



Spider Bites in Libya

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Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

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ABSTRACT

Aims: To highlight signs and symptoms of suspected spider bites and to evaluate local and systemic manifestations to suspect the more prevalent type of spider bites if *Loxoscelism* or *Latrodectism*, also to widen knowledge of physicians about not well known disease in Libya.

Study Design: Prospective case- series study.

Place and Duration of Study: The study was performed in dermatology department of Zliten Medical Center, which is the largest and main governmental general hospital in Zliten city. The study period was 3 years started 1st Sept. 2017 and finished on 31th Aug. 2020.

Methodology: The study has included patients from all age groups; with spider bites, nevertheless the culprit spider was seen or not. The diagnosis in cases, who did not see spiders, was mainly clinical, with or without presence of dermal necrosis. The other involvement criteria were painless bite involving proximal covered extremities or trunk.

Results: Thirty eight patients were involved (32 females, and 6 males), the majority (76%) have not seen the culprit spider. The most frequently bitten sites of the body were proximal extremities and trunk.

Local skin necrosis was the main clinical features and was seen in 71% of patients, furthermore, the majority (76 %) had developed mild systemic symptoms like fever, headache, nausea.

Conclusion: Dermonecrosis is one of main features of spider bites in Libya, and mild systemic symptoms are common, while severe systemic symptoms or complications were not registered, that the most likely disease caused by spider bites in Libya seems to be *Loxoscelism*. Therefore, studies to identify the culprit spiders are mandatory.

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1. INTRODUCTION

Thousands of spider species are known worldwide, and about two hundred species are dangerous [1]. Spiders belong to arachnids, and related to scorpions, but their bites are usually result in a local cutaneous reaction. Most of the bites by genus *Loxosceles* Heineken & Lowe, 1832 (Araneae: Sicariidae), e.g. the brown recluse spider do not cause systemic serious complications, and cutaneous reactions start with erythema and then evolve into central vesicle or bulla and later develop necrosis.

On the other hand, the widow spider *Latrodectus* Walkenaer, 1805 (Araneae: Theridiidae) causes milder local reactions like erythema, edema, sweating, and piloerection, while the systemic symptoms are usually apparent as headache, nausea, severe abdominal pain, generalized and localized muscle spasms, and generalized excessive sweating [2,3,4].

Recluse *Loxosceles* Heineken & Lowe, 1832 and Black widow spider *Latrodectus* Walkenaer, 1805, are well known dangerous species with many other species.

Spider venoms contain many components like, proteins, peptides, polyamines, bioamines, free acids, glucose, free amino acids, inorganic ions [5].

In literature, there are many reports on the Mediterranean recluse spider, *Loxosceles rufescens* (Dufour, 1820), in countries of North Africa and Southern Europe [6,7,8,9-13].

Furthermore, there are many reports on dermonecrosis caused by recluse spiders in the Mediterranean region [9,14-17].

In Libya, brown recluse spider was not studied and researches about *Loxoscelism* or brown recluse spider was not found in literature. Although, suspected cutaneous *Loxoscelism* and its dermonecrosis is frequently seen in daily clinical practice. In this study we tried to focus the light on this not well known disease regarding the cause, either *Loxoscelism* or *Latrodectism*, and to highlight the seasonal variations, and its local and systemic symptoms.

2. METHODS AND MATERIALS

Patients with suspected spider bites were involved in this study, the patients were from

different ages and different sex, and all of them were from Zliten (North West of Libya). Zliten is a coastal city in north west of Libya with 289,000 people. The study was conducted over three years period. Study sheet was developed to collect data of patients, history, local and systemic clinical features, and their results of related investigations (Complete blood count, urea, and creatinine).

3. RESULTS

Thirty eight patients were enrolled in this study, the majority of patients were females (32 patients which represented 84% of total 38 patients).

The suspected spider bites were distributed all over the months of the year, although, the least frequent registered cases were in December and January, which are the coldest months in Libya.

In the majority of cases (76%), the culprit spiders were not seen or captured, only nine patients had seen the bitten spiders and most of them; eight (out of nine) of them (89%) had pain at the moment of spider bites, as well as six of them (represented 66%) had not developed necrosis, but local erythema, and only three of these definite cases developed necrosis.

The most frequent bitten sites of the body were proximal extremities and trunk, while the distal extremities were less frequent sites of the suspected spider bites (Fig. 1).

Regarding of pain during the bite, most of the patients had not experienced any pain, and in our study about 60% had overlooked the bite.

Necrosis was the main local pathological change and was registered in about 71% of all patients and most of them had not seen the culprit spider Fig. 2, Fig. 3, Fig. 4, Fig. 5.

Most of the patients have developed some of systemic symptoms (29 patients represented 76%) and these symptoms were fever, headache, generalized fatigability, muscle cramps, generalized erythema, dizziness, nausea and vomiting Fig. 6. Fortunately, no severe complications such as shock, hemolysis, renal insufficiency and disseminated intravascular coagulation have occurred.

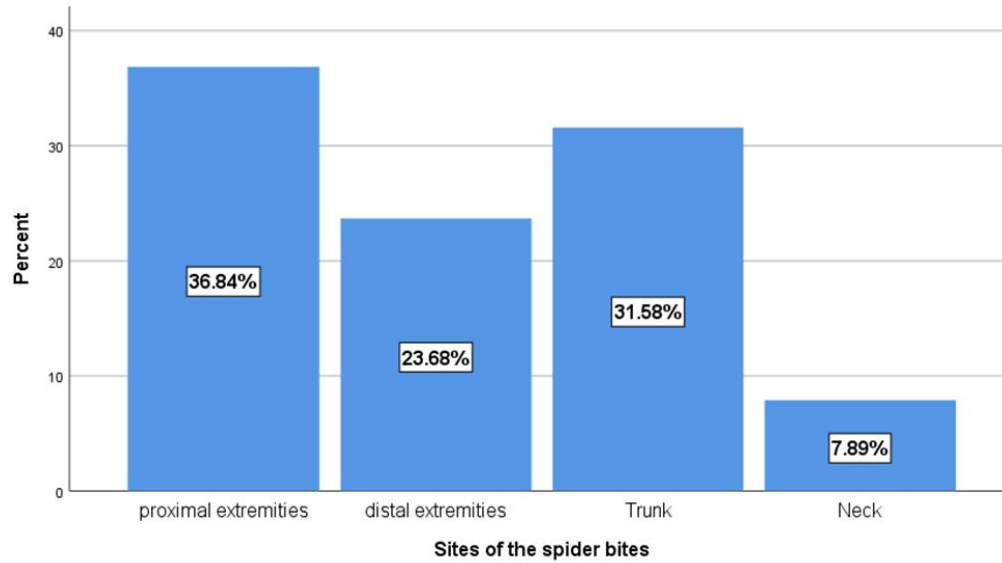


Fig. 1. Distribution of spider bites regarding body sites



Fig. 2. Necrosis 3 mm x 3 mm in size at Rt. arm, 4 days after suspected spider bite



Fig. 3. Necrosis 15 mm in diameter at abdominal wall few days after suspected spider bite



Fig. 4. Necrosis at thigh 13 mm x 13 mm in size surrounded with erythema, 4 days after confirmed spider bite



Fig. 5. Haemorrhagic bulla, 8 mm x 6 mm surrounded with erythema 6 cm x 8 cm at Lt. Leg few days after suspected spider bite

