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Bits from "Bullets and Brains": Taking the Sting out of Scorpion Venom

### Dr. Wilner:

You're listening to Book Club on ReachMD. I am Dr. Andrew Wilner, and today I'll be reviewing one of the more than 100 essays from my book, Bullets and Brains.

On August 3, 2011, the FDA approved a new antivenom for scorpion stings. Many of the essays in my book are triggered by such news reports, and I decided to look into this, why was this important. Turns out that there is a scorpion, *Centruroides sculpturatus*, also known as the Arizona Bark scorpion, which is the only one of about 30 scorpions in the United States that is potentially lethal. And of interest to neurologists, it is a neurotoxic scorpion. Patients will have wild, flailing movements of their arms, strange eye movements that may be like nystagmus or even opsoclonus, as well as respiratory distress requiring intensive care admission and often intubation and sedation.

Well, up until about 1999, there was a goat serum for these severe scorpion stings, and it had a lot of side effects. It wasn't completely embraced by the community. But in 1999, they stopped manufacturing it. It was not an FDA-approved treatment. Consequently, there was no treatment other than supportive care after 1999. This was really not a big problem even though there are more than 11,000 stings reported in Arizona. Most of these are quite uncomfortable but not life-threatening. However, the exception is children, and for children under 5, a scorpion sting can be fatal. And about 25% of children under 5 years old can die, and this is because of their small body weight and relative high dose of the toxin when they are stung. And, of course, many stings are accidental.

Well, a very concerned pediatrician, Leslie Boyer, got together with colleagues and had the insight to partner with a pharmaceutical company in Mexico, because in Mexico, there are a thousand deaths per year from scorpion stings because the scorpions in Mexico are a lot nastier than what we have here in the US. They developed a new antivenom from horse serum, which had less side effects, and they did their own clinical trial of 15 children who were all admitted to the intensive care unit. Half got the new antivenom, and the other half didn't. This was reported in the New England Journal in May 2009. The title of that article is Antivenom for Critically Ill Children with Neurotoxicity from Scorpion Stings, with the lead author Dr. Boyer, B-O-Y-E-R.

Well, sure enough, this new treatment worked. It was almost miraculous. The half of the patients who received the antivenom were smiling within hours, and measurements of the antivenom in their blood were nil. The other half, one of them responded, but the others were stuck in the ICU, intubated, requiring 10 times the dose of benzodiazepines for sedation.

So, after this clinical trial, this drug was approved. And it's just a fabulous story, because it must have been a huge effort by Dr. Boyer and her colleagues, and it's just a wonderful service to mankind that will be appreciated by very few people; but those few people, those parents of these small children, instead of watching their children suffer in the ICU will watch them go home from the emergency room after receiving the antivenom. It's really an amazing story.

There are more than 100 other amazing stories in my book, Bullets and Brains. For more information and to access other episodes of this series, visit [ReachMD.com/bookclub](https://ReachMD.com/bookclub) where you can Be Part of the Knowledge. For ReachMD, I am Dr. Andrew Wilner. Thanks for listening.