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Case Report

Necrotic loxoscelism in lower limb and reconstruction with skin autograft

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ABSTRACT

Loxesceles are small spiders, from 9 to 25 mm, with a dark brown spot on the dorsal part in the shape of an inverted violin. They are common in northwestern Mexico and can live at temperatures of 8 to 40°C. These spiders are considered of medical importance because their venom is dermonecrotic, with proteolytic and necrotic action, which is generated in two apocrine glands. The cutaneous clinical picture is the most frequent, with edema, erythema and ischemia that tends to evolve to ulceration and deep necrosis. The key to treatment is early debridement to avoid complications. We presented the case of a 57-year-old female patient who developed an inflammatory condition secondary to a fiddler spider bite involving the left lower extremity. Her evolution to necrosis and late diagnosis required surgical debridement and use of negative pressure therapy (VAC), followed by harvesting and placement of partial thickness skin autograft, obtaining a successful aesthetic and functional result.

Keywords: Spider bite, Loxoscelism, Vacuum therapy, Skin autograft, Reconstruction, Skin autografting

INTRODUCTION

Spiders of the genus Loxosceles belong to the family Sicariidae, suborder Araneomorphae, order Araneae. Worldwide, 139 species are known, of which 40 species have been described in Mexico (38 native and two introduced: *L. reclusa* and *L. rufescens*).[1] Loxesceles are small spiders, from 9 to 25 mm, with a dark brown spot on the dorsal part in the form of an inverted violin. They are common in northwestern Mexico and can live at temperatures from 8 to 40°C. They are nocturnal and are found in the northwestern part of the country. They are nocturnal and can be found in little-traveled spaces, behind or under objects of little use. Bites by *Loxosceles reclusae* (fiddler or brown spider) are characterized by the development of vasculitis associated with necrosis, and are the most common in our environment.[2]

These spiders are considered of medical importance because their venom is dermonecrotic, with proteolytic and necrotic action, which is generated in two apocrine glands. It is composed of hyaluronidases, esterases, proteases and DNases, mainly phospholipase D (sphingomyelinase D), responsible for the necrotic and hemolytic process. Loxoscelism is the term used to describe the clinical manifestations caused by its toxicity when it is inoculated, through the bite, in attacked persons.[3] The clinical expression may be cutaneous or systemic, since the intensity of the reaction depends on the amount of venom inoculated, as well as on the susceptibility of the person to the components. The cutaneous clinical picture is the most frequent, in 80% of the cases. It presents with edema, erythema and ischemia that tends to evolve into ulceration and deep, but localized, necrosis.[4]

CASE REPORT

A 57-year-old female patient with a history of type II diabetes mellitus and systemic arterial hypertension. She went to the emergency department of our hospital unit for evaluation due to a fiddler spider bite in the left lower limb of one-month evolution. On admission she reported burning pain in the left pelvic limb, later she reported that she developed edema, hyperemia and was accompanied by fever and chills. On physical examination, the left pelvic limb was found to have ulcers with necrotic tissue in the posterior portion of the leg at the proximal, middle and distal levels. During his evaluation he presented with inability to ambulate. It was decided to admit her to hospital and she was started on a double antibiotic therapy and analgesics, glycemic control was maintained with insulin, and arterial hypertension was kept under control with losartan. A culture of the lesion was taken and preoperative assessments were requested for initial surgical management.

Prior to the complete surgical protocol, the first lavage plus surgical debridement of all necrotic and purulent tissue was performed, the negative pressure assisted closure system (VAC) was placed, the negative pressure therapy was maintained for 4 days and was withdrawn for evaluation, obtaining satisfactory results. Subsequently, three subsequent surgical washings were performed, every fourth day with replacement and placement of the VAC system, achieving partial wound healing and obtaining adequate granulation tissue at 70% in the lesion (Figure 1).

Figure 1: Lesion after surgical debridement and placement of VAC system@.

