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Cutaneous Loxoscelism in a Paediatric Patient: A Case Presentation

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Case Report

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ABSTRACT

Introduction: We present the case of a 5-year-old schoolboy with a cutaneous loxoscelism. Loxoscelism is defined as the clinical picture of poisoning after the bite of a spider of the genus Loxosceles. There are two well-defined medical variants: cutaneous and systemic loxoscelism, both of which are of great medical interest because of the clinical manifestations triggered by the potential cytotoxic poison of the loxosceles spider.
Objectives: The aim of this publication is to report a clinical case of cutaneous loxoscelism in a pediatric patient, accompanied by an extensive review of the subject to explain its characteristics. clinical aspects, appropriate management, expected evolution, as well as its prognosis.
Conclusions: Cutaneous loxoscelism should be suspected when there is evidence of a dermonecrotic lesion or, when photographic or in-person evidence of the spider is shown.

Keywords: Paediatric patient; cutaneous loxoscelism; swollen.

1. INTRODUCTION

Loxoscelism and dermonecrotic arachnoidism are two terms used to describe skin lesions and various clinical manifestations caused by venom injected after a bite by members of the genus Loxosceles [1].

The genus Loxosceles is currently made up of approximately 133 species worldwide and is distributed mainly in Central and North America (101 species), followed by Africa (22 species), Europe (8 species) and Asia (2 species), Mexico has a great diversity with 39 species (29.32%). [2].

The most famous being Loxosceles reclusa, commonly known as "fiddler" spiders, or "corner spiders", represent one of the main genera responsible for serious medical problems for humans worldwide. [3].

These spiders cohabit with humans in buildings and homes, usually in dry and dark places, they can be found in cracks in furniture, clothing, items stored in cardboard boxes, and inside closets [4,5].

They are considered important due to their potential dermonecrotic venom. The action of the venom is proteolytic and necrotic as it dissolves tissues. The poison is composed of protein molecules with enzymatic toxic activity such as phospholipases, metalloproteases, serine proteases, sphingomyelinase, hyaluronidases, serine protease inhibitors, and peptides classified as cystine knot inhibitors [6].

Loxoscelism is presented as: cutaneous loxoscelism (LC) and visceral cutaneous loxoscelism (LCV) also called systemic loxoscelism, even other authors also call it cutaneous-viscero-hemolytic loxoscelism [7]. LC is the most frequent form (83.3%) and LCV (16%) is the most severe.

LC: after a spider bite, there may be a stabbing sensation and pain of little intensity. The beginning is characterized by burning pain of varying intensity. In most cases can evolve in 24-36 hours and develop the characteristic "marble or livedoid plaque" (interspersed areas of pallor and ecchymosis). At the fifth day occurs the formation of a necrotic eschar, which begins to detach from the edges and after its fall reveals an ulcer with a granulation background that takes several months to heal and may require reconstructive surgery [8].

LCV: is usually triggered between 6 and 24 hours after the bite and less frequent 48 hours late. Is accompanied by systemic involvement characterized by chills, fever, hematuria, hemoglobinuria, jaundice, increase in indirect bilirubin, lactic dehydrogenase (LDH), and decrease in hematocrit because of the hemolytic effect of the poison. Severe cases can progress to acute renal failure, the main cause of death in loxoscelism [9,10].

Reclusmyn®; is a polyvalent phaboterapic modified by enzymatic digestion and free of albumin derived from horse plasma hyperimmunized with recombinant necrotoxins of the species L. reclusa, L. boneti, and L. laeta. The recommended dose varies according to the age of the patient, the type of loxoscelism and the severity of it. In the company's management indications, it is recommended in the first 24 hours and up to seven days after the bite. [11,12,13].

2. CASE REPORT

5-year-old male patient, originally from Irapuato, Guanajuato, Mexico, was admitted to the emergency department of our Hospital (HGZ/MF2, IMSS) with a history of having suffered a spider bite 1 day earlier during the night, suspected by both parents for having found 2 arachnids in the peripheries of the patient's bed. Starting in the morning after with local irritation and pruritus, unquantified fever and hyporexia, vomiting of gastro-food content on 3 occasions, so she went to a doctor in her locality, who prescribed ceftriaxone and dexamethasone. She did not notice improvement, adding hyperemia, and ulceration, which is why he was referred to this hospital. (FI 22/07/2023)

Conscious, VS: Heart rate (HR) 79x', Respiratory rate (RR) 22x', 37°C, Blood pressure 100/65 mmHg the patient reported pain in the site and have a hyperemic lesion, 25 cm in diameter, with central ulceration with necrotic plaque, with a 10x2 cm central livedoid lesion in the bite region (Fig. 1A).

Treatment based on intravenous hydration at 1800 ml/m2sc, triple antimicrobial regimen (Ceftriaxone, clindamycin, and doxycycline), Dapsone, diphenhydramine, analgesics based on metamizole sodium, tramadol, usual pediatric doses, as well as 2 doses of Reclusmyn were initiated, however, it was administered 2 days after admission (Fig. 1B).

Dermatology described the lesion as an erythematous-edematous plaque measuring 17x12.5 centimeters with necrotic eschar and epidermolysis zones in its center of 5x2 cm. (Fig. 1C). With a more stable evolution, the control of laboratories with nothing to highlight, except a decrease in platelets to 113x103/µL, is suspected to be due to consumption. There is a decrease in C Reactive Protein (CRP) from 12.5 to 5.3. According to the literature review, it was decided to adjust the treatment by remaining with a double antimicrobial regimen (Ceftriaxone and clindamycin), Dapson was discontinued, and added methylprednisolone (15 mg/kg/day), analgesics based on metamizole sodium, tramadol, as well as Enoxaparin, and Vitamin K were added with the application of two bottles of Reclusmyn (Fig. 1D).

His evolution is towards improvement, having completed 10 effective days of antibiotic therapy, it was decided to discharge him home and subsequent referral for plastic and reconstructive surgery.

Table 1. SR: Not Available; No reagent

Laboratory	22/07/23	23/07/23	24/07/23	25/07/23	26/07/23	28/07/23
Hb/Hcto (g/dl/ %)	13.4/35	12.9/34.2	12.5/33	11.9/31.8	12/32.3	12.2/33.4
Leukocytes (103/µL)	16,300	15,800	16,400	11.900	12,700	16,300
Neutrophils/ Lymphocytes (%)	88.8/1.4	90.4/2.9	88.8/4.8	54/42	43.3/43.3	31.8/52.4
Platelets (103/µL)	214,000	162,000	113,000	65,000	84,000	217,000
TP/TTP/INR (sec/sec/Unit)	17.4/31.1/1.38	SR	SR	SR	SR	12.3/42.3/1.13
Urea/BUN/Creatinina (mg/dl)	81.32/38/1.1	83.46/39/0.9	49/22/0.6	SR/SR/0.6	SR/SR/SR	SR/SR/SR
CPK/CPKMB (U/ L)	38/17	20/3	20/SR	SR	SR	92/23
PCR/VSG (pc/dl)	12.5/SR	SR	SR	SR	SR	SR
Na/K/CL/(mmol/l)/Ca (mg/dl)	124/3.6/99/8.2	SR	SR	137/3.8/109/7.9	SR	136/3.8/103/8.5
TGO/TGP (U/l)	SR	50/50	40/29	SR	SR	38/39
BT/BD/BI (mg/dl)	SR	0.7/0.2/0.5	0.8/.06/0.2	SR/0.2/SR	SR	0.3/0.2/0.1
DHL/FA (U/L)	420/SR	294/160	297/143	SR	SR	233/SR
Albumina (mg/dl) /Globulina (g/dl)	SR	3.1/2.2	SR	SR	SR	SR
Dimero (U/L)/ Fibrinógeno (mg/dL)	SR	SR	SR	SR	SR	0.85/241

Hb: hemoglobin, Hcto: hematocrit, g:gram, mg:miligram, dl:deciliter, PT:prothrombin time, PTT: partial thromboplastin time, INR:international normalized index, seg: seconds, CPK: creatine phosphokinase test, CPR: C reactive protein, VSG: erythrocyte sedimentation rate, Na: Sodium, K: potassium, Cl: chlorine, ALT: alanine transaminase, AST: aspartate aminotrasferase, BT/BD/BI: total, direct, indirect bilirubin, DHL: lactic dehydrogenase, ALP: alkaline phosphatase

