



Case Report/Relato de Caso

Accident caused by *Centruroides testaceus* (DeGeer, 1778) (Scorpiones, Buthidae), native to the Caribbean, in Brazilian airport

Acidente causado por *Centruroides testaceus* (DeGeer, 1778) (Scorpiones, Buthidae), nativo do Caribe, em aeroporto brasileiro

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ABSTRACT

Describes the case of a 6-year-old girl who was stung by a *Centruroides testaceus*, a scorpion native to the Lesser Antilles, in the Guarulhos International Airport, São Paulo, Brazil, as she disembarked from a flight coming from the Caribbean. The patient presented only local symptoms (a small area of erythema and pain at the sting site), which were resolved after a few hours with analgesics, without the need for antivenom. Physicians who treat patients stung by scorpions should be alert to the possibility of such accidents being caused by non native species, especially those cases that occur near airports or ports.

Keywords: Scorpion Sting. *Centruroides*. *Centruroides testaceus*.

RESUMO

Descreve-se um caso de menina de 6 anos de idade picada por um *Centruroides testaceus*, escorpião nativo das Antilhas, no interior do Aeroporto Internacional de Guarulhos, São Paulo, Brasil, após ter desembarcado de um voo vindo do Caribe. A paciente apresentou apenas sintomas locais (pequena área de eritema e dor no local da picada), resolvidos em algumas horas com uso de analgésicos, não necessitando receber soro antiveneno. Os médicos que tratam pacientes picados por escorpiões devem estar precavidos quanto à possibilidade dos acidentes serem causados por espécies não-nativas, especialmente nos que ocorrem próximos a aeroportos ou portos.

Palavras-chaves: Picadas de escorpião. *Centruroides*. *Centruroides testaceus*.

INTRODUCTION

Envenomation associated with scorpion stings is a serious public health problem in tropical and subtropical countries. Although there are approximately 1,500 species of scorpions described, currently distributed in 18 families, about thirty of them are recognized as potentially dangerous for humans¹. Less than a dozen of these species are responsible for serious envenomation or death¹. Worldwide, the annual number of scorpion stings exceeds 1.2 million, leading to more than 3,250 deaths¹. Severe cases are seen especially among children¹⁻⁵.

While scorpions of the genus *Tityus* are recognized as the main cause of scorpionism in Brazil², in the southern United States, Mexico, Central America, and the West Indies, they are the scorpions of the

genus *Centruroides*^{1,3-5}. Among the more than seventy described species of this genus⁶, only some are regarded as dangerous to man: *C. exilicauda* (= *sculpturatus*), *C. infamatus*, *C. elegans*, *C. noxius*, *C. suffuses*, *C. limpidus*, and *C. gracilis*^{1,3-5}. There are no cases of scorpionism caused by *Centruroides testaceus* (DeGeer, 1778), native to the Antilles⁷, reported in the literature.

In this work, we describe the case of a 6-year-old girl who was stung by a *Centruroides testaceus* in the Guarulhos International Airport, São Paulo, Brazil, as she disembarked from a flight coming from the Caribbean.

CASE REPORT

A previously healthy 6-year-old girl was presented to the Vital Brazil Hospital, Butantan Institute, 1h and 15min after being stung by a scorpion inside the Guarulhos International Airport, São Paulo, Brazil. She disembarked from a flight coming from Bonaire (a Caribbean island, of the former Netherlands Antilles), with stops in Curaçao (another Caribbean island) and Bogota (Colombia). She had remained for about 4h in Curaçao and visited a park there. She was carrying a backpack on her shoulders (hand luggage) when she felt a sharp pain in her right arm (later referred to as grade 7 in the Wong-Baker Faces Pain Rating Scale [WBFPRS])⁸ and noticed that there was a scorpion on her shirt, identified in the Arthropod Laboratory of the Butantan Institute as *Centruroides testaceus* (Figures 1 and 2). Clinical examination on admission showed local pain (grade 4, WBFPRS) with a small area of erythema in the anterior middle third of her right arm. Her blood pressure was 95/65mmHg, her heart rate was 61/min, and her temperature was



FIGURE 1 - Scorpion brought by the patient, identified in the Arthropod Laboratory of the Butantan Institute as *Centruroides testaceus*.

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FIGURE 2 - Distal segment of the scorpion tail where the stinger is located.

36.1°C. There were no signs of respiratory distress, and the oxygen saturation measured by pulse oximetry [SpO₂] was 98% in room air. Her cardiac and pulmonary auscultations were normal. The patient was treated with dipyrone orally and with a hot water bottle at the site of the sting and kept under observation with cardiac monitoring. About 2h later, she was totally asymptomatic and was discharged.

