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Article · September 2016

DOI: 10.4172/CDRJ.1000107

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Necrotic Arachnidism by *Zorocrates guerrensis* First Case Reported in Mexico

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Abstract

The spiders (filo *Arthropoda*) occupy seventh place in global species richness. The genus *Zorocrates* Simon, consists of endemic species in Mexico. This arthropod used for feeding or defense, glandular secretions to manipulate their prey (including human), affecting their state of health or causing the death, by what are considered species of medical importance.

We present the case clinical female 19 years old, resident of the Mexico City, who came to the Parasitology Laboratory, National Autonomous University of Mexico (UNAM), commenting that three days before, sitting on his bed, felt pain in the left external tibial region at the level of the third half, discovering a large insect, repelling it immediately; minutes later, there are burning, and erythema in the area of reference, which evolves with formation of vials, which spontaneously bursts. Then presented erythematous, itchy, painful plaques, reason for the requested medical attention. The ulcerative lesion studied with slow progress until the cicatricial process.

Responsible arachnid is presented to the laboratory until the end of the treatment, which is identified as *Zorocrates guerrensis*, species located in areas of the Mexico City (bedrooms, bathrooms, patios, zotehuelas, cisterns and gardens). There are no cases reported in Mexico and the world, about accidents caused by this species. It is suggested that the injury is due to the mechanics of the bite and not by the toxic effects of its secretion, which has not yet been characterized and that cannot be ruled out, along with other components, as head of the pathophysiological manifestations.

Keywords

Necrotic arachnidism; *Zorocrates*; Mexico

Introduction

Spiders belong to the class *Arachnida* *Araneae* order [1], sub-orders, *Mesothelae* (a family, two genera and 85 species) and *Opisthothelae*, comprising the *Mygalomorphae* consisted “tarantulas” (15 families, 300 genera and 2,683 species) infraorders and *Araneomorphae* “true spiders” (94 families, 3,200 genera and 36,000 species) [2,3,4]. Due to its global diversity, the order is located in seventh place in richness of species within *Arthropoda* and boasts 46,157 species, 3,989 genders

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Received: July 16, 2016 Accepted: September 20, 2016 Published: September 26, 2016

and 114 families [5]. The family *Zoropsidae* Dahl has 26 genera and 178 species and the genus *Zorocrates* Simon is made up of 31 species and 77% of endemic to Mexico [5]. *Zorocrates guerrensis* Bertkau is a common species for the homes of the Mexico City and has been registered in 9 delegations and 5 municipalities [6,7].

For poisonous animals, including spiders, their venom is an efficient mechanism to manipulate their prey with lower risk of losing it or be injured by them. The venom contains molecules that affect the normal biochemical and physiological processes to facilitate feeding or defense to producer animal [8].

Some of the poisonous species, are considered of great medical importance, since, to inoculate its poison, they can modify the general state of health of a person and even cause death. It should be clear that virtually all spiders have venom, but few that are endangering the life of the human. In the American continent, two large groups of spiders of medical importance are recognized: that generate poison with neurotoxic effects (*Latrodectus* sp. or black widow) and which affect various tissues, including necrosis (*Loxosceles* sp or violinist) [9,10].

Clinical Case

Female 19 years of age, who was born and resides in the Mexico City, Iztapalapa delegation, attends the Parasitology Laboratory of the Department of Microbiology and Parasitology, Faculty of Medicine, UNAM, referring three days earlier while on his bed, felt like pain burning in the tibial region outside left at the level of its middle third, so to be revised, see in such area “spider patona”, repelling it immediately with anguish, so flock family, who captured this arthropod.

Mentions that he observed in the affected area, ardent feeling, not painful or itchy, reddened with small trickle of blood, so it applied soap and water immediately. After 20 to 30 minutes, has numbness in the region and training of ampula, persisting the ardent feeling. An average of an hour and a half, this vial reached a diameter of 3 cm and 15 to 20 minutes later, bursting spontaneously leaving ardent feeling in lesion site (Figures 1a, 1b, 1c) self-medicating with analgesic (Paracetamol 1 gram V.O.).

The next day, the patient wakes up with intense itching and burning pain so again applying soap and water and ingested 1g of acetaminophen, noting that you injury modification, reason by which goes to health care.

On physical examination, is observed dermatosis localized in third half tibial external, consisting of plate erythematous with hyperpigmented center of jagged edges, accompanied by peripheral violet spots; referring to be itchy and painful, it is accompanying systemic symptoms (Figure 2).

By the fact of denying allergic background, confirmation of injury caused by arachnid, the ignorance of this species and the evolution of the clinical picture, decides to management with ARACMYNPLUS®, tetanus toxoid, and prophylactic antibiotic against anaerobic germs.

