OPEN ACCESS

Scholars International Journal of Anatomy and Physiology

Abbreviated Key Title: Sch Int J Anat Physiol
ISSN 2616-8618 (Print) |ISSN 2617-345X (Online)
Scholars Middle East Publishers, Dubai, United Arab Emirates
Journal homepage: https://saudijournals.com

Case Report

A Flesh-Eating Disease of the Hand: Why is Necrotizing Fasciitis So Dangerous?

Younes Chagar[1]*, Ilias Chagar[1], Omar Aguenaou[1], Mohammed Reda Fekhaoui Zerhouni[1], Jalal El Mekkaoui[1], Moncef Boufettal[1], Reda-allah Bassir[1], Moulay Omar Lamrani[1]

[1]Department of Orthopedic Trauma, Avicenne Hospital, University Mohamed V – Souissi Rabat Morocco

DOI: https://doi.org/10.36348/sijap.2026.v09i03.001 | **Received:** 04.03.2026 | **Accepted:** 30.04.2026 | **Published:** 06.05.2026

***Corresponding author:** Younes Chagar
Department of Orthopedic Trauma, Avicenne Hospital, University Mohamed V – Souissi Rabat Morocco

Abstract

Necrotizing fasciitis or "flesh-eating disease," is a rare and serious infection that can kill a person in less than a day. Early diagnosis and appropriate treatment can avoid serious complications that can lead to death. Herein, we report three cases of necrotizing fasciitis of the hand admitted to the emergency department and detail their management, from the diagnosis to the outcome. Before causing death, necrotizing fasciitis causes massive destruction of the soft tissue and bones, even in early diagnosed patients. The diagnosis is challenging, even for orthopedic surgeons. Once it is suspected, "acting fast" is mandatory, and so the orthopedic surgeon should be alerted.

Keywords: Hand; Necrotizing fasciitis; Debridement.

INTRODUCTION

Although it is rare, necrotizing fasciitis (NF) is a serious infection that can kill a person in less than a day. Known as a "flesh-eating disease" [1], it is a rapidly progressive soft-tissue infection of the subcutaneous tissue and the fascial layers. [2-3] Its prevalence ranges from 0.3 to 15 cases per 100,000 people. [4] Its location in the upper limb is less common than in the lower limb. [5] The diagnosis constitutes a real challenge for orthopedic surgeons. Early diagnosis and appropriate treatment can avoid serious complications that can lead to death. [6] In this study, we aim to report three cases of necrotizing fasciitis of the hand and discuss their management and outcome.

CASES PRESENTATIONS

- ***Case 1:*** A 55-year-old woman with no medical history sustained a needlestick on her thumb. Three days later, she consulted a physician who had prescribed an antibiotic with non-steroidal anti-inflammatory drugs. Two days later, the pain got worse with a change in the color of the hand, and she was transferred to our orthopedic department. She was conscious when admitted, with a temperature of 38 °C, a pulse of 82 beats per minute, a blood pressure of 11/50, and an O2 saturation of about 89%, which improved to 93% on 8 liters per minute of oxygen via non-rebreather mask. Physical examination revealed edema and blisters on the left hand along with necrosis on its dorsum (fig 1A). The palpation and the mobilization were painful. The neurovascular examination was normal. The hand x-ray revealed no abnormalities. The blood investigations revealed: hemoglobin = 11 (g/dl); WBC = 13 (cells/mm3); CRP = 100 (mg/l). Based on the clinical and biological findings, we confirmed the diagnosis of necrotizing fasciitis of the hand with a systemic infection manifestation that needs intravenous fluids. Then the patient was taken to the operating room, in which we performed aggressive debridement of the affected tissues, we took three bacteriological samples, followed by copious irrigation (about 3 liters) (fig 1B). For the antibiotics, it consisted of the administration of amoxicillin/clavulanic acid (3 g/day), gentamicin (160 mg/day) and metronidazole (1 g/day) for a course of 15 days. The dressing of the wound was performed daily.

Figure 1: Clinical aspect of the hand showed edema and blisters on the left hand along with necrosis on its dorsum (A), and the clinical aspect after debridement (B)

A few days later, the samples were negative, and the regeneration process started (fig 2a). Two weeks later, we performed a full-thickness skin graft with a good outcome at three months of follow-up (fig 2b).

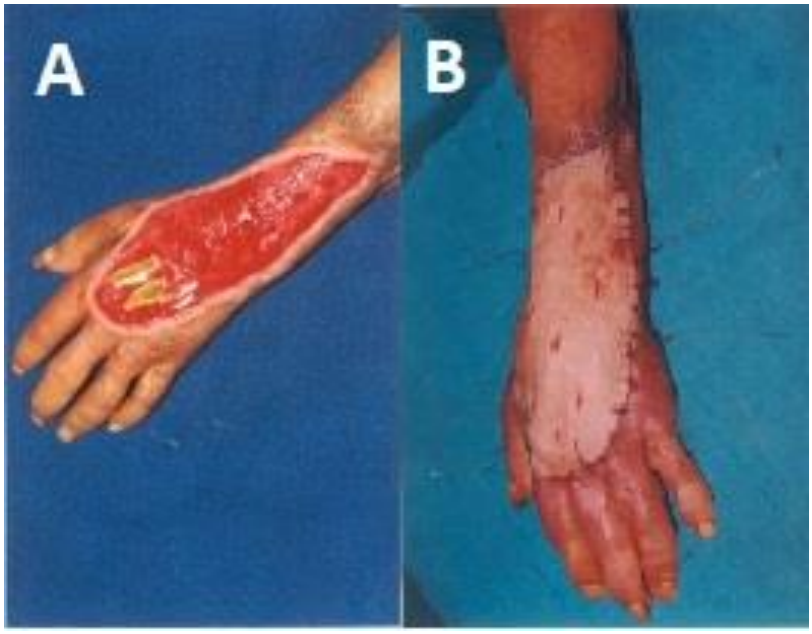

Figure 2: The regeneration process started (A) followed by full-thickness skin graft (B)