Due to her clinical improvement it was decided to discharge her home, with antibiotic therapy and analgesics. She was instructed to continue her medical treatment for metabolic control, since she presented an adequate control during her hospital stay, rest of the limb was also indicated, cures with soap and water every third day with placement of hydrocolloid dressings, which were provided to the patient. She was given an appointment to the wound clinic of our hospital unit every week for follow-up and monitoring. In her follow-up appointments at the wound clinic of our center, exhaustive cures were performed with soap and water and placement of hydrocolloid dressings at the site of granulation tissue, the change of hydrocolloid patches was continued every 6 to 7 days. Subsequently, due to the good evolution of the patient, with free data of wound infection, with viable granulation tissue for the placement of a graft, it was decided to admit her to hospitalization for her definitive surgical resolution.

After a complete surgical protocol and informed consent, a surgical cleaning and debridement of the lesion was performed on the left lower extremity by means of the hydrosurgery system (Versajet), more viable tissue was obtained and covered with hydrocolloid patches. Subsequently, four days later, skin autografting was performed; partial thickness graft was taken with Padgett type dermatome in anterior and lateral face of the left thigh, 30×15 cm each, and was applied in the affected areas, fixed with 3-0 nylon and covered with organdil and bandage, the procedure was terminated without eventualities (Figure 2).

Rifocyn was applied every 24 hours in the region where the graft was taken. The grafted area was kept under surveillance and 5 days later it was discovered, an integration of 80% was observed, so it was decided to discharge her home with follow-up by the outpatient clinic. The patient continued under postoperative surveillance for one month with favorable evolution (Figure 3).

Figure 2: Skin autograft harvest and placement.

Figure 3: Post-operative one month, with favorable evolution.

DISCUSSION

Supportive treatment of spider bites includes asepsis of the lesion to avoid complications of infection and application of cold compresses, tetanus prophylaxis, use of mild analgesics, corticosteroids; and in severe cases with systemic involvement, in-hospital management is required, use of antihistamines and prednisone and/or dapsone or other antibiotics, none of them specific.[5] Regarding the use of antiloxosceles antidotes, good efficacy has been described from 12 to 36 h after the attack; after this time, their use is controversial and their efficacy is doubtful. It is important to highlight, in the case of our patient, the late diagnosis, which contributed to the severity of the lesión.[6]

Leg wounds represent a reconstructive challenge, especially the more distal they are located, because the skin there is less elastic and there is less subcutaneous and muscular tissue surrounding the bones.[7] The VAC system consists of the application of a bacteriostatic sponge over the wound, covered by a sterile adhesive seal around it, combined with a subatmospheric pressure cycle. With this method, circulation in the treated area is increased fourfold, increasing the rate of granulation tissue formation, decreasing the bacterial load and improving flap survival by removing excess wound exudate and reducing edema. Negative pressure therapy, by improving circulation to the treated area, increases granulation tissue formation, promotes decreased bacterial load and improves flap survival and graft integration.[8]

The simultaneous application of this therapy to medical and surgical treatment greatly facilitated an adequate evolution of the lesion, allowing the subsequent reconstruction of the defect created to be an elective procedure in a clinically more stable patient.[9] Graft is defined as a unit of tissue used as a covering for anatomic defects, which is separated from its vascular supply and requires the formation of a new one in the recipient bed. Skin, fat, tendon, cartilage, cartilage, bone tissue, nerve and fascia alone or in combination can be transferred as a graft.[10] Partial-thickness grafts can be taken with electric, drum or manual dermatomes.

Some skin preparations facilitate graft harvesting, such as subcutaneous infiltration of saline solution with epinephrine, especially on bony surfaces, as well as lubrication of the donor area with petroleum jelly ointment or sterile solution (reduces friction). The donor site is covered with dressings made of materials that keep the wound moist. Whenever the amount of graft taken is excessive, it is recommended to autograft the donor site with the remaining graft.[11]

CONCLUSION

It is very important to keep in mind this type of ailments and rule out differential diagnosis, for which a detailed anamnesis should be performed. Venomous spider bites can be of variable severity, so the patient should be closely monitored. Ulcerative and necrotic lesions caused by spider bites are a rare but serious condition. Early and extensive surgical debridement of the affected area is the key to treatment, thus reducing the mortality rate. VAC therapy facilitates treatment by allowing reconstruction to be an elective procedure in a more stable patient. Skin grafts continue to be the ideal management for covering areas without excessive damage or deeper areas with exposure of neurovascular or osseous structures.

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