Three days later on its medical control, it concerns reduction of the clinical picture, so it continues washing with water and SOAP and prophylactic antibiotic therapy; Since the dermatosis can be seen

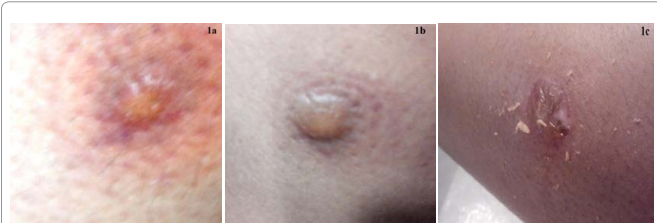


Figure 1a-c: Evolutionary process of the first two post-bite arachnid hours.



Figure 2: Characteristics of the lesion 24 hours after the bite and after application of medical treatment.

with discrete surface desiccation and decline of peripheral violaceous stains, however, realized that the depth of the lesion reaches subcutaneous tissue (Figure 3).

Dermatosis that evolves satisfactorily clean appreciate ulcerated lesion with regular edges vascularized and peripheral stains hyperpigmentation (Figures 4a,4b,4c). These features evolve slowly and by an average of two months and means presents desquamative cicatricial process, to be finally two weeks in hyperchromic stain with full remission of symptoms, reason by which gives high to the patient (Figures 5a,5b).

Not omitted to mention that up to this date and referred to our insistence, chose, despite his repulsion, take the spider to study (Figure 6).

Biology and Poison

Family *Zoropsidae* Dahl, 1913

Composed of spiders cribeladas measuring 3 to 33 mm in total length. They present the narrow oval shell. In both sexes, the trochanter III shows a notch [11] and the rows are grouped espigots. In the case of the male, the pedipalpal tibia presents a ventroapical process, in addition to the tibia has a recess and a tarsal escopula. In general they are burrowing habits or runners.

Genus *Zorocrates* Simon, 1888

Spiders of the genus *Zorocrates* are represented by 31 species distributed mainly in the United States, Mexico and Central America. Mexico shares five United States species and two species with Central America, as well as having 24 endemic species, i.e., 77% of the total number of species described so far [5]. The species that make up this genre, are considered to be phylogenetically interesting, due to the variation of some morphological structures, so their phylogenetic relationships are poorly defined [12,13,14] (Table 1).

The species that make up the genus *Zorocrates* are distributed almost throughout the Republic of Mexico (Figure 7) [14]. In particular, in the homes of the Mexico City has been reported the presence of the species *Z. guerrerensis*, mostly political delegations that make it up (Figure 8) [6,7].

Zorocrates guerrerensis Gertsch and Davis, 1940

Description: This species is characterized by having eight eyes in



Figure 3: Clinical features three days subsequent application of medical treatment.



Figure 4: Evolutionary process of injury after the fifteen days of medical treatment.



Figure 5: Satisfactory evolution after three months of medical treatment, resulting high medical patient.



Figure 6: Spider *Zorocrates guerrerensis*.

Table 1: Distribution of species of *Zorocrates* genus. References to the geographical location of the 31 species of the genus *Zorocrates*, family Zoropsidae, order Araneae, class Arachnida and phylum Arthropoda.

Species	Author and Year	Distribution
<i>Aemulus</i>	Gertsch, 1935	USA, Mexico
<i>Alternatus</i>	Gertsch & Davis, 1936	USA, Mexico
<i>Apulco</i>	Platnick & Ubick, 2007	Mexico
<i>Badius</i>	Simon, 1895	Mexico
<i>Blas</i>	Platnick & Ubick, 2007	Mexico
<i>Bosencheve</i>	Platnick & Ubick, 2007	Mexico
<i>Chamela</i>	Platnick & Ubick, 2007	Mexico
<i>Chamula</i>	Platnick & Ubick, 2007	Mexico
<i>Chiapa</i>	Platnick & Ubick, 2007	Mexico
<i>Collimated</i>	Platnick & Ubick, 2007	Mexico
<i>Contreras</i>	Platnick & Ubick, 2007	Mexico
<i>Fuscus</i>	Simon, 1888	Mexico
<i>Gnaphosoides</i>	(OP-Cambridge, 1892)	Mexico to El Salvador
<i>Guerrenderis</i>	Gertsch & Davis, 1940	Mexico, Central America
<i>Huatusco</i>	Platnick & Ubick, 2007	Mexico
<i>Karli</i>	Gertsch & Riechert, 1976	USA, Mexico
<i>Mistus</i>	OP-Cambridge, 1896	Mexico
<i>Mordax</i>	(OP-Cambridge, 1898)	Mexico
<i>Nochix</i>	Platnick & Ubick, 2007	Mexico
<i>Oaxaca</i>	Platnick & Ubick, 2007	Mexico
<i>Ocampo</i>	Platnick & Ubick, 2007	Mexico
<i>Pictus</i>	Simon, 1895	Mexico
<i>Foot</i>	Platnick & Ubick, 2007	Mexico
<i>Potosi</i>	Platnick & Ubick, 2007	Mexico
<i>Loneliness</i>	Platnick & Ubick, 2007	Mexico
<i>Basement</i>	Platnick & Ubick, 2007	Mexico
<i>Tequila</i>	Platnick & Ubick, 2007	Mexico
<i>Terrell</i>	Platnick & Ubick, 2007	USA, Mexico
<i>Unicolor</i>	(Banks, 1901)	USA, Mexico
<i>Xilitla</i>	Platnick & Ubick, 2007	Mexico,
<i>Yolo</i>	Platnick & Ubick 2007	Mexico

length, presents a few pockets very broad in the epigynum, as well as the lobes of the strongly convoluted espermatecas and with the blind prominent anterolateral. The male can reach up to 11 mm in total length. Retrolateral tibial apophysis has a flange and is also short [6,14,15].

Biology and ecology: It is a wandering sort of nocturnal and feeds on other arthropods. It can be located on the floors of bedrooms, bathrooms, patios and zotehuelas (in these last two places behind pots or buckets), but also you can find inside cisterns and gardens (between rocks) [6,15].

Spiders of the genus *Zorocrates* poison

We performed a search for reports of clinical cases or the study of the genus *Zorocrates* poisons, using MEDLINE, SCIEDIRECT and periodic © portals search engines. The following key words were used: “*Zorocrates*” and “case report”, and “Zoropsidae” “case report”, “*Zorocrates*” and “venom” and “Zorocratidae” and “venom”, throwing zero reports specific to this genus or family. Therefore, it is assumed that there are no reports in Mexico and around the world about the characterization of their poisons and not reports of bites or poison by spiders of this genus which could suggest medical relevance for the genus *Zorocrates*.

However, it is important to note that family Zoropsidae is grouped within the superfamily Lycosoidea [16], which includes spiders wolf (fam. Lycosidae), sac spiders (fam. Miturgidae) and search spiders (fam. Ctenidae), and for these families poisonings reports refer to symptoms including inflammation, Erythema, and even necrosis at the site of the bite. In the case of these poisons, with information on the components and the biological activity of these proven models, the researchers suggest that the observed clinical picture is result of the own bite-mechanical action, as well as inflammatory effect by the presence of the poison, and not as a result of dermonecrotic activity of a toxin [17,18,19].

Results and Discussion

This report would be the first recorded case of poisoning by bite spiders of the genus *Zorocrates*, being important to note that the



Figure 7: The shaded areas represent the distribution of arachnid location of *Zorocrates guerrenderis* in Mexico.

two rows straight, cribellum, and two tarsal claws [15]. The carapace is narrow in its front part and presents silks. The opisthosoma is oval and dark in colour, while the legs are progradas, long and the same color as the shell. The female may reach up to 15 mm in total

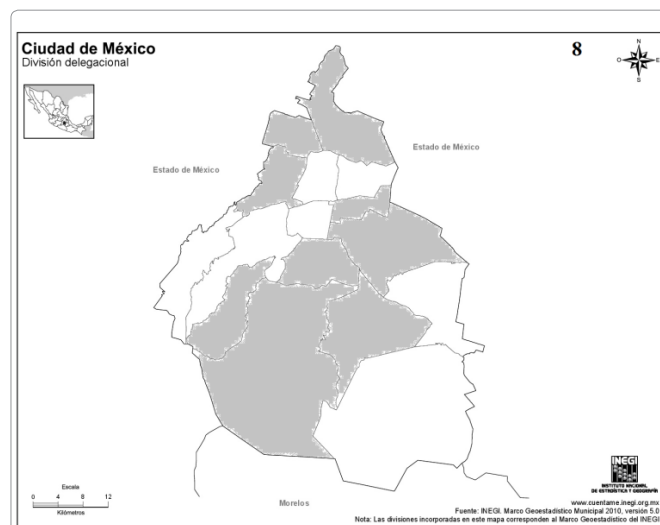


Figure 8: The shaded areas represent the distribution of the location of the arachnid in delegations from Mexico City.

venom of these spiders has not been characterized not in terms of the composition of molecules or the biological activities that they have. So this leaves open the search for the components that might be responsible for the pathophysiological described in this clinical case demonstrations.

It is important to recommend that comply with the characteristics of the animal involved and, where that is feasible, have the specimen, as this may help in the correct identification and the timely and accurate choice of treatment.

The evolution of the clinical picture is based on factors such as the species of venomous animal, dosage and place of inoculation of the venom, as well as the general state of health of the patient. It is relevant to consider the differential diagnosis in the clinical pictures dermonecrotics.

Acknowledgement

Efraín Axel Castillo Castillo their support in the edition of the figures in the present manuscript.

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