DISCUSSION

Scorpion envenomation by the genus *Centruroides* is a very common occurrence in the southwestern United States, Mexico, Central America, and the West Indies^{1,3-5}. So far, no accidents caused by this kind of scorpion have been recorded in Brazil, where scorpions of the genus *Tityus* are recognized as the main cause of scorpionism².

Most scorpion toxins affect the sodium channel of excitable cells (known as long toxins) by retarding inactivation or enhancing activation^{1,9}. A few of these toxins affect the potassium channel (short toxins)^{1,9}. As a result of the effects on neuromuscular transmission and autonomic effects secondary to the release of acetylcholine at the vagal ganglia and on cardiac postganglionic nerves, affected individuals can develop signs and symptoms of cholinergic and sympathetic excess. These symptoms are assumed to be directly related to the concentration of toxins in the venom injected by the scorpion⁵.

The clinical features may vary in severity from only local pain, which may be severe at times and radiate up the affected limb, to a life-threatening illness¹⁻⁵. The sympathetic effects include increased heart rate and blood pressure, hyperglycemia, dilated pupils, piloerection, sweating, and hypertension. The parasympathetic effects include salivation, tearing, urination, defecation, bradycardia, hypertension, and gastric distension. Other effects include pain, paresthesias, hyperesthesia near the sting site, respiratory difficulties, increased secretions, stridor, irritability, blurred vision, difficulty swallowing, and slurred speech. The most dramatic signs of envenomation in young children are as follows¹⁻⁵: hyperactivity, restlessness, opisthotonos accompanied by muscle twitching, fasciculations, roving eye movements, and nystagmus. In severe cases, rhabdomyolysis (secondary to persistent muscle contractures), dysrhythmias, and respiratory failure may develop. It is important to remember that these clinical findings may also vary depending on the genus or the species of scorpion involved in the accident¹.

In the case described, the patient presented only local symptoms (a small area of erythema and pain at the sting site), which were resolved after a few hours, despite her belonging to the pediatric age group, where the most severe cases caused by scorpions of the genus *Centruroides* occur³⁻⁵. Moreover, we found no reports of accidents caused by *Centruroides testaceus* in the medical literature. It is unclear to us whether this is because accidents caused by this species are rare or because its venom does not cause severe envenomation, which is the case with many other species belonging to this genus¹.

The species *Centruroides testaceus* seems to be restricted to Curaçao and the neighboring islands⁷. This leads us to believe that the scorpion that stung the patient came with her hand luggage from Bonaire or Curaçao. We understand that it is more likely from Curaçao, where the patient had spent a few hours visiting a park before flying to São Paulo, with a stop in Bogota. There is no doubt that in cases where only local symptoms are observed, the treatment should only be symptomatic, aimed mainly at pain control, as in the case presented^{2-3,5}. However, although in Brazil we recommend the use of antivenom in the treatment of all cases of scorpion stings with systemic symptoms², there is controversy in the literature regarding the treatment of severe accidents involving scorpions of the genus *Centruroides*^{1,3-5}. While some experts advocate the use of antivenom, which is the only specific treatment, others recommend supportive treatment and the use of sedatives¹. Nevertheless, mortality from scorpion envenomation has been dramatically reduced in Mexico since the mid-1990s, after the introduction of antivenom³⁻⁵. Recently, Boyer et al. demonstrated that the use of antivenom effectively resolved the toxic effects of envenomation caused by *Centruroides sculpturatus* within 4h after its administration, reduced the need for concomitant sedation with benzodiazepinics, and reduced the level of circulating unbound venom³. If our patient had developed systemic symptoms, our only option would have been supportive treatment, as we have specific antivenom only for the genus *Tityus* and there are no studies showing that it would be effective in the treatment of envenomation caused by scorpions of the genus *Centruroides*.

Apart from the unavailability of a specific treatment, this case raises another important issue: the possibility of airports serving as gateways for the introduction and spread of different species of scorpions from other regions of the world. We know that some species, such as *Tityus serrulatus*, are able to reproduce by parthenogenetic mechanisms¹⁰, that is, reproduction without the need for a male.

In conclusion, physicians who treat patients bitten by scorpions should be alert to the possibility of such accidents being caused by nonnative species, especially those cases that occur near airports or ports or when the causative agent is not brought to the health service. The occurrence of such cases also raises a controversial issue: Should we consider the possibility of maintaining a small supply of antivenom for the treatment of accidents caused by unusual species of scorpions?

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