



Case report

Necrotizing fasciitis of the finger

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ABSTRACT

A 62 year old woman with a medical history of hypertension presented to her local general practice with moderate pain in the right ring finger which worsened over a few hours after onset. Her condition progressed swiftly into sepsis and required hospital admission in the intensive care unit. Over the course of 24 h the patient was diagnosed with necrotizing fasciitis in the finger but unfortunately despite treatment with antimicrobials and surgical debridement the patient's finger could not be saved and she had amputation of her finger.

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Introduction

Necrotizing fasciitis is a rare severe soft-tissue infection associated with rapidly progressive necrosis of the subcutaneous tissue and superficial fascia. This rare condition carries high mortality rate and require prompt diagnosis and urgent treatment. Patients who suffer from necrotizing fasciitis usually present with symptoms of sepsis, systemic toxicity, or evidence of skin inflammation at later stages of the disease. The presentation feature is pain that is disproportional to the degree of inflammation, however, the process can be difficult to diagnose early after onset.

Case report

A 62 year old right-handed secondary school teacher presented to the local general practice center with a history of 3 h of pain in the right ring finger. She stated that she was working in her garden that morning and perhaps accidentally injured her right hand. She had no other associated symptoms at the time of presentation. Her medical reports revealed a past medical history of hypertension. Her medications included enalapril and amlodipine.

On initial examination, the right ring finger was not swollen. His capillary fill time was less than 3 s, radial pulse was palpable and patient was able to move all her fingers including the ring finger. Her ring finger showed no clinical signs of infection such as redness or swelling. Her temperature was 37.3 C, blood pressure 122/73 and heart rate 94. An assessment was made that the pain in the finger is related something she had done in the garden earlier that morning.

No blood tests or x rays were required. No obvious source of sepsis could be identified at the time of admission and the patient was allowed to go home with prescriptions for acetaminophen and ibuprofen.

After around 3 h at 18:21 she presented to the local out of hours general practice center with worsening pain, erythematous and swelling of her in the right ring finger. She also complained of rigors. On examination she was found to be pyrexia with an elevated temperature of 38.5 C. Blood tests revealed a slightly elevated C- reactive protein 11 mg/L. The patient was treated as early cellulitis and was prescribed flucloxacillin antibacterial course and was sent home. She was advised to continue with acetaminophen and ibuprofen.

After around 4 h at 21:40 as the out of hours general practice center was closing, she presented again with severe pain in the finger and swelling in the hand up to the right wrist. She had difficulty in moving her fingers. The pain was so severe she could not drive to the medical center and asked a friend to drive her there. On examination this time the right hand was edematous up to the wrist. The C- reactive protein elevated further 43 mg/L. At 23:01 the patient was transferred to the emergency department and further bloods were taken her C- reactive protein had increase dramatically to 161 mg/L. Other laboratory values were as follows: leukocyte count of 18.4×10^9 cells/uL, a hemoglobin level of 132 mg/dL, and a platelet count of 261×10^9 cells/uL, Spot glucose of 17.6 mg/dL; creatinine, 156 mg/dL; urea, 18.4 mg/dL; and total bilirubin, 59 mg/dL.

A diagnosis of upper limb cellulitis was made and the patient was placed on intravenous flucloxacillin. Deep venous thrombosis (DVT) was ruled out by ultrasound examination. X ray revealed no deformities or fractures and no comment on soft tissue gas was made. The patient's situation deteriorated over the next few hours of hospitalization with rapid progression of redness and swelling

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with deep hyperpigmentation with hemorrhagic bullae was noted made the possibility of necrotizing fasciitis. At 07:19 the next day she was transferred to the surgical intensive care unit. Her antimicrobials were switched to intravenous vancomycin, ciprofloxacin and piperacillin/tazobactam.

At 09:33 the next morning the surgical team recommended surgery. At 11:03 she was taken to the operating room and emergency debridement was performed. Incisions were made which revealed necrotic tissue and subcutaneous edema. During the operation anaerobic, aerobic and fungal cultures were taken which revealed beta hemolytic streptococcus as well as "Methicillin-sensitive *Staphylococcus aureus*".

Despite the infection beginning controlled on antimicrobials, the entire right ring finger became necrotic and amputation was performed on hospital day 22 and she was discharged 10 days after that. She continues to have regular follow-up with her local general practice for minor wound problems.

Discussion

Necrotizing fasciitis is an uncommon severe soft-tissue infection associated with rapidly progressive necrosis of the subcutaneous tissue and superficial fascia and carries high mortality rate and require prompt diagnosis and urgent treatment. The disease is also characterized by early development of systemic toxicity [1].

There are no definite blood tests that can diagnose necrotizing fasciitis. At onset, it is difficult to differentiate from other superficial skin conditions such as cellulitis. Necrotizing fasciitis can occur anywhere in the body and certainly can occur on the upper limbs but it is rare [2,3]. Around 80% of necrotizing fasciitis occurs in the extremities but of that percentage only 4–5% occurs in the upper extremities [4]. Early detection and surgical debridement, as well as aggressive antimicrobial therapy are essential to limit loss of limb or life [5–7].

This case illustrates that despite the early detection within hours and broad-spectrum antimicrobial therapy the patient required a finger amputation. The lack of early diagnostic tests makes the diagnosis difficult in the early stages. Markers which can help in the diagnosis according to the laboratory risk indicator for necrotizing fasciitis are C-reactive protein levels, total white-cell count and hemoglobin, sodium, glucose and creatinine can help [8,9].

Despite these laboratory tests doctors must rely on the clinical presentation which is vague and difficult to diagnose in the initial presentation. Physicians should also use the "finger test" which is a quick and established method that can be performed in the emergency department under local anesthesia [10]. The finger test is a bedside procedure under local anaesthesia which is used to confirm or refute the diagnosis [5]. Lack of bleeding, presence of smelly secretions, noncontracting muscles, and lack of tissue resistance to blunt finger dissection indicates necrotizing fasciitis [11–15].

Physicians must have a high level of suspicion and low threshold for surgical referral when confronted with cases of

pain, fever, and erythema in order not to miss this life-threatening condition. The use of finger test should be used routinely in high index suspicion cases along with the laboratory blood tests.

Contributors

All the authors contributed to the case report and preparing the manuscript for submission.

Competing interests

The authors declare that they have no competing interests.

Consent for publication

We have sought written consent from the patient which is available on request.

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