- ***Case 2:*** A 26-year-old man with no medical history presented intense pain and a change in the color of his digit then was transferred to our emergency department. On admission, he was conscious with no distress. He reported an injury from a piece of wood when he was working in his garden three days ago. Physical examination found necrosis of the third digit with edema, prompting the patient to undergo surgery. Both the neurovascular and the x-ray of the digit were normal. In the operating room, we performed a debridement of the necrotic tissues (fig 3a) along with the administration of the antibiotic following the same protocol. This case required three debridement procedures before the clinical picture stabilized. The bacteriological sample revealed a sensitive ß-hemolytic streptococcus. 15 days later, we performed a graft skin (fig 3b) with a good outcome.

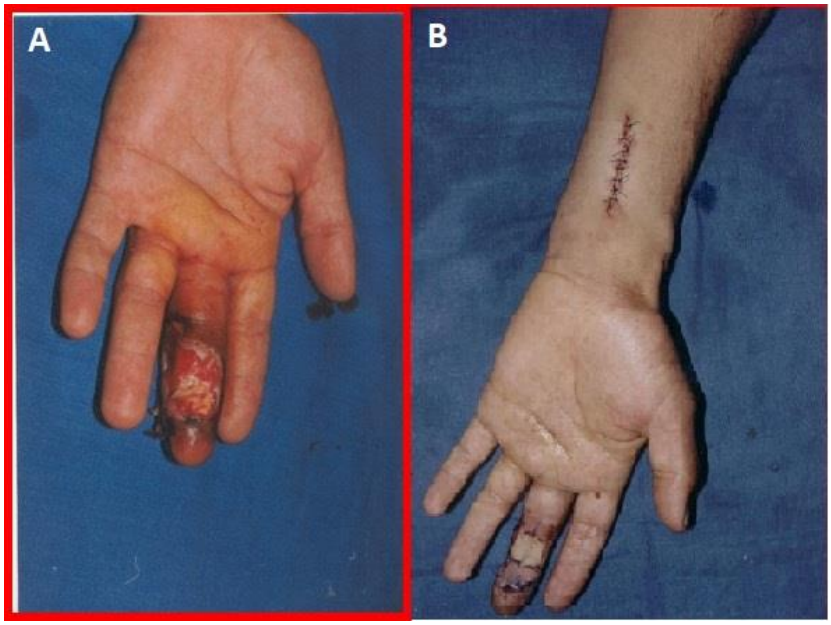

Figure 3: Clinical aspect after debridement of the necrotic tissues of the digit (A), followed by skin grafting showed good outcome (B)

- ***Case 3:*** A 34-year-old man suffered from a 24-hour history of pain and edema of the fourth digit following an insect bite. He was transferred to our orthopedic department. The clinical examination revealed a necrotic digit at the terminal stage (fig 4A) with no hemodynamic distress, prompting the patient to undergo surgery. We amputated the digit and administered antibiotics (amoxicillin/clavulanic acid 3 g/jr + metronidazole 1 g/jr) over a 10-day period. The postoperative care was uneventful, and the bacteriological samples revealed a ß-hemolytic streptococcus. Three months later, the patient did well with no recurrent infection (fig 4B).

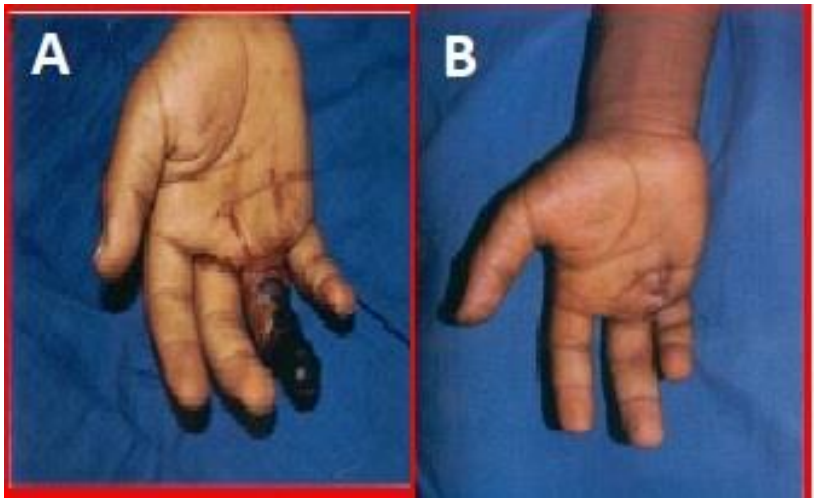

Figure 4: Clinical aspect of the necrotic digit at the terminal stage (A), followed by amputation of the digit (B)

DISCUSSION

Necrotizing fasciitis constitutes a major health problem throughout the world as it is a life-threatening disease. The first record of necrotizing fasciitis was by Hippocrates. He described the disease as erysipelas. [7] In 1987, Joseph Jones described the same cases and called them "hospital gangrene". In the ensuing years, many other terms, such as necrotizing erysipelas, streptococcal gangrene and suppurative fasciitis, have also been used. Wilson B *et al.,*coined the term necrotizing fasciitis for this disease in 1950. [8] It can destroy the epidermis, dermis, subcutaneous tissue, fascia, and muscle. It can occur in any region of the body, such as the abdominal wall, perineum, and extremities. Certain factors place patients at higher risk for NF, such as obesