
CLINICAL NOTE

Cutaneous loxoscelism

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None

Loxoscelism is a toxic disease produced by the poison inoculated through the bite of a spider belonging to the gender *Loxosceles* ("brown spider" or "corner spider"). This clinical condition may appear under two different clinical forms: cutaneous loxoscelism and viscerocutaneous loxoscelism. In Spain, the species *Loxosceles rufescens* has been involved in two cases of cutaneous loxoscelism but not in cases of viscerocutaneous loxoscelism, a much more severe and potentially fatal disease. The cutaneous loxoscelism begins with a burning and stinging sensation, which changes gradually either to an edematous form with intense pain and edema, with better prognosis, or to a more severe form with necrosis, as occurred in the present case, which finally developed dry gangrene and required the amputation of a finger. Usually, the diagnosis is clinical. The treatment includes analgesic and antihistaminic drugs, steroid medication, broad-spectrum antibiotics and dapsone in some of the more severe. The administration of the serum antivenin is not recommended in our country. [Emergencias 2008; 20: 64-67]

Key words: Loxoscelism. Insect and arachnid stings.

Introduction

Spiders are prevalent on the Iberian Peninsula, especially in rural areas, and many species have effective poisons, although are very infrequently the cause of relevant pathogenicity. The sudden onset of a dermal necrotic lesion following a bite or similar symptoms should lead to suspicion of the involvement of a number of species of arachnids as the aetiological grounds of such symptoms. Among the species with effective poison, in Spain the bite by *Loxosceles rufescens*¹ may be considered as the causal agent of cutaneous loxoscelism, a highly infrequent but potentially serious set of symptoms, detailed below.

Clinical case

A 35-year-old female smoker of 15 packs/year with a history of extrinsic asthma and allergy upon contact with flour presented at the emergency services of our hospital with oedema and pain in the left hand, with sudden onset at dawn, initially with pruritus. No traumatic instance was referred and no bite justify-

ing the symptoms was recalled. She did not present fever or additional systemic symptoms. The physical exploration showed severe cyanosis of the soft part of the 4th finger on the left hand (Figure 1) and intense oedema of the left hand and forearm with hypoesthesia of the 4th finger and preserved mobility. Peripheral pulse was preserved and symmetrical. Differential diagnosis of acrosyndrom (vasculitis, arteritis, autoimmune diseases or those affecting connective tissue), cellulitis or pyodermitis, thoracic opercular syndrome and spider bite, a haemogram was performed, including iron metabolism, thyroid hormones, proteinogram, complement, anticardiolipin antibodies, antinuclear antibodies, rheumatoid factor and 24-hour urine, arteriography of upper left limb, smear and culture of lesion and x-ray of thorax and cervical spine.

The haemogram showed leucocytosis with neutrophilia and a rise of the acute phase reactants. The remaining explorations, including the arteriography, were normal. The patient was admitted with the diagnosis by exclusion of spider bite, having started treatment with prostaglandin E1, low molecular weight heparin at therapeutic



Figure 1. Severe cyanosis of fleshy part of the 4th finger of the left hand is observed.



Figure 2. Necrotic aspect of the 4th finger and serohaemorrhagic blebs at the base.



Figure 3. Fasciotomy.



Figure 4. Image of the 4th finger showing evolution of dry gangrene.

doses and broad-spectrum antibiotics. At 24 hours after admission the fourth finger exhibited a necrotic appearance with serohaemorrhagic blebs at the base (Figure 2), gradually increasing in size with increase in pain upon passive mobilization of the fingers with significant tense oedema on the reverse of the hand and forearm. Given the poor progress of the symptoms, decompression and cleansing of the hand was decided via a broad fasciotomy of the hand (Figure 3). Four days after the intervention the overall appearance of the hand had improved but the 4th finger was clearly necrotic and surgical intervention was decided once again to clean and amputate the 4th finger (Figure 4). The patient subsequently progressed well and was discharged. She is currently in rehabilitation with significant functional restriction. It is of note that shortly afterwards we had a similar case, a 51-year-old male living 20 km. away from the previous patient's town, who likewise failed to recall being bitten and who required hospital admission, although his good progress did not call for surgical intervention.

Discussion

Many spiders, almost all of which are poisonous, exist throughout the Mediterranean region, although only certain species are able to cause such a degree of human intoxication: *Loxosceles rufescens*, *Latrodectus tredecimguttatus* and *Lycosa tarantula*². Other species inhabiting our environment do not present any danger, although their bites can be painful. *Loxosceles rufescens* (Figure 5) belongs to the *Loxosceles* genre ("brown spiders" or "corner spiders") whose intoxication leads to necrotizing loxoscelism or arachnoidism, much more serious and potentially lethal when caused by the bites of the species *L. laetia* *L. reclusa*, present throughout America and Africa. These spiders (Figure 6) live in rural and urban domestic milieus and prefer dark corners where they weave large and irregular webs to trap flies and small insects on which they feed. These can be found in room corners, ceiling beams, cupboards or behind pictures. They are more active at night and are not at all aggressive, biting only



Figura 5. *Loxosceles rufescens*. Photograph taken from "<http://epi.minsal.cl/epi/html/Actualidad/loxoscelismo1.pdf>"



Figura 6. *Loxosceles rufescens*. Photograph taken from "http://www.pediatratria.cl/picaduras_arana.htm"

as a defence when trapped among bedding or clothing.

Loxoscelism typically presents a local lesion at the bite site, associated with oedematous or necrotic symptoms depending on the ischemic involvement of the area (cutaneous mode) and, less frequently, general involvement due to massive intravascular haemolysis (cutaneous-visceral mode)⁴. This is physiopathologically explained by the poison inoculated via the spider bite, by injection from its salivary glands via the chelifers. The poison is of a proteic nature and has cytotoxic, proteolytic and haemolytic action. It is known that the enzyme sphingomyelinase D is the main agent responsible for its destructive effects.

Cutaneous loxoscelism begins with a sensation like a violent burning sting or intense itching at the bite site, which becomes strong and increasing in pain within a few hours. There is a fast subsequent progression towards two possibilities: an

oedematous or a necrotizing symptomatology. In its oedematous form, which is more frequent when the face is affected, locoregional, hard, elastic, painful and extensive swelling appears that may deform the affected anatomical region, with no erythema or necrosis and often with a favourable outcome. In its necrotic form, which is much more painful than the former, between 24 to 48 hours after the bite, a violet patch with pale and haemorrhagic areas, that may contain sero-haemorrhagic blisters or vesicles, appears which may lead to dry gangrene, a slow-scarring ulcer or simple tissue removal^{2,6}. This evolution can last a fortnight or beyond. In Spain two cases of cutaneous loxoscelism have been published, both in its necrotic form. There is another much less frequent and much more serious form of loxoscelism that is the cutaneous-visceral form, with all the above-mentioned local symptoms and, within the first 24 hours, fever, general malaise, headache, vomiting, myalgia and subsequently haemolytic anaemia with jaundice, paleness, haemoglobinuria, haematuria and kidney failure, disseminated intravascular clotting and neurological alterations ranging from clouding of consciousness to coma that can eventually lead to death⁷. No case of cutaneous-visceral loxoscelism has been described to date in Spain, but in Latin American countries it is a frequent cause for consultation in emergency services and often with a fatal result, as in the case recorded in Chile with 8 deaths per year caused by loxoscelisms. The diagnosis of cutaneous loxoscelism is difficult to make given that often the spider or its bite remain unnoticed, the onset of symptoms is not immediate or some of the symptoms are non-specific. There is no special test that can help confirm the diagnosis, which is clinical. Immunospecific tests such as ELISA have been developed to detect circulating and on site poison, but it is not yet routinely used in clinical practice.

The differential diagnosis in the case of cutaneous loxoscelism must be made with other arachnid or insect bites, herpes simplex, herpes zoster, erysipelas, anthrax, cutaneous lupus erythematosus, angioneurotic oedema and vasculitis⁵. The insects and/or arachnids that produce skin lesions are: spiders, of which only three poisonous species exist in Spain (*Loxosceles rufescens* – brown, recluse or corner spider–, *Latrodectus tenebrosus* –black widow– *Lycosa tarentula* –tarantula–), scorpions, ticks, centipede, dipterans (flies and mosquitoes), lepidoptera (caterpillars), hemiptera (bedbugs), syphonaptera (fleas) and Hymenoptera (ants, wasps and bees). The *Latrodectus* bite is characterised by a lack of local

symptoms with a small red wine stain; after 10 to 60 minutes local intense pain appears together with significant systemic neurotoxicity. The *Lycosa tarentula* produces a bite which, though painful, only affects the epidermis in a small superficial necrotic area². The yellow scorpion produces an erythematous papule around a necrotic point and surrounding oedema with intense pain radiating along the entire limb, and the black scorpion produces an erythematous papule, pain, oedema and ecchymotic blisters within. The remaining insects produce cutaneous lesions that could rarely be confused with those discussed herein. The recommended treatment for cases of cutaneous loxoscelism is as follows: rest, application of cold on the site (both steps often prove to be enough in most cases in our country), intravenous antihistamines, systemic corticoids, antibiotics, tetanus injection, analgesics and Dapsone (the many serious systemic side effects of this drug make it only recommendable in particularly serious cases). Surgical treatment of a dermonecrotic lesion must be delayed for at least one week since the date of the bite, as immediate scarectomy increases morbidity^{1,10}. Given the reduction in total thickness, definitive surgical treatment often involves covering the area with a laminar skin graft or full flap, depending on the site and its size⁶. Antiloxosceles serum is an injectable solution of specific, purified and concentrated immunoglobulins, obtained from the serum of horses that are hyperimmunized against loxosceles poison. Adverse reactions are frequent, of an anaphylactic nature and occur within the first 24 hours after administration. It must be given before the 6th hour after the bite

incident and the dosage is of 1 to 5 ampoules under strict orders. Given the absence of visceral-cutaneous loxoscelism, its efficacy is doubtful and its use is not recommended in our country^{4,6}.

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Loxoscelismo cutáneo

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El loxoscelismo es un cuadro tóxico producido por el veneno que inoculan con su mordedura las arañas del género *Loxosceles* ("arañas pardas" o "del rincón"). Dicho cuadro puede presentarse bajo dos formas clínicas: loxoscelismo cutáneo y loxoscelismo cutáneo-visceral. En España se encuentra la especie *Loxosceles rufescens* a la que se le han atribuido dos casos de loxoscelismo cutáneo pero ninguno cutáneo-visceral, mucho más grave y potencialmente mortal. El loxoscelismo cutáneo se inicia con prurito, posteriormente dolor intenso y evolución a una forma edematosa, de mejor pronóstico, o a una necrosante, como el caso que exponemos a continuación, que evolucionó a gangrena seca y requirió de la amputación de un dedo. El diagnóstico es eminentemente clínico. El tratamiento consiste en analgésicos, antihistamínicos, corticoides sistémicos, antibióticos de amplio espectro y dapsona en casos graves. La administración del suero antiloxosceles no se recomienda en nuestro país. [Emergencias 2008; 20: 64-67]

Palabras clave: Loxoscelismo. Picaduras de insectos y arácnidos.