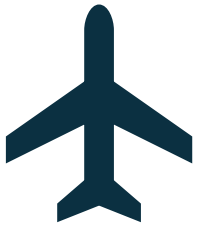
50-year-old healthy female traveled to Curacao for a scuba diving trip to cull lionfish



Puncture injury from lionfish spine to pad of right third finger (Figure 1)

Exposure

Day 0	• Removal of spine • Warm water immersion (1A) • Blistering of dorsal pad of fingertip and edema to entire finger (1B/1C)
Day 1-2	• Progressive edema & pain to digit (1D/1E)
Day 2	• Seen at local clinic in Curacao • Blister opened (1F/1G) • Azithromycin prophylaxis



Further dives in Leeward Antilles
Returns to Canada

~2-3 weeks: Evaluation in Tropical Disease Unit	• Persistent edema and pain with pressure • O/e: 2mm scab on dorsal aspect of fingertip pad, mild edema • No secondary infection, retained foreign body, or complications from venom (congestion, necrosis, ischemia)
Impression	Local envenomation +/- thermal injury
2 months: Clinical Outcome	• Complete resolution of erythema, edema, and bruising (Figure 2) • Residual altered sensation with typing (pressure)

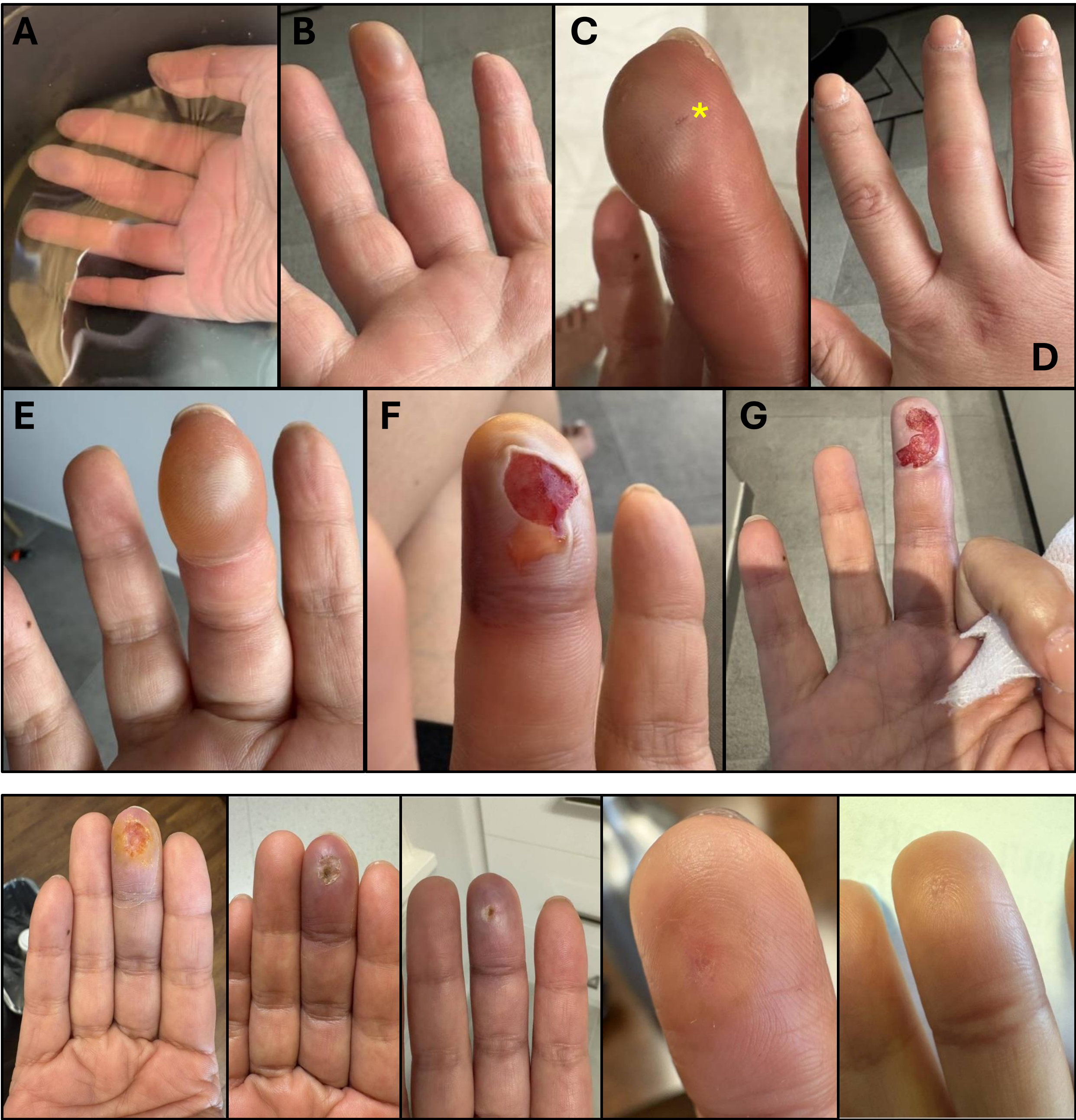


Figure 1: Lionfish sting wound following spine puncture injury.

1A: warm water bath immersion following initial sting injury.
1B and 1C: blister formation on day of puncture injury.
* Visible puncture wound.
1D: diffuse edema to the entire third digit on day of puncture injury.
1E: blister formation on day two following puncture injury.
1F and 1G: open wound two days after blister excision in Curacao.

Figure 2: Progressive healing of the lionfish sting, with resolution of erythema and ecchymosis. Final image (far right) was taken on two-month assessment in our Tropical Disease Unit outpatient clinic.

Lionfish Marine Envenomation

- Increasing and underreported source of marine envenomation
- Common local manifestations include pain, edema, erythema; necrosis and ischemia are infrequent complications^{3,4}
- Systemic toxicity is rare^{3,4}
- Initial therapy should include warm water immersion (45°C for 30-90 min.)^{4,5}
- Other management considerations include wound care, tetanus prophylaxis, assessment of secondary bacterial infections, and supportive care^{4,5}

Environmental Health Implications

- Invasive species can have devastating consequences to local marine ecosystems
- Climate change and rising sea temperatures increase the range of invasive marine species^{2,6}
- Overfishing places additional stressors on native marine species¹
- Ecological changes increase the potential for human contact with venomous marine species⁶
- Pre-travel preparations should include marine envenomation precautions
- Post-travel providers should be aware of local and delayed complications

References

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