

SPIDER BITE - A CASE OF CUTANEOUS LOXOSCELISM

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Summary

A case of spider bite presenting as cutaneous loxoscelism is reported. The clinical features and management of cases of spider bite in general are highlighted.

KEY WORDS : Spider bite, cutaneous loxoscelism.

Medical literature on spider bite is rather scanty and as a result clinically this condition is often not suspected. This article deals with a case which was diagnosed as spider bite and cured.

Case Report

A female patient aged 23 years presented at the Outpatient Section of Dermatology and Venereology department, Medical College, Trivandrum, with extensive erythematous eroded exuding patches on the front of the chest mainly on the left side with slight extension on to the back and the adjoining part of the left arm. Unruptured intact vesicles, pustules and lakes of pus were noted over the lesion. The borders of the patch were ill-defined and irregular. The total duration of the disease was 7 days.

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The onset was abrupt in the form of a few vesicopustular lesions on an erythematous oedematous base on the front of the chest which was noticed in the morning, on waking up from sleep. No medicine was applied on that area. In the course of one week the lesion extended rapidly sideways and downwards with the appearance of similar new lesions at the periphery. In addition, certain blackish areas were noted at places. On general examination the patient was ill looking. Pulse rate was 100 per minute and was regular with normal volume and tension. Blood pressure was normal. Patient was afebrile. On investigation urine and blood showed no abnormality. A Gram stained smear of pus showed polymorphonuclear leucocytes, but no organism. Histopathological examination of a pustule showed an abscess with plenty of polymorphonuclear leucocytes in the subepidermal location.

The patient was advised to take thorough bath daily, to rupture intact lesions and to clean them. Systemic steroids were administered in the form of prednisolone 30 mg per day in divided doses and also erythromycin capsules 1 G daily to control possible

secondary bacterial infection. The dose of steroid was gradually tapered off and on the eighth day, when the lesions were dry and healing, patient was discharged from the hospital. Clinical photographs taken at the beginning and end of the hospital stay are shown in figures I and II respectively.

Discussion

The presence of features of an acute inflammation pointed to the possibility of an irritant dermatitis or a phyto-dermatitis. But there was no corroborative history, distribution, or configuration to substantiate the diagnosis. Moreover, the presence of blackish areas suggestive of necrosis was against the diagnosis of a dermatitis. The absence of organisms in the Gram stained smear excluded a primary bacterial infection. The initial appearance of the lesion early in the morning suggested the possibility of an insect bite at night. Since the lesion was in an area covered by clothes it was inferred that the insect was probably hidden in clothes. Spiders es-

pecially one of the poisonous varieties namely the *Loxosceles* species, usually hide in dark areas and one such location is cupboards in between clothes. They come out nocturnally and man is bitten for self defence if disturbed. Their venom consists of a necrotoxin and a spreading factor which leads to rapid spread and necrosis of the lesion. As the epidemiological evidences were in favour of spider bite by the *Loxosceles* species a presumptive diagnosis of cutaneous loxoscelism was made. An entomologist who was consulted supported the diagnosis.

Spiders belong to the class arachnida and order araneida of the phylum arthropoda. Their body consist of a fused cephalothorax called prosoma and a globose abdomen, both of which are connected together by a narrow pedicle like waist. Prosoma has six appendages. Generally all spiders possess venom glands which are situated at the base of the first pair of appendages which is called chelicerae. The tip of the chelicerae is claw like and it bears the opening of the poison



Fig. 1
Lesion before treatment.



Fig. 2 After treatment.

gland. The second pair of appendage is known as pedipalps and the basal segment of this is swollen to form a crushing base known as endite. This may have a scopula and a series of fine teeth which helps to crush the prey. The basal segments of the first two pairs of appendages form the

upper jaw (Fig. 3). Mouth is situated just behind the chelicerae. The spiders have a carnivorous diet and they bite and inject the toxin into their prey to immobilise them before swallowing. When the tip of the chelicerae is pressed into the prey, the poison flows freely. After immobilising the prey, proteolytic enzymes are liberated by salivary glands in the lower lip which dissolve the prey and it is then sucked in. Sometimes the prey is crunched by the upper jaw. Most spiders on account of their small size can feed only on small insects. But some species are capable of attacking even larger animals like birds¹. Man is bitten accidentally by spider for their self defence. It is estimated that there are more than 2000 genera of spiders in the world. Great majority of these spiders have weak poisons which will be very little in quantity incapable of producing any symptom in man if bitten. But a few species of spiders possess very powerful toxins which can produce serious symptoms in man even if a little of it is injected. These spiders mainly come under two families, namely Therididae and Loxoscelidae. The clinical syndromes produced by their bites are termed arachnidism and loxoscelism respectively^{2,3,4,5}.

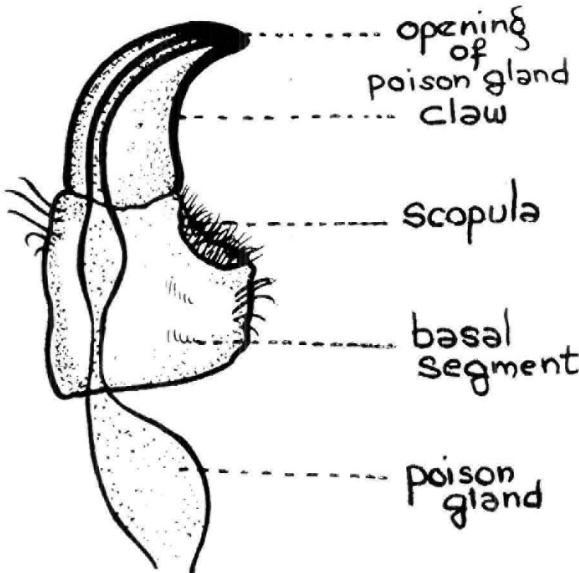


Fig. 3 Diagrammatic representation of the chelicera and the basal segment of pedipalps.

