

A CASE OF SCORPIONISM CAUSED BY *Tityus brazilae* (SCORPIONES, BUTHIDAE) IN PERNAMBUCO STATE, BRAZIL

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ABSTRACT

Accidents involving scorpions represent a risk to public health, principally in tropical countries. Thus, we present the first report of scorpionism caused by *Tityus brazilae* Lourenço & Eickstedt, 1984 in the Pernambuco state. This case occurred in an Atlantic Forest fragment located in the municipality of Araçoiaba. The accident involved an adult man stung in the hand. Clinical symptoms have been described as local (pain and numbness sensation) and systemic (chills followed by agitation, fever, and drowsiness). The case described here was classified as moderate, allowing the addition of *T. brazilae* as a species of medical importance in the state of Pernambuco.

Keywords: envenomation; medical importance; public health; scorpion accident

RESUMO

Os acidentes envolvendo escorpiões representam um risco à saúde pública, principalmente em países tropicais. Assim, apresentamos o primeiro relato de escorpionismo causado por *Tityus brazilae* Lourenço & Eickstedt, 1984 no estado de Pernambuco. Este caso ocorreu em um fragmento de Mata Atlântica localizado no município de Araçoiaba. O acidente envolveu um homem adulto picado na mão. Os sintomas clínicos foram descritos como locais (sensação de

dor e dormência) e sistêmicos (calafrios seguidos de agitação, febre e sonolência). O caso aqui descrito foi classificado como moderado, permitindo a inclusão de *T. braziliae* como espécie de importância médica no estado de Pernambuco.

Palavras-chave: envenenamento; importância médica; saúde pública; acidente de escorpião.

INTRODUCTION

Scorpionism is the name given for human envenomation by scorpion sting and is considered a public health problem in several countries due to its high incidence, severity of cases, and difficulty in managing health services (Chippaux & Goyffon, 2008). Although scorpions are distributed across all continents, the highest incidence of accidents caused by these animals occurs in tropical countries, especially in the regions of South and Central America (Gopalakrishnakone *et al.*, 2015). If complications occur from stings, there is a high risk of mortality in children and elderly (Mullen & Sissom, 2019; Gomes *et al.*, 2023).

The severity of accidents involving scorpions generally depends on factors such as species, venom composition, and clinical condition of the patient (Torrez *et al.*, 2019). Most cases reported for scorpions are mild, with approximately 97% cases consisting of only pain (Mullen & Sissom, 2019). Moderate cases present with a greater degree of manifestations, such as nausea, sweating, vomiting, tachycardia, tachypnea, agitation, and arterial hypertension (Brasil, 2001). However, cases of aggravated systemic conditions, such as constant sweating, frequent vomiting, pallor, hypothermia, spasms, tachycardia, and restlessness followed by drowsiness, also still occur (Brasil, 2001).

Currently, in Brazil, scorpions from the genus *Tityus* C.L. Koch, 1836, exhibit the highest rate of scorpionism (Gomes *et al.*, 2023). Among them, the following species stand out: *T. serrulatus* Lutz & Mello, 1922, *T. bahiensis* (Perty, 1833), *T. stigmurus* (Thorell, 1876), and *T. obscurus* (Gervais, 1843), which are the main causes of fatal accidents (Brasil, 2009; Gomes *et al.* 2023). Despite this, other species also possess medical importance; for example, *Tityus braziliae* Lourenço

& Eickstedt, 1984 from the state of Bahia (Queiroz, 2001) and *T. pusillus* Pocock, 1893 from Pernambuco state (Albuquerque *et al.*, 2009). Therefore, here, we present the first case of scorpionism attributed to *T. brazilae* in the Pernambuco state, suggesting an increase in the incidence of envenomation by this species and classifying it as a species of medical interest in Brazil.

CASE REPORT

A 22-year-old man suffered a scorpion sting on the middle finger of his right hand, while actively collecting scorpions for academic research purposes, in an area of Atlantic Forest that is close to the Campo de Instrução Marechal Newton Cavalcanti, at 10:30 PM on January 23, 2022. The accident occurred in the municipality of Araçoiaba, Pernambuco state in Brazil. The man reported pain immediately after the scorpion sting on his hand. After two hours, he showed symptoms such as fever, drowsiness, and chills followed by agitation that lasted for seven hours. The following symptoms persisted up to 12 hours after the scorpion sting: pain at the site of the sting, nausea and chills. According to the known clinical picture of scorpion accidents, the case analyzed in this study was classified as moderate (Brasil, 2001). The scorpion responsible for the accident described in this work was captured and deposited in the Arachnological Collection of the Universidade Federal de Pernambuco (UFPE) and identified as *T. brazilae* (Figure 1). This study has been approved by the Ethics Committee under the CAAE number "74081223.6.0000.9547".

DISCUSSION

Tityus brazilae occurs across the states of Bahia, Pernambuco, Espírito Santo, Sergipe, Paraíba and Alagoas in Brazil (Bertani *et al.*, 2022). It is mainly found in forested areas and uses tree bark as a refuge (Lira *et al.*, 2018, 2020). Before this incident, scorpionism caused by *T. brazilae* was only reported in the municipality of Salvador, Bahia (Queiroz, 2001). In addition, these cases caused by *T. brazilae* were classified as mildly severe (Queiroz, 2001), which are different from the case reported in this study. Considering the wider geographical distribution of *T. brazilae*, the difference between accidents from Salvador and

those described here may be attributed to intraspecific variation in venom composition. Species with a wider geographical distribution possess intraspecific variations in their venom composition (Schaffrath *et al.*, 2018).

In summary, after this reported case, we have increased the number of scorpion species of medical importance from the Pernambuco state. In addition, scorpionism reported by *T. braziliae* in the present study was similar to reports of scorpionism caused by other species, such as *T. pusillus*, which was reported in areas near natural vegetation (Albuquerque *et al.*, 2009). One of the main causes of the high scorpion envenomation rate is disorderly urban growth (Queiroz, 2001). Therefore, although *T. braziliae* is considered a forest-specialist species (Lira *et al.*, 2020) the reduction in its natural habitat may facilitate encounters with humans and increase the chance of accidents. In conclusion, species such as *T. braziliae*, if found in fragmented areas, could cause accidents with aggravating conditions, thus increasing the number of scorpions that may cause accidents in humans in Pernambuco.



Figure 1. Dorsal view of *Tityus braziliae* Lourenço and Eickstedt, 1984 adult.

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