

AfriTox Guidelines Cytotoxic Spider Bite in Southern Africa

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DO NOT ARCHIVE

Treatment protocols are current only on the day of issue. They are frequently revised and rapidly become outdated. Do not store them for future reference.

Overview

Necrotic arachnidism (i.e. cutaneous and/or subcutaneous necrosis caused by spider venom) may result from a cytotoxic spider bite. However, it is possible that necrotic arachnidism is over diagnosed, as in most instances the spider is not seen at the time the bite is inflicted. Members of the public and medical personnel may incorrectly assume that a lesion is due to a spider bite, but alternative diagnoses must be considered if the history is not clear.

Cytotoxic lesions require routine wound care and may take weeks to heal.

Only two groups of South African spiders are known to inflict cytotoxic bites: violin (also known as brown, recluse and fiddleback) spiders in the genus *Loxosceles*, and sac spiders in the genus *Cheiracanthium*. Both genera are widely distributed throughout South Africa.

A third group of spiders, six-eyed sand or crab spiders of the *Sicarius* genus, are also considered cytotoxic, but human clinical evidence is inconclusive. The venom of this spider has only been tested on animals where it has been shown to be highly venomous causing massive tissue destruction, coagulopathy and death. *Sicarius* spiders are found throughout South Africa, apart from in KwaZulu-Natal and the Highveld. As *Sicarius* spiders are extremely shy and no records of proven human bites by *Sicarius* in South Africa can be found (2016), *Sicarius* bites are not currently considered to be of medical importance nor described further in this guideline.

Clinical Features

Most bites by cytotoxic spiders occur at night and are virtually painless. Itchiness may be prominent in the first 12 hours, but the onset of pain is slow and may take up to 8 hours to develop.

If the bite is noticed, signs at the bite site develop early within 2 hours, as follows:

- *Loxosceles* (violin spiders) - an erythematous and oedematous lesion, sometimes with a purple centre, appears. There are no distinct bite

marks.

- Cheiracanthium (sac spiders) - two distinct bite marks, a useful diagnostic feature, may occasionally be seen. They are yellowish to greenish, about 6mm apart, and cause very slight oedema and erythema.

Within 12-24 hours the bite site becomes more erythematous, oedematous and painful. Mottled areas with hemorrhage or blisters may develop.

Over the next 2-3 days the centre of the lesion may become blackened with or without vesicles or pustules. The lesion may resemble a furuncle at this stage and sterile pus-like matter may be discharged.

Most lesions are self-limiting and progress to spontaneous healing after about 2 weeks, but some may be complicated by extensive necrosis and an aggressive, spreading cellulitis.

Necrosis, if it develops, is mostly only evident after 72 hours. A dry necrotic eschar which forms in the centre of the bite detaches after 2-3 weeks, leaving an underlying ulcer involving the depth of the dermis. The resultant ulcer may persist for 4-8 weeks, is slow to heal, with recurring breakdown, and may result in significant scarring.

Occasionally, progressive cellulitis or necrotising fasciitis develops requiring hospitalisation and aggressive management. This clinical picture may be particularly attributable to bites by *Loxosceles* (violin spiders).

Few patients may develop non-specific systemic symptoms 3-5 days after the bite consisting of headache and fever, regional lymphadenitis, a scarletiform rash and malaise. The diagnosis may be confused with tick bite fever, but can usually be differentiated from this condition by the shorter time to presentation following the bite, i.e. 3-5 days, as opposed to 10 days for tick bite fever.

There are no substantiated reports of systemic loxoscelism following *Loxosceles* bites in South Africa. Bites from *Loxosceles reclusa* in South America and the USA have resulted in acute haemolytic anaemia, rhabdomyolysis, coagulopathy (DIC), renal failure and multi-organ failure. Although cases are reported across all age groups, children appear to be most vulnerable. Systemic loxoscelism should probably be included in the differential diagnosis for children presenting with acute haemolysis of unknown origin in areas where *Loxosceles* spiders are indigenous.

Differential Diagnosis

Other causes of dermal necrosis need to be considered in cases of presumed spider bite, as necrotic arachnidism is often over diagnosed. These include infectious causes (bacteria, fungi, viruses, parasites), tick or other arthropod/ insect bites (e.g. “veld sores”), and vascular causes (e.g. diabetic ulcers, vasculitis). Community- acquired methicillin-resistant Staph aureus and Strep pyogenes infections should also be considered as they are increasingly common causes of cellulitis and occasionally necrotising fasciitis.

Spider Identification

As cytotoxic bites are almost never felt initially, the identification of the causative spider is seldom conclusively made. If a specimen of the spider accompanies the patient, identify the spider from an illustrated reference book, poster or internet images. For help with identification, find contact details of Identification Experts in the Standard Guidelines under Toxic Groups.

Loxosceles (violin spiders) are free-living, medium to large spiders which have a characteristic violin-shaped marking on dorsum of the cephalothorax (wider part of the violin towards the front of the head). They have long slender legs. They are found in attics, mine shafts, and in houses behind picture frames, bookshelves or any other dark and sheltered area.

Cheiracanthium (sac spiders) have straw/golden-coloured bodies with a characteristic black, shiny face due to the dark colour of their large mouthparts. They make sac- like silken retreats in door and window frames, cracks in walls and occasionally in folds of curtains or clothes.

Both violin spiders (non-aggressive) and sac spiders (more aggressive) are nocturnally active.

Sicarius spider species are only found in the more arid sandy areas of Southern Africa and have little contact with humans. They are shy, prefer to lie buried under sand and rocks and do not readily bite readily.

Treatment

First Aid

Clean the bite with mild soap and water.

TRIAGE

- Patients with only local effects can be managed symptomatically at home with daily wound checks, observing for the development of infection.
- Admit all patients with rapidly spreading cellulitis or those with significant systemic symptoms for a full diagnostic workup, monitoring and parenteral antibiotic therapy.

Supportive Treatment

- The majority of lesions are self-limiting and heal spontaneously without treatment within 2 weeks.
- Treatment is directed at preventing secondary bacterial or fungal infection of the ulcers, although this is uncommon, and minimising the necrotising effect of the lesion by careful wound care and surgical intervention if needed.
- There is no specific antivenom currently available.
- There is little evidence to support the use of dapsone, topical or oral corticosteroids, antihistamines, anti-inflammatories, heparin, hyperbaric oxygen, or local electric shock, and these are not recommended.
- Where there are local effects only:
- Daily wound care.
 - Apply ice or cool compresses for up to 72 hours.
 - Elevate the affected limb or keep in neutral position, if extensive necrosis or surrounding cellulitis.
 - Administer analgesic and antipruritic drugs as appropriate.
 - Tetanus booster if immunity not up to date.
 - Oral antibiotics should be prescribed at the earliest signs of secondary infection/cellulitis, but not used prophylactically.
- Where there is significant necrosis of a bite or marked systemic symptoms:
 - Consider admission for full workup and review of possible differential diagnoses.

- Aggressive parenteral antibiotic therapy may be required.
- Debridement of the wound may promote better healing once the lesion is well demarcated and clinically stable (see Surgical treatment below).

Monitor

No laboratory investigations are required for patients with only limited local effects following cytotoxic spider bites. In patients with rapidly progressing cellulitis or significant systemic symptoms, the following should be performed:

- Full blood count
- Urea and electrolytes
- Renal function
- Microbiological analyses (e.g. pus swab, biopsy of wound) Liver function tests
- Urine dipstix (haematuria)
- Clotting profile, if indicated

Surgical Treatment

Development of an abscess or suspected necrotising fasciitis is an indication for surgical intervention. Large necrotic areas may also require excision, using primary or secondary closure. Spontaneous healing is by slow granulation, although skin grafting may be necessary.