

SHORT COMMUNICATIONS & CASE REPORTS

Loxosceles reclusa bite to the eyelid

U. KEKLIKCI¹, S. AKDENIZ², Y.B. SAKALAR¹, S.S. CAKMAK¹, K. UNLU¹¹Department of Ophthalmology²Department of Dermatology, Dicle University Faculty of Medicine, Diyarbakir - Turkey

PURPOSE. *The authors report a case of Loxosceles reclusa infestation on the eyelid.*

METHODS. *The specimen collected by swabbing the lesions with gauze was tested by using a venom-specific enzyme-linked immunosorbent assay. Loxosceles venom was detected in specimen. The patient was managed with conservative therapy that included saline compresses and ocular lubrication.*

RESULTS. *The case presented with severe edema and necrosis on the left upper eyelid. On laboratory examination, a significant left shift of white blood cell count was detected. Although residual scar of the eyelid and punctate epitheliopathy on the inferior of cornea was detected, vision was not impaired.*

CONCLUSIONS. *Supportive therapy may be reasonable treatment for Loxosceles reclusa infestation on the eyelids. The presence of venom proteins detected with an enzyme-linked immunosorbent assay technique is beneficial for supporting the diagnosis of Loxosceles envenomatio. (Eur J Ophthalmol 2008; 18: 633-5)*

KEY WORDS. *Eyelid, Loxosceles reclusa, Supportive therapy, Venom*

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INTRODUCTION

Loxosceles spiders are predominantly found in the temperate and tropical regions of the world. There are more than 100 species described in many countries of Europe, Africa, Oceania, Asia, North America, Central America, and mainly South America. In natural environments, they are found under rocks or in burrows of other animals where they make a small retreat web of flocculent silk (1). The bites occur when patients are dressing or sleeping (2). Eyelid brown recluse bites are uncommon.

The spiders possess a venom capable of causing painful, disfiguring necrotic ulcers with surrounding dermal inflammation and, uncommonly, severe systemic effects (3). The diagnosis of a brown recluse spider bite is a clinical one made on the basis of the morphologic appearance of the cutaneous lesion. However, morphology of a lesion is the usual basis for diagnosis but is not specific for *Loxosceles* spp. envenomation as there are many mimics of spider bites (3).

We diagnosed and managed a case of *Loxosceles reclusa* infestation on the eyelid.

Case report

An 8-year-old girl from the rural area of Batman in the South-eastern Anatolia region of Turkey was awakened with mild pruritus and swelling of the left eyelid. No spider was identified. Within 3 days, severe bilateral eyelid and facial edema developed. She was taken to the local pediatric hospital, and was referred to our clinic on the third day. On clinical examination the patient had erythema, edema, and superficial necrotic crust of the left eyelid (Fig. 1). Upon hospital admission, she was normotensive with a temperature of 38.5 °C, and a pulse of 96. She had a white blood cell count of 15,400/μL with a significant left shift. Hemoglobin and hematocrit levels, urinalysis, and other blood indices were within normal limits. The eyelid lesion was managed supportively with saline compresses and ocular lubricants. The lesion healed with scarring. Final visual acuity in the right and left eyes were 20/20 and 20/20, respectively. She was found to have punctate epitheliopathy on the inferior cornea. The child's parents observed that the right eyelid was incompletely closed when she slept.



Fig. 1 - The erythema, edema, and superficial necrotic crust.

METHODS

The specimen for enzyme-linked immunosorbent assay (ELISA) determination was obtained at the University of Dicle in Turkey. Gauze sponge soaked in normal saline was used to obtain a specimen from the affected lesion and contralateral control site. The specimen was collected by gently swabbing the lesion and the control site for 30 seconds. The swab was taken on the 13th day after the onset of the lesion in the case. The specimen was transferred via an express carrier to the Dermatology Center, SpiderTech, Rolla, MO. Despite shipping by an express carrier, the shipments took 10 days and were stored in transit in ambient summertime temperatures for unknown durations. Material obtained by swabbing the lesion with gauze was tested by using a venom-specific ELISA. The presence of venom proteins was detected with an ELISA technique for detecting *Loxosceles* venom originally described by Gomez et al (4) with minor modifications noted herein. The case was treated according to the guidelines of the Declaration of Helsinki.

DISCUSSION

The brown recluse is known not only for its unique appearance, but because of its bite. The venom is the etiologic agent responsible for the cutaneous necrosis. The characteristic dermonecrotic lesion results from the direct effects of the venom on the cellular and basal membrane components, as well as the extracellular matrix. The initial interaction between the venom and tissues causes complement activation, migration of polymorphic neutrophils, liberation of proteolytic enzymes, cy-

tokine and chemokine release, platelet aggregation, and blood flow alterations that result in edema and ischemia, with development of necrosis (2).

The first situation, which is more common (67–100%), is characterized by the presence of painful cutaneous lesion, of slow and gradual evolution, where signs such as edema, induration, erythema, ischemia, ecchymosis, and mixed area of erythema, ecchymosis, and ischemia, known as red, white, and blue sign, appear (3, 5, 6). Previous studies have reported that, over the next 5 days, there is a massive neutrophilic infiltration into the dermis and subcutaneous muscle, with vessel destruction, thrombosis, hemorrhage, myonecrosis, and coagulative necrosis (1). Our case presented with severe edema, hemorrhage, myonecrosis, and necrosis after 3 days.

The identified spider, combined with the characteristic history, presentation, and course of the lesion, substantiates the diagnosis of brown recluse spider bite. Each case describes early swelling, redness, and pain leading to significant peri-orbital edema. In similar time courses, the lesions became necrotic, formed black eschar, and resulted in some degree of scarring (5). Moreover, the potential causes of dermonecrotic lesions are extensive and include bacterial or fungal infection, viruses, drug reactions, pyoderma gangrenosum, other arthropod bites, focal vasculitis, thromboembolic phenomena, Lyme disease, neoplasms, chemical burns, and factitious injections. Therefore, when confronted with a dermonecrotic lesion, the clinician should not rush to diagnose a spider bite without considering all of the potential causes (6). The massive eyelid edema and early necrosis observed in the case presented here are consistent with loxoscelism but not diagnostic, as other conditions, particularly envenomations from other arthropods, can have such a presentation. For diagnostic confirmation of the case presented here, we utilized a sensitive and specific ELISA designed to detect *Loxosceles* venom by using specimens obtained noninvasively by swabbing the lesions with cotton gauze. The venom ELISA provided supporting evidence for the diagnosis. The specificity of an earlier implementation of the polyclonal ELISA used in this case was reported by Gomez et al. In their study, 17 North American arthropod venoms elicited no cross-reactivity when assayed at relevant venom amounts (4).

The bite occurred in the periocular region, an uncommonly reported location. Severe edema is generally observed. Acute complications include elevated intraocular pressure and airway compromise associated with laryngeal swelling. Long-term complications include necrosis and scarring of the eyelid, which can lead to corneal irritation (3, 5). Our case presented

massive eyelid edema and early necrosis, but systemic complications were not observed. The case healed without vision impairment, although with residual scar of the eyelid, and punctate epitheliopathy on the inferior cornea. Akdeniz et al (3) reported two cases with bites to the eyelids. In one of the two cases, a 34-year-old woman healed without scarring and with normal eyelid function with supportive treatment. However, the lesion healed with scarring of the eyelid in a 7-year-old patient. In addition, earlier studies have reported that the complications occur more frequently with bites to the eyelids, hands, and feet (5). We believe that complications may occur more frequently in children with bite to the eyelids.

Loxosceles spiders have a worldwide distribution and are considered one of the most medically important groups of spiders. Eyelid brown recluse bites are uncommon. Different interventions and medications were proposed for the treatment of eyelid brown recluse bites, such as local care, dapsone, systemic corticosteroids, hyperbaric oxygen, and debridement of necrotic tissue with flap reconstruction (3, 5). Treatment of brown recluse spider bites with dapsone and hyperbaric oxygen remains controversial. Previous studies have supported the use of dapsone, a leukocyte inhibitor, and demonstrated the benefits of twice-daily hyperbaric oxygen therapy. However, a more recent controlled study using New Zealand white rabbits failed to support the use of either of these treatments (1, 3, 5). Systemic or intralesional glucocorticosteroids are also commonly given. Realizing that there may be an autoimmune component to the tissue breakdown, studies using systemic corticosteroids as treatment have been performed, but there has been no difference in the size of the eschar or necrosis (1). Previous studies reported the benefit of antivenom in the prevention of eschar formation and skin sloughing. However, antivenom is not readily available and must be administered early following injury (1, 5). Edwards et al (7) noted that caution must be emphasized to avoid the overzealous debridement of eyelid tissue. Because of the excellent blood supply, the eyelids have a remarkable propensity for self-repair in the setting of gangrenous lid involvement. The poor cosmetic results that occurred in early interventions were thought to be due to heightened levels of acute phase reactants secondary to surgery that exacerbate the venom and prolong tissue injury (2). Some authors have recommended a conservative approach. Supportive therapy can include topical and systemic antibiotics, saline dressings, and ocular lubricants. A bandage lens has been employed to minimize corneal irritation (3, 5). Cantharotomy and cantholysis have also been used to restore normal pressure in a case with elevated intraocular pressure (5). Our case was managed with conservative therapy that included saline

compresses and ocular lubrication.

In conclusion, *Loxosceles* spiders are the only important cause of skin necrosis from spider bites. There is no evidence-based effective therapy for loxoscelism. Correct diagnosis leads to immediate treatment, thus contributing to decrease in morbidity, discomfort, and mortality. In our case, it was reasonable to treat with supportive therapy that included saline compresses and ocular lubrication.

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Reprint requests to:
Ugur Keklikci, MD
Department of Ophthalmology
Dicle University Faculty of Medicine
TR-21280, Diyarbakir, Turkey
ukekikci@yahoo.com

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