

Are you sure it's just a bug bite?

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Introduction

Necrotizing infection is an uncommon and rapidly spreading disease with the potential of being life threatening¹. Patient outcomes are dependent on time to presentation and early initiation of effective treatment². This is a case of necrotizing lower limb infection resulting from an insect bite. Not only does this case report add to the body of knowledge on the disease, it illustrates the rapid development of necrotizing cellulitis secondary to a single insect bite in an immunocompromised patient.

Case Description

An otherwise healthy 28 year old female with a history of rheumatoid arthritis presented with an insect bite to her left lower extremity after vacationing at her lake-side cottage. Immunosuppressant medications included Humira. Allergies: Penicillin, Erythromycin and Sulfa

Day 1

- Patient noticed insect bite on her lower lateral left leg
- Patient applied general antibiotic cream to the bite

Day 2

- Area surrounding bite became swollen with drainage
- Patient visited her GP. Ciprofloxacin prescribed for the presumed diagnosis *Strep A* vs *Staph aureus* vs co-pathogens

Day 3

- Swelling and drainage progressed with increased ecchymosis
- Patient visited the emergency room where Metronidazole was added to her Ciprofloxacin regime
- Cultures: 4+ *Streptococcus pyogenes* (Group A streptococcus) sensitive to Penicillin

Day 4

- Involved area continued to swell with progression to epidermal necrosis of the lateral dorsal foot and lateral leg
- Second visit to the emergency room
- Patient started on IV Vancomycin, continuing Ciprofloxacin
- Patient was referred to the plastic surgery team

Day 5

- Epidermal and dermal necrosis progressed
- Vancomycin dose increased to 2 grams
- Surgical debridement of full thickness necrosis
- Infectious disease consult and started on Clindamycin
- CT scan ordered
- Cultures: 3+ PMN, 4+ Gram positive cocci, 2+ Gram negative bacilli, no MRSA, no anaerobes
- Tissue for pathology: marked superficial and deep hemorrhagic dermatitis with abscess formation

Day 8

- Follow up visit with the plastic surgery team
- Decision made clinically and supported by CT that no further surgery would be required

Next 18 days

- Continued to improve
- Responded well to an at home IV therapy program



Day 2



Day 3



Day 4



Day 8



Week 4



Week 6

Discussion

The patient suffered a necrotizing cellulitis to her lower left leg. The infection was initially caused by an insect bite which allowed for bacterial ingrowth and secondary infection. Bacterial infection rapidly progressed to a necrotizing cellulitis requiring surgical debridement and IV antibiotics. Ultimately, the patient responded well to treatment.

Multiple factors influenced the extent of necrosis in this case:

1. Insect Bite

The initial lesion was compatible with the bite of a brown recluse spider. This type of spider produces necrotizing venom. These spiders are indigenous to the region where the patient was residing.

2. Lake Water

The patient had increased exposure to bacteria resulting from swimming in lake water. The region where this lake was located carries a virulent strain of bacteria, group A streptococcus, that can cause a variety of infections including necrotizing cellulitis.

3. Immunocompromised

The patient was also on Humira, an anti-TNF medication for rheumatoid arthritis. The patient's reduced ability to combat infection may have allowed the initial bacterial infection to progress into a rapidly spreading necrotizing group A streptococcus infection.

Comprehensive examination, interpretation of medical information, and environmental factors collectively influence patient outcomes. This case serves as a reminder that a typically minor cutaneous infection can progress rapidly in an immunocompromised patient, potentially threatening life or limb.

Acknowledgements

The authors want to extend their thanks to Russell Ives for his contribution, guidance and encouragement in the development of this case report.

References

1. Lanitis, S, et al. "Severe monobacterial necrotizing soft tissue infection by group A *Streptococcus*: A surgical emergency." *Asian Pacific Journal of Tropical Biomedicine*, Asian Pacific Tropical Medicine Press, Mar. 2012, www.ncbi.nlm.nih.gov/pmc/articles/PMC3609267/.
2. Hakkarainen, Timo W., et al. "Necrotizing soft tissue infections: Review and current concepts in treatment, systems of care, and outcomes." *Current problems in surgery*, U.S. National Library of Medicine, Aug. 2014, www.ncbi.nlm.nih.gov/pmc/articles/PMC4199388/.