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Confirmed Envenomation by *Androctonus amoreuxi* (Egyptian Yellow Fat Tail Scorpion)

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Abstract

In the United States, envenomations by native scorpion species such as *Centruroides* are common and generally well-tolerated. On the contrary, *Androctonus* species envenomations are exceedingly rare outside the Middle East and North Africa but are particularly deadly. We report a case of envenomation by an Egyptian Yellow Fat Tail (*Androctonus amoreuxi*) scorpion and the subsequent clinical course. A hobbyist and dangerous scorpion collector was stung by his pet *Androctonus amoreuxi*, purchased online. Our patient rapidly developed severe localized pain followed by systemic effects, including tachycardia, hypertension, tachypnea, anxiety, GI symptoms, diplopia, dyspnea, profound myalgias, and intense paresthesias. Ultimately, he was diagnosed with a grade 2-to-3 scorpion envenomation based upon evidence of autonomic hyperactivity and cranial nerve dysfunction. He never progressed to cardiopulmonary compromise; neither dobutamine nor antivenom was administered, and he improved with supportive care alone. Case details were verified in person and via electronic medical record review.

Keywords

Androctonus amoreuxi, Fat Tail Scorpion, Envenomation

1. Introduction

Scorpion envenomations are common among scorpion collectors and hobbyists; however, the genus *Androctonus* is unusually deadly and a major cause of scorpion envenomation morbidity and mortality worldwide, particularly in the Middle East and North Africa. We report a case of envenomation by an Egyptian Yellow Fat Tail (*Androctonus amoreuxi*) scorpion and the subsequent clinical

course.

2. Case Report

A 47-year-old otherwise healthy male was stung once on his right middle finger while hand-feeding his pet *Androctonus amoreuxi* (Figure 1). He is a hobbyist and collector of dangerous scorpions he purchases online. Within 30 minutes of the envenomation, he developed localized pain and edema (Figure 2) in his right fingers and hand. He rapidly progressed to severe paresthesias of the right arm, crampy abdominal pain, nausea, and a throbbing headache. Fortunately, he was able to drive himself to a small local hospital.

Figure 1. *Androctonus amoreuxi*, the pet scorpion that the hobbyist purchased online.

Figure 2. Right hand 15 minutes after envenomation.

He arrived in the Emergency Department (ED) 90 minutes after envenomation. His initial vitals were: temperature 38˚C, heart rate 120 beats per minute, blood pressure 180/90 mmHg, respiratory rate 24, and oxygen saturation 98% on room air. Laboratory testing was notable for a WBC 11.0 k/uL, bicarbonate 21 mEq/L, lactate 2.9 mEq/L, creatinine 1.35 mg/dL (baseline 1.0 mg/dL), pH 7.54, and pCO_2 27 mmHg. Serum sodium, potassium, transaminases, alkaline phosphatase, bilirubin, lipase, PT/INR, hemoglobin, and platelet count were within normal limits. He had no eosinophilia. EKG demonstrated sinus tachycardia with normal intervals, unchanged from his prior studies. The chest radiograph was clear without evidence of pulmonary edema, and the abdominal CT was unremarkable. Consequently, the Medical Toxicology team was consulted.

Over the next two hours, he developed progressive nausea, anxiety, and restlessness, followed by dyspnea, diffuse myalgias, and diplopia. The paresthesias intensified and spread to his face, left arm, and legs. He described his skin as "fire hot, embedded with shards of glass"; however, he was never hypoxemic or hypotensive. He received 2 liters of intravenous isotonic crystalloid for dehydration and fluid losses, IV ondansetron for nausea, acetaminophen and low-dose intravenous hydromorphone for analgesia, and intravenous midazolam for symptoms of anxiety, agitation, and neuroexcitation.

He was admitted to the Medical Intensive Care Unit (ICU) to monitor for cardiopulmonary decompensation, and his symptoms peaked at 12-to-18 hours post-envenomation. Notably, he never developed hemodynamic instability, hypoxemia, pulmonary edema, or coagulopathy and did not receive dobutamine, prazosin, or antivenom. Over the next 24 hours, his laboratory studies gradually normalized, and a transthoracic echocardiogram was normal. He was discharged on hospital day 3 with mild persistent abdominal pain and lingering paresthesias of his right hand and arm.

At a two-week follow-up visit, his symptoms had entirely resolved, and his wife had directed him to remove all scorpions and enclosures (**Figure 3**) from their home.

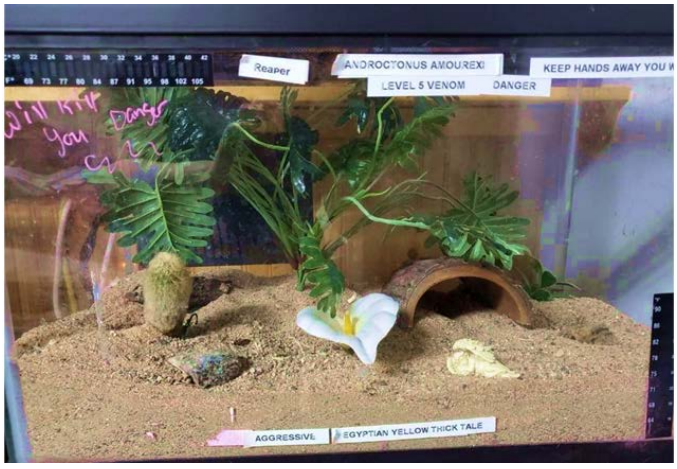

Figure 3. *Androctonus amoreuxi* enclosure.

3. Discussion

Androctonus amoreuxi is one of the multiple scorpions of the *Androctonus genus* found throughout North Africa and the Middle East. Scorpions from this area of the world account for 42% of the global sting burden and approximately half the fatalities. Case-fatality rates, which generally are imprecise measurements, are estimated at 0.42-0.52% [1].

Androctonus venom contains a complex milieu of neurotoxins, cardiotoxins, and immuno-inflammatory peptides. Alpha-toxins are the most clinically significant of these and are sodium channel openers that inhibit the fast inactivation of sodium channels, resulting in increased sodium influx and neuroexcitation [2]. Envenomation often causes localized symptoms that resolve with symptomatic and supportive care; however, a minority develop a nonspecific syndrome of life-threatening autonomic hyperactivity (including increased vagal tone) and massive catecholamine and cytokine release that can lead to a wide array of symptoms [3]. Mortality associated with *Androctonus* envenomation frequently results from cardiogenic shock and pulmonary edema (cardiogenic and noncardiogenic) and is often treated with a dobutamine infusion and vasodilators, respectively [4]. Antivenom is available in North Africa and the Middle East; however, it is challenging to obtain promptly, has questionable clinical efficacy, and has a high occurrence of adverse reactions. Local physicians argue against its administration as the standard of care [5].

In our case, the patient rapidly developed local and systemic toxicity consistent with a grade 2-to-3 scorpion envenomation based upon symptoms of autonomic hyperstimulation (adrenergic and cholinergic) and neuromuscular excitation. However, he never progressed to cardiopulmonary compromise and, accordingly, he did not receive dobutamine or antivenom and improved with symptomatic and supportive care alone.

4. Conclusion

Andoctronus envenomations are uncommon in the US but commonplace in scorpion collectors and hobbyists. Unfortunately, these envenomations have high morbidity and mortality.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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