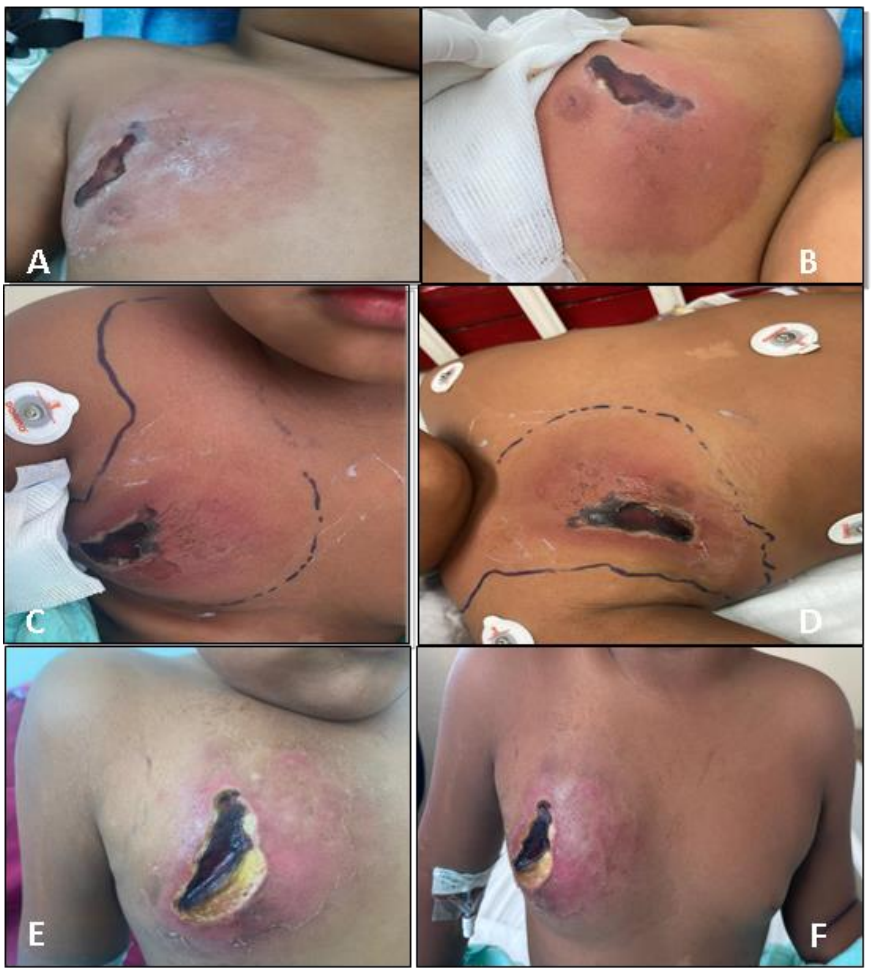

Fig. 1. Clinical evolution A On admission, B. After 12 hours C. After 72 hours of evolution, D. At 86 hours, E. On its ninth day, the patient presented with necrotic eschar and exposure of the perilesional subcutaneous tissue F. Upon discharge

3. DISCUSSION

It was not possible to make the confirmatory or biochemical diagnosis, nor to demonstrate the species of the aggressor spider, however the clinical evolution of our patient agrees with a case of cutaneous loxoscelism since most of the cases generated by spiders of the genus Loxosceles, the spider and its bite go unnoticed, being difficult to identify, mainly because it is a predominantly nocturnal event, in this case the report given by the relatives according to the anatomical characteristics of the spiders found at home agree with the anatomical characteristics of the "violinist" spider as it is known in this region of the country. In addition, regarding the evolution of our patient, the most common symptoms reported in the pediatric age were fever, pain, pruritus at the site of the bite, starting later with the three characteristic phases of the lesion presenting; a peripheral vasodilation zone, an intermediate ischemic zone, and a central necrotic zone, (red, white, and blue, also called in the French flag) of a "lividoid aspect".

Our case was associated with elevation of acute phase reactants, however, it never presented characteristic symptoms or biochemical profile compatible with systemic loxoscelism, he did not present data of disseminated intravascular coagulation.

We can see that this patient meets all the clinical characteristics to suspect a case of loxoscelism, at the biochemical level it is only worth highlighting the elevation of CRP (C reactive protein) , DHL (lactic dehydrogenase), as well as the thrombocytopenia, however since our hospital operates as a second level of care, several tests were missing, including D-Dimer as

well as a confirmatory ELISA (enzyme -linked immunoassay) test, the latter is not within reach in the laboratories of the State, without being able to reach the confirmatory biochemical diagnosis.

A variety of treatments have been proposed for both cutaneous loxoscelism and systemic loxoscelism, focusing on the management of dermocutaneous loxoscelism. According to the degree of severity or cutaneous involvement, exemplifying the case of our patient where the cutaneous involvement was moderate, the use of antihistamines, and steroids could be considered, as well as the use of dapsone could be considered since it has been used in cases of loxoscelism with great necrotic activity with its limitations because of her great adverse effects. In this case, its use was limited to a few doses with no adverse effects.

Regarding the extensive damage to the skin, our literature review shows washing the wound, and analgesics should be applied, surgical debridement of the wound should be postponed until 8 to 10 weeks later.

Regarding the use of Reclusmyn, it had limitations in our patient, since it was applied 72 hrs. after the spider bite, its effectiveness being mostly demonstrated in the first 24 hours in dermonecrotic conditions. Its use is more studied and with a higher degree of efficacy for systemic loxoscelism.

4. CONCLUSIONS

Cutaneous loxoscelism should be suspected when there is evidence of a dermonecrotic lesion or, when photographic or in-person evidence of the spider is shown. The patient complied with the clinical characteristics of mnemonics not recluse (numerous occurrence timing, red center elevated, chronic, large, ulcerates too early, swollen, and exudative). We conclude the need for further training for suspected diagnosis and accurate treatment according to the evidence shown.

CONSENT

Data Confidentiality: We followed our workplace's protocols regarding the publication of patient data.

Right to privacy and informed consent: The authors have obtained written informed consent from the patients or subjects mentioned in the article. The corresponding author has this document.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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