

A Case of Mortal Necrotizing Fasciitis of the Trunk Resulting From a Centipede (*Scolopendra moritans*) Bite

M Serinken, B Erdur, S Sener, B Kabay, A Cevik

Citation

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Abstract

Background: Insect bites have been described as the cause of necrotizing fasciitis (NF) especially in patients with suppressed immune systems, burns, or trauma. It is a serious necrotizing process which involves the fascia of the skin. Patients usually experience pain, edema and a dusky bluish-red discolouration of the skin with or without bullae formation. Failure to identify NF can result in significant morbidity, mortality. Treatment comprises early detection, surgical debridement, intravenous antibiotics and supportive care as soon as the necrotizing fasciitis is diagnosed.

Case Presentation: We report a case in which severe necrotizing fasciitis involving chest along with toxic shock induced after the patient was bitten by a centipede (*Scolopendra moritans*).

Conclusion: We are not aware of any NF case resulted mortally, which the patient is bitten by *Scolopendra moritans*.

BACKGROUND

Necrotizing Fasciitis (NF) is a serious, grossly mutilating and devastating soft-tissue infection that involves the subcutaneous tissue and deep fascial layer with relative sparing of the skin and muscles, both of which may be infected secondarily. NF is relatively uncommon but often life threatening.[¹] Patients are presented to hospitals with insidious erythematous, tender, swollen area resembling cellulitis with disproportionately severe pain at the site of involvement.[²] There may be a history of injury to the skin in means of variable mechanisms consisting cuts, burns, insect or animals bites and chronic skin conditions. Although usually no bacteria is identified by swab cultures of the infected sites, when it is possible gram-positive organisms are found responsible. [³]

We report an unusual mortal case of NF of the chest caused by *Scolopendra moritans* bite, which is the member of centipede family.

CASE PRESENTATION

A 46-year old, 96 kg white man was brought to the emergency department (ED) at the Pamukkale University Hospital, Denizli, Turkey with an insect bite on the left site of his neck. The patient described that after he was woken up

at night by a sharp pain on his neck, he found and killed an insect on the bed. A day after he was bitten, the patient initially went to the local emergency room with swelling, redness, itching and pain on his neck. The emergency physician diagnosed the lesion as a non-complicated insect bite and prescribed antihistaminic and analgesic tablets. Although he was using his remedies regularly, complaints did not resolve; furthermore, erythema, pain and edema advanced to his chest wall. The patient returned four days later back to the regional hospital suffering from increasing severe pain, blue-reddish bullae formation on the chest wall and shortness of breath. No surgery but infectious disease specialist consult was obtained where a diagnoses of NF was made. He was then admitted to the ward and was started on antibiotics (ceftazidim, teicoplanin and metronidazol) via intravenous route. Transfer from the regional hospital to our university hospital decision was taken for advance care after the patient developed respiratory distress and anuria.

On arrival at our ED, he was alert, oriented but in acute distress and agitated. He had just a history of hypertension and he was on angiotensin-converting enzyme (ACE) inhibitor. No allergy history was obtained. Patient's family members also brought the insect with them as evidence. We immediately contacted to our toxicologist and we were

informed that the insect is a centipede called *Scolopendra moritans*, which is not lethally venomous (fig. 1).

Figure 1

Figure 1: Centipede () that was caught and killed by the patient



Physical examination revealed a blood pressure of 105/65 mm Hg, heart rate of 126 /min, respiratory rate of 22 /min, temperature of 38.6 °C (109.2 °F) and oxygen saturation of 91%. Two separated areas of reddish-purple and black discoloration (necrosis), which were approximately 5 X 5 cm wide on the left and right sides of the chest wall, were initially remarkable (fig. 2a and 2b). These areas were edematous, muddy, and tender with palpation. There was no crepitus on the lesions, and no evidence of insect bite was found on the neck as well. The remainder of the examination was unremarkable.

Figure 2

Figure 2a, 2b: Dull blue-purple necrotic lesions surrounded with erythema on the chest wall



Figure 3



Laboratory values on admission to ED were white blood cell count 17,300/mm³, blood urea nitrogen (BUN) 136 mg/dL, creatinin 8 mg/dL, potassium 5.6 mEq/L, sodium 132 mEq/L, creatinin kinase 1291 U/L. Arterial blood gas values were pH: 7.23, pO₂: 61.4 mm Hg, pCO₂: 36.9 mm Hg, SpO₂: 90%. No subcutaneous space air was found on chest x-ray. Human immune-deficiency virus (HIV) serology, aerobe and anaerobe blood cultures, and swab cultures of each lesion were also unremarkable.

During his second hour in the ED while the operating theatre and surgery team were getting prepared for the operation, the patient insidiously and immediately deteriorated.

Cardiopulmonary resuscitation was begun and after all resuscitative efforts; he died probably because of multiple

organ failure. No autopsy decision was made since it was not a suspicious death.