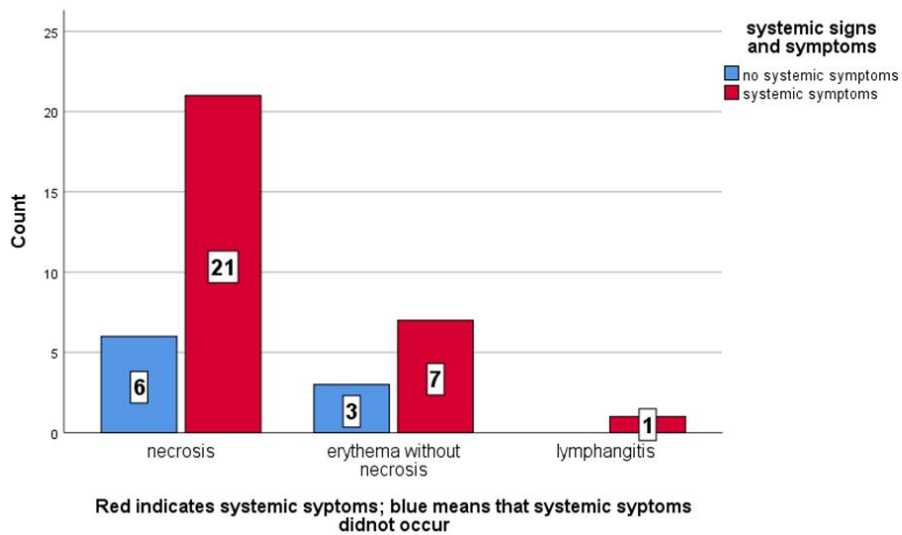


Fig. 6. Frequency of systemic symptoms in association with local reactions

4. DISCUSSION

Dermonecrosis could be caused by *Loxosceles rufescens*, which is one of the most dangerous arachnid and presents in Mediterranean region [17]. The believe that spider bites produce necrotic ulcer was firstly prescribed in 1909 by Shamus [18].

Frequently, the spider was not collected for proper identification and diagnosis. In this study only 9 patients (23%) of total patients (38) had seen the spider during occurrence of bite, and in other studies less than 10% have collected the culprit spider, this means that in the majority of suspected spider bites, the diagnosis was unreliable, and spiders were unavailable for proper identification and diagnosis [19,20].

The majority of bites of *Loxosceles reclusa* Gertsch & Mulaik, 1940 do not cause serious complications, the pain at the site of bite starts several hours after the bite, local reaction may end with hemorrhagic bulla and necrosis [21,22]. Our patients, with suspected cutaneous *Loxoscelism*, had developed necrosis in 71 % of total number of enrolled patients. Although, only few patients; who developed necrosis; only 3 out 27 patients (11%) had seen the bitten spider.

This result is similar to what was found in one study performed in USA, in that study only 10% of cases with suspected arachnidism, the spider was available for identification [20].

In this study, the systemic manifestation had occurred in the majority, but no serious complications had occurred and the systemic symptoms were mild. This finding was similar to studied patients in Switzerland, in them no serious reaction or complications like thrombocytopenia and hemolytic anemia were registered [22].

Our study showed that most of bites occurred at trunk, and proximal extremities, this similar to other studies [23,24].

The least frequency of suspected spider bites; in Libya; had occurred in December and January and this compatible with reports from other geographical parts of world. Where spiders seem to be active in summer months [14,23,24].

There were reports from different countries in the Mediterranean region on spider bites with

Loxosceles rufescens and development of skin necrosis at the sites of unnoticed bites. In these reports the culprit spider was *Loxosceles rufescens* which cause cutaneous *Loxoscelism*, however, *Loxoscelism* in these areas might be not well documented that it is not well known disease [9,14-17]. As well as there was report on Mediterranean recluse spider (*Loxosceles rufescens*, dufour) from Washington (USA) with manifestations similar to the bite of *Loxosceles reclusa* [25].

In this study, the size of necrosis was from 2 mm up to 60 mm with tendency to be less than 36 mm in the majority of patients who developed necrosis.

Dermonecrosis of necrotic arachnidism is suspected to occur due to the effects of sphingomyelinase [9]. Few reported spider bites were documented in countries of Europe and Mediterranean basin countries like Italy, Greece, Turkey and France [17].

In Zliten medical center, the patients were treated locally at the site of bite with topical cream containing steroid and Antibiotics. The main therapy was with low to moderate dose of systemic steroids (Prednisolone) 20- 30 mg oral daily dose for 1 week duration as well as short course of systemic penicillinase resistant penicillin, and oral antihistamine. For patients with dermonecrosis, Dapsone tablets (100mg daily) was added as an oral treatment. Generally, the outcome was very good with fast relief of systemic symptoms and slowly healing of skin ulceration at the site of spider bite.

5. CONCLUSION

Laboratory confirmation through serological test is need to confirm diagnosis as well as to choose proper Antivenom and suitable treatment regimen. However, identification of poisons species will necessitate the cooperation between physicians and entomologists.

CONSENT

It is not applicable.

ETHICAL APPROVAL

The study design and protocols were reviewed and approved by Ethical Committee of Zliten Medical Center.

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COMPETING INTERESTS

Author has declared that no competing interests exist.

REFERENCES

1. Diaz JH. The global epidemiology, syndromic classification, management, and prevention of spider bites. *The American Journal of Tropical Medicine and Hygiene*. 2004;71(2):239-250.
2. Lotz L. An update on the spider genus *Loxosceles* (Araneae: Sicariidae) in the Afrotropical region, with description of seven new species. *Zootaxa*. 2017; 4341(4):475-494.
3. Ali HB, Fadhil HY, Baker IM. Taxonomic and molecular study of the widow spider genus *Latrodectus* Walckenaer, 1805 (Araneae: Theridiidae) in Iraq. *Pakistan Entomologist*. 2018;40(1):25-29.
4. Browning J. *Dermatology* Edited by Jean L. Bologna Julie V. Schaffer Lorenzo Cerroni Fourth edition China: Elsevier, 2018, ISBN 978-0-7020-6275-9. *Pediatric Dermatology*. 2018;35(2):289-289.
5. BREENE RG. Common names of Arachnids., American Tarantula Society: New Mexico; 2003.
6. Dufour L. Descriptions de cinq arachnides nouvelles. *Annales générales des sciences physiques*. 1820;5:198-209.
7. Hula V, Niedobová J. The Mediterranean Recluse Spider *Loxosceles rufescens* (Dufour, 1820): A new invasive for Socotra Island (Yemen). *Rendiconti Lincei. Scienze Fisiche e Naturali*. 2020;31(3):719-723.
8. Amr Z. Arthropods of medical importance in Jordan. *Jordan Med J*. 1988;22(2):125-137.
9. Yigit N, et al. *Loxosceles* spider bite in Turkey (*Loxosceles rufescens*, Sicariidae, Araneae). *Journal of Venomous Animals and Toxins including Tropical Diseases*. 2008;14(1):178-187.
10. Blick T, et al., Checkliste der Spinnen Mitteleuropas. Checklist of the spiders of Central Europe.(Arachnida: Araneae). Version 1. Dezember. Internet; 2004. Available:<http://www.arages.de/checklist.html>
11. Cohen N, et al. Dermonecrotic loxoscelism in the Mediterranean region. *Journal of Toxicology: Cutaneous and Ocular Toxicology*. 1999;18(1):75-83.
12. Stefanidou M, et al. Necrotic arachnidism from *Loxosceles rufescens* harboured in Crete, Greece. *Journal of the European Academy of Dermatology and Venereology: JEADV*. 2006;20(4):486-487.
13. Ori M, Ikeda H. Spider venoms and spider toxins. *Journal of Toxicology: Toxin Reviews*. 1998;17(3):405-426.
14. Cachia M, et al. Rare case of dermonecrosis caused by a recluse spider bite in Europe. *Case Reports*. 2016: bcr2016215832.
15. Karimi K, et al. Acute cutaneous necrosis: A guide to early diagnosis and treatment. *Journal of Cutaneous Medicine and Surgery*. 2017;21(5):425-437.
16. Coutinho I, et al. Cutaneous loxoscelism in Portugal: a rare cause of dermonecrosis. *Acta medica portuguesa*, 2014;27(5):654-657.
17. Rubenstein E, et al. Documented cutaneous loxoscelism in the south of France: an unrecognized condition causing delay in diagnosis. *Infection*. 2016;44(3): 383-387.
18. Schmaus L. Case of arachnidism (spider bite). *Journal of the American Medical Association*. 1929;92(15):1265-1266.
19. Krywko DM, Gomez HF. Detection of *Loxosceles* species venom in dermal lesions: A comparison of 4 venom recovery methods. *Annals of Emergency Medicine*. 2002;39(5):475-480.
20. Malaque CM, et al. Clinical picture and laboratorial evaluation in human loxoscelism. *Toxicon*. 2011;58(8):664-671.
21. Gertsch WJ, Mulaik S. The spiders of Texas. 1. *Bulletin of the AMNH*. 1940;77, article 6.
22. Gnädinger M, et al. Swiss prospective study on spider bites. *Swiss medical weekly*. 2013;143:w13877.
23. Gremski LH, et al., Recent advances in the understanding of brown spider venoms: From the biology of spiders to the molecular mechanisms of toxins. *Toxicon*. 2014;83:91-120.
24. Dyachenko P, Ziv M, Rozenman D. Epidemiological and clinical manifestations

- of patients hospitalized with brown recluse spider bite. Journal of the European Academy of Dermatology and Venereology. 2006;20(9):1121-1125.
25. Greene A, et al., The Mediterranean Recluse Spider, *Loxosceles rufescens* (Dufour): An Abundant but Cryptic Inhabitant of Deep Infrastructure in the Washington, D.C. Area (Arachnida: Araneae: Sicariidae). American Entomologist. 2009;55(3):158-169.

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