

# Neurotoxicity from Sidewinder Rattlesnake Envenomation in Arizona

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## Background

- North American rattlesnake envenomations typically result in local tissue injury and hematotoxicity. Neurotoxicity is uncommon and most often is associated with bites by the Mojave rattlesnake, *Crotalus scutulatus*. Neurotoxicity following bites by the Sidewinder rattlesnake, *C. cerastes*, has not been reported.
- This is the first reported case of a Sidewinder envenomation resulting in neurotoxicity.

## Case Report

- A 56 year-old-man was bitten on the right foot through a leather boot by a snake he described as having horns and exhibiting sideways movement [Fig. 1].
- The patient developed painful right sided paresthesias and weakness progressing from the toes to the distal thigh. Physical exam 3 hours after the bite revealed ecchymosis at the bite site [Fig. 2], decreased sensation in the right foot, mild weakness of the leg, and pronounced fasciculations of the anterior thigh musculature [Video].
- Two independent herpetologists confirmed the species to be *C. cerastes* by photo taken of the snake after envenomation [Fig. 3].
- Fasciculations progressed to involuntary contractions of the large muscles of the thigh.
- Laboratory studies revealed normal platelets, protime, fibrinogen, creatinine phosphokinase and electrolytes throughout hospitalization.
- Antivenom was withheld based on unclear benefit for treatment of neurotoxicity.
- Over next 48-72 hours symptoms progressed to include right arm weakness and paresthesias, bilateral ptosis, and respiratory muscle weakness with 3 consecutive worsening negative inspiratory force (NIF) measurements. Respiratory failure did not occur. He was anorexic and unable to walk independently.
- On day 5 he had improved enough to ambulate with a walker. His ptosis, right arm weakness and respiratory muscle weakness resolved.

## Figures

Fig. 1



Fig. 2



Fig. 3



Photo by: fieldherpforum.com

## Follow up and Discussion

- In clinic on day 10 the patient continued to have improving paresthesias and weakness in the right leg. He also reported atypical chest pain lasting up to a few seconds, poor appetite, and new abdominal cramping.
- He was lost to follow-up thereafter.
- The patient developed prolonged and progressive neurotoxicity without hematotoxicity or significant local tissue injury.
- Antivenom was not given due to minimal neurotoxic symptoms on presentation, no hematotoxicity, minimal swelling, and lack of evidence for antivenom efficacy in reversing neurotoxicity.
- We did not anticipate the continued worsening and persistence of clinical effects in this patient, and in the future would consider a trial of antivenom in a similar patient.

## Timeline

- **Day 1** – Right foot pain, paresthesias, weakness, and loss of sensation in distal half of foot. Right thigh fasciculations [Video].
- **Day 2** – Involuntary contractions of right thigh musculature. Paresthesias and weakness progressed to right arm.
- **Day 3** – Developed bilateral ptosis and respiratory muscle weakness based on NIF measurements.
- **Day 4** – NIF measurements normalized, ptosis improved, right sided weakness slowly improved.
- **Day 5** – Able to ambulate with assistance of walker. Discharged home.

## Conclusions

- Envenomation by the Sidewinder rattlesnake, *Crotalus cerastes*, may be associated with neurotoxic effects, including paresthesias, fasciculations, and weakness. Symptoms may progress in the days following envenomation.
- It is unknown whether such effects would be prevented or reversed with antivenom.