DISCUSSION AND CONCLUSION

There are numerous cases, case series and reviews regarding centipede bites in the literature; however, to our knowledge, this is the first case reported of a mortal NF induced by a centipede (*Scolopendra moritans*) bite.^[4, 5, 6, 7, 8, 9]

Nearly 5,000 centipede bites are reported every year in Turkey.^[10] It is probable that number of centipede bites in Turkey may be underestimated since the victims do not always seek medical assistance because of the benignity of their clinical manifestations. *Scolopendra moritans*, which the patient brought with, belongs to the Arthropoda phylum, Chilopoda class and Scolopendridae family.^[11] Venom from this species contains both serotonin and histamine; furthermore, the presence of several protease-activities has been demonstrated.^[12, 13]

Although usually centipede bites produce a characteristic lesion with erythema, edema and pain that heal in a week with no complication, violation of the intact skin may cause and progress to NF. Necrotizing fasciitis occurs predominantly in patients predisposed by advanced age, immunosuppressive therapy, alcohol abuse, HIV infection, malignancy, diabetes mellitus, chronic renal failure or vascular insufficiency. It can occur at any age while the mean age varies from 32 years to 57.^[2] Although bacteria resulting NF vary (facultative anaerobes, enterobacteriaceae, group A β -hemolytic streptococcus, marine vibrios and fungi), group A streptococcus (*Streptococcus pyogenes*) accounts for 62% to 97% of all cases.^[14, 15] Reported mechanisms of the injury have included cuts, burns, blunt or penetrating traumas, chronic skin conditions, animal, human or insect bites, child-birth, intravenous use of illegal drugs, post-operative infections, perirectal or other abscesses, incarcerated hernias and even inconsequential scratch or injection of insulin.^[3]

NF present with severe pain at a localized site with or without cutaneous inflammatory changes (rubor, calor, dolor and tumor) and may deceptively appear as a mild cellulitis.^[16] The presence of classical signs such as crepitus on lesion or soft tissue air on plain x-ray is seen in only 37% and 57% of patients respectively.^[8] CT and MRI are sometimes useful, but the critical condition of the patient often precludes their use.

Although lower limb was most commonly involved (32%), followed by the upper limb (24%), the perineum (16%), the trunk (16%), head and neck (10%) and buttock (>1%)^[14], truncal and perineal regions have higher mortality rates and poor prognosis than the extremities.^[17]

The inoculation of the bacteria into the subcutaneous space can occur with any damage to the overlying skin. The sequence of cutaneous changes may manifest as erythema, then bronzing and induration of the skin, followed by breakdown with purple bullae formation within 3-5 days and finally the dull blue-gray hue of frank skin necrosis.

Diagnosing necrotizing fasciitis is often difficult, and the clinical signs are used to make the diagnosis. Wall et al.^[18] developed a model to help distinguish between necrotizing fasciitis and non-necrotizing soft tissue infection. They found that a white blood cell count $>15,400/\text{mm}^3$ and a serum sodium value $<135 \text{ mEq/L}$ were predictive, with sensitivity of 90% and specificity of 70% and our patient also meet these criteria.

Once NF is diagnosed, definitive treatment is first and foremost surgical, along with antibiotic therapy and supportive care. Optimal surgery includes early debridement of all necrotic tissue and drainage of involved fascial planes via extensive fasciectomy until healthy fascia is encountered. All patients should receive broad-spectrum intravenous antibiotics to cover streptococci, staphylococci, Gram-negative rods and anaerobes. A combination of clindamycin and cefuroxime rather than penicillin is recommended, with any adjustments made once culture results have returned.^[19, 20, 21, 22]

Our patient was on triple antibiotic regimen (ceftazidim, teicoplanin and metronidazol) for three days; however, definitive surgical treatment was delayed until he was brought to our center on the fifth day. He had no predisposing factor but poor prognostic factor such as trunk involvement. Although he was being prepared and stabilized for operation, he could not go to operating theatre since he had cardiopulmonary arrest in ED. Although centipede bite might be lethally poisonous to allergic patients; to our understanding, death of our case was the result of an advanced NF and toxic shock, not centipede bite.

This clinical case illustrates that a centipede bite can cause necrotizing fasciitis, which may be mortal without any adequate treatment. Physicians dealing with soft tissue

infections should be highly suspicious and patients who suffer from violation of the skin should be treated with increasing awareness. The key aspects of management include early diagnosis, resuscitation of the patient, and administration of broad-spectrum antibiotics followed by radical surgical debridement.

COMPETING INTEREST AND ACKNOWLEDGEMENT

We declare that there is no non-financial (political, personal, religious, academic, intellectual, commercial or any other) or financial competing interest and acknowledgement in relation to this manuscript. Written consent was obtained from the relative of the patient for publication of study

CONTRIBUTIONS

MS, BE and BK carried out the diagnosis and treatment of the patient in the manuscript. SS and AAC participated in the design of the study, conceived of the study, and participated in its design and coordination and helped to draft the manuscript. All authors read and approved the final manuscript.

CORRESPONDENCE TO

Serkan Sener, MD Gulhane Military Medical Academy, Department of Emergency Medicine Etlik, 06018, Ankara Tel: +90-312-304 3080, Fax: +90-312-304 3058, e-mail: ssenermd@yahoo.com

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Author Information

Mustafa Serinken

Assistant Professor of Emergency Medicine, Department of Emergency Medicine, School of Medicine, Pamukkale University

Bulent Erdur

Assistant Professor of Emergency Medicine, Department of Emergency Medicine, School of Medicine, Pamukkale University

Serkan Sener

Attending Physician of Emergency Medicine, Department of Emergency Medicine, Gulhane Military Medical Academy

Burhan Kabay

Assistant Professor of Surgery, Department of Surgery, School of Medicine, Pamukkale University

A. Alper Cevik

Assistant Professor of Emergency Medicine, Department of Emergency Medicine, School of Medicine, Osmangazi University