In the family Therididae the poisonous species come under the genera *latrodectus*⁴. These species of spiders are widely distributed in the warm areas of the world. Bites by the species *Latrodectus Mactans* is reported from United States. *Latrodectus* spiders are otherwise known as widow spiders. They are so called because the female kills the male after copulation. They may be black brown or grey in colour. The length of the trunk is about 1 cm and on the ventral aspect of its abdomen there is an hour-glass marking which may be white, red or orange in colour. This is a distinguishing feature of this species. These spiders form their webs in dark places like crevices, under stones and rocks or in privies. A very powerful neurotoxin is injected which is said to be ten times as potent as the vipers venom. Initially at the time of bite no pain is experienced. After 2 to 3 hours severe pain and rigidity of muscles will start at that site and it will slowly extend to the whole body producing muscular cramps. The patient will be ill looking and febrile. In the course of another two or three days they may show signs of improvement. In children and the debilitated it may end up fatally. Treatment in the form of intravenous calcium gluconate injections, steroids and specific gammaglobulin are found to be effective in its management. Tourniquet applied above the site may prevent the spread of the toxin to other areas.

In the family Loxoscelidae the species poisonous to man belong to the genus *Loxosceles*. They are brown or chocolate in colour and are known as recluse spiders. These spiders are smaller in size when compared to the *latrodectus* spiders. They are distinguished by a violin shaped mark on the dorsal aspect of its cephalothorax. They are nocturnal and largely domestic in habit. These spiders are shy by

nature and hide themselves in places like cupboards in between clothes, in cracks and crevices in the walls etc. Outside the house these spiders are seen under stones and leaves. Bite by the species *Loxosceles Laeta* has been reported from South America⁶ and by *Loxosceles Leclusa* from North America⁷.

Loxoscelism is of two types, viscerocutaneous and cutaneous. The commonest variety is the cutaneous type. Cutaneous loxoscelism is otherwise known as necrotic arachnidism. Often the patient is bitten at night which goes unnoticed. Two to three hours later, there is intense erythema and oedema at the site which is followed by vesiculation and crusting. Gradually that area becomes dry, blackish and necrotic with surrounding zones of erythema, vesiculation, pustulation and crusting. It spreads rapidly with areas of necrosis in between. In course of time the eschar separates forming erosions and ulcers which may heal with or without scarring. Sometimes the toxin injected may also contain a haemolysin which may lead to systemic viscerocutaneous loxoscelism. The patient may be febrile and toxic with nausea and vomiting. There may be petechial rashes all over the body, along with haemolytic anaemia, jaundice and haematuria. The condition may even end up fatally in the debilitated individual. Steroids are reported to be effective in preventing the extensive necrosis of skin. Dillaha et al⁷ have proved this by animal experiments. Generally the cutaneous lesion is said to be slow in healing, but our patient who was put on steroids, antibiotics and scrub bath showed remarkable improvement in a week's time. It has to be inferred and stressed that scrub bath might have played a vital role in hastening the healing process in our patient. It is a very essential adjuvant in the management of cutaneous loxoscelism to clear up the toxin responsible

for the spread and necrosis of the lesion. Hershley and Aulenbacher⁸ are of opinion that excision of the area will speed up healing and prevent excessive scarring.

It may be concluded that spider bite is not an uncommon condition in India and it should be suspected as a differential diagnosis in appropriate cases.

References

1. Potts FA and Eastham LES : The class, Arachnida, The invertebrata, 4th edition, edited by Borradaile LA, Potts FA, Eastham LES and Saunders J.T. Cambridge University Press, London, 1961 p 535.
2. Rook A: Skin diseases caused by Arthropods and other venomous or noxious animals, Text book of Dermatology, 3rd edition, Edited by Rook A, Wilkinson DS and Ebling FJG, Blackwell Scientific Publications. London 1979; p 911.
3. Derbes VJ: Arthropod bites and stings Dermatology in General Medicine, Second edition, Edited by Fitzpatrick TB, Eisen AZ, Wolf K et al, Mc Graw Hill, New York, 1979: p 1656.
4. Shatin H: Dermatoses caused by Arthropods, Clinical Tropical Dermatology, Edited by Canizares O, Blackwell scientific publications, Oxford, 1975; p 234.
5. Moschella SL : Parasitology and Tropical Dermatology, Edited by Moschella SL, Pillsbury DM and Hurley HJ, WB Saunders company, Philadelphia, 1975; p 1487.
6. Schenone H and Prats F : Arachnidism by *Loxosceles Laeta*, Report of 40 cases of necrotic Arachnidism, Arch Dermatol 1961; 83, 139.
7. Dillaha et al: North American *Loxoscelism* Necrotic bite of the brown recluse spider, JAMA, 1964; 188 : 33-36.
8. Hershley FB and Aulenbacher CE : Surgical treatment of brown spider bites, Ann Surg, 1969; 170 : 300.