

# Recluse Spider Bite (*Loxosceles* sp.): A Case Report from Jordan

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## Abstract

*Loxosceles* is a genus of spiders belongs to the family Sicariidae, known as recluse spiders. These spiders are considered venomous and are distinguished by three pairs of eyes, arranged in triangular pattern. In Jordan, only *Loxosceles rufescens* was recorded. A 75-year-old female with history of hypertension was bitten by a recluse spider. The case developed cellulitis and secondary infection at the site of the bite. The patient showed no response to the treatment with antibiotics either at home or in the emergency department. She was admitted as an inpatient and given Tinam (Cephalosporin / 4th generation). The patient left the hospital after improvement of the symptoms on day 14. Bite of *Loxosceles* spider cause serious poisoning and lead to severe skin infection that needs hospitalization.

**Keywords:** Loxosceles, bite, poisoning, Jordan, recluse spider

## Introduction

*Loxosceles* spiders are of medical importance. Their bites cause symptoms range from local lesions to serious dermonecrotic ones that may reach up to 30 cm in diameter (1). In addition, the venom can cause renal failure and hematological abnormalities in severe cases. Few patients brought the spider that caused the injury to the hospital for identification, making the diagnosis of the spider bites difficult and frequently presumptive (2). In this report, the patient developed sever dermonecrotic wound and systemic symptoms likely secondary to *Loxosceles* spider bite. This report is the first documented case of spider bites in Jordan.

## Case Report

A 75-year-old woman with no medical history, except hypertension, was presented to Al-Mafraq Government Hospital in August suffering from a painful wound on her left lower limb. The patient reported that a brown spider has bitten her extremity while she was sitting at home. Initial symptoms (included acute ankle pain, mild swelling, redness, and itching) took less than 60 minutes to appear.

The patient received anti-inflammatory drugs, but without response and the symptoms persisted. After 12

hours, ecchymosis was noted which forced the patient to refer to the emergency department at the hospital. The patient received anti-inflammatory drugs consist of I.V hydrocortisone and oral antibiotic and was discharged to the house with close observation. The symptoms persisted and became intense, forcing the patient to require hospitalization again. Routine blood analysis was performed with increase in WBC and ESR (Table 1). Medication was administered and the patient was discharged. Over the next 3 days, the case was deteriorated, and blisters appeared (Figure 1). The patient again seek medical attention.

**Table 1:** Results of the Blood Tests upon Second Visit

Parameter	Patient value	Reference value
WBC count	19X 10 <sup>3</sup>	4.50-11.00 X 10 <sup>3</sup> /μL
Hemoglobin	10	12.0-15.7 g/dL
Platelet count	200 X 10 <sup>3</sup>	140-440 X 10 <sup>3</sup> /μL
Creatinine	1.7	0.50-1.50 mg/dL
Erythrocyte Sedimentation Rate (ESR)	150	0 to 29 mm/hr
C-reactive protein	+ve	0.8-1.0 mg/dL

The patient started on a broad-spectrum antibiotics (flagyl and vancomycin). CT scan of the injured leg excluded necrotizing fasciitis and osteomyelitis, the result

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**Figure 1.** **A.** Erythema of skin with area of ulceration covered partially by dark necrotic crusty tissue (eschar formation). **B.** Erythema with sub-epidermal bullous formation which is oozing serous fluid with adjacent ulcer covered partially by dark necrotic tissue (eschar formation). **C & D.** Erythema with associated bullous formation with early necrotic changes at the edges. Crust formations at viable skin

showed normal foot and ankle. Moreover, blood culture and methicillin-resistant *Staphylococcus aureus* (MRSA) screen were ordered with negative result. After one week, skin necrosis developed with blisters with formation of green pus. Previous antibiotics were discontinued and Tinam 4th generation (Cephalosporin) was administered. The case started to improve, however with persistent swelling, redness, discharge, and pain. Tinam was continued for another week and notable progress was observed. After 14 days, the patient was discharged with advice to seek for local wound care and using the prescribed antibiotics.

## Discussion

*Loxosceles* is a genus of recluse spiders known as fiddlebacks or violin spiders. This genus includes about 133 species, the most common ones are *L. laeta*, *L. reclusa*, and *L. rufescens* (3). The species *laeta* is known as the Chilean recluse spider and it is native to South America, however it has been introduced into several new areas (4). *Loxosceles reclusa* commonly known as the brown recluse spider have a global distribution (3). The third species, *rufescens* is known to occur in the Mediterranean region, but now recorded outside its native range and considered one of the most invasive spiders' species in the world. In Jordan, only *L. rufescens* was recorded (5).

The spiders of Jordan were studied with 57 species recorded (5, 6). In the current case, we could not confirm the

species of the spider. The patient did not bring the specimen to the hospital, and just mentioned that the spider was brown. So, the bite presumptively identified as a bite of *Loxosceles* spider.

*Loxosceles* spider bite presents four clinical categories (7); (i) Unremarkable (restricted localized damage and the lesion spontaneously heals), (ii) Mild (redness, itching, and small lesion spontaneously heals) (iii) Dermonecrotic (necrotic skin lesion), (iv) Systemic or viscerocutaneous (impacting the circulatory system, extremely uncommon, and perhaps lethal). The current case can be considered Dermonecrotic as it includes severe cellulitis and tissue necrosis.

The necrotic wound-caused by the spider's bite arises because of the venom components. The venom of *Loxosceles* spiders contains several enzymes and biologically active compounds including phospholipase D, the major dermonecrotic factor (8). This *Loxosceles* venom enzyme modifies the membrane raft's structure, which activates a protease on the membrane. This will cause cell necrosis and proteolytic cleavage of cell surface proteins.

Presented is a case of a severe necrotic ulcer secondarily caused by a spider bite. *Loxosceles* bite frequently offers a diagnostic problem, unless the patient have the spider for accurate identification. In the current case, the patient saw a spider around the biting time. In a study included 111 cases of brown recluse spider bites, only 22 patients have seen a spider delivering a bite but without capturing the arachnid, moreover 78 patients were diagnosed completely on clinical manifestations (9).

Diagnosis solely depends on the clinical presentations (signs, symptoms) and the history of bite including observing or capturing the spider. Currently, there is no diagnostic test available commercially, but some laboratorial tests are in progress (10).

Symptoms of the recluse spider bite (loxoscelism) range from painless signs at the bite site, skin necrosis, and, less frequently, systemic effects. The pain begins within the first few hours and gets worse with erythema and pruritus (11). In our patient, the pain begun within the first hour. Moreover, a dusky, erythematous, ring-shaped area around the bite occurs 24 hours after the bite, and within 48–72 hours, it develops into an ischemic ulcer (11). Our case showed ischemic and necrotic ulcer after 48 hours (Figure 1). There have been instances where these ischemic ulcers have grown to a diameter of 30 cm, necessitating surgical debridement and, on rare occasions, skin grafts (9).

Moreover, the list of possible diagnoses for necrotic skin lesions is extensive and includes cellulitis, contact dermatitis, anthrax, tularemia, Lyme disease, herpes simplex infection, sporotrichosis, toxic epidermal necrolysis, pyogenic gangrenosum, pyoderma gangrenosum, ecthyma gangrenosum, vasculitis, vascular insufficiency, Martorell ulcers, diabetes, medication reactions, thermal burns, and Chagas disease (11, 12). The current case, however, had lived in the area for a long time and had not recently left the

country. She did not use any medications, have any recent contacts with illness, or have a history of immunological, endocrine, or rheumatologic disease. The patient had no history of methicillin-resistant *Staphylococcus aureus*, and laboratory test was negative. He had already finished two antibiotic treatments and showed no evidence of a persistent infection. There were no burns or injuries to the affected area. The lesions appeared during the summer, a time of increased *Loxosceles* activity. The likelihood of a mistake in this case is decreased by the clinical appearance and lack of other etiologies.

The severity of the spider bites symptoms depends on the quantity of venom injected, the victims' age, and how susceptible person is to the poison (highly allergic person). Steroids, dapson, antibiotics, hyperbaric oxygen therapy, conservative wound management, and scar repair are used to treat *loxosceles* spider bites (12). However, neither one of these treatments has been shown to be effective in helping infected persons recover. Most cutaneous wounds heal successfully with standard wound care.

The current report is the first study documenting spider bites in Jordan. More attention should be paid to loxoscelism in Jordan. Recently, several *loxosceles* bites were recorded with increasing frequency in the neighboring countries like Iraq, Saudi Arabia, and Turkey (13-15).

## Conclusion

In conclusion, diagnosis of *loxosceles* poisoning is not an easy task. The bite history should be considered if the patient reports the spider bite. In the current report, we presented a case of a 75-year-old female who developed sever dermonecrotic wound secondary to a recluse spider bite. The current case highlighted the difficulties of differentiation between loxoscelism and other necrotic soft tissue infections. Physicians should receive training to identify the bite of *loxosceles* based on epidemiological and clinical data available.

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## Conflict of Interest

All authors declare that they have no conflicts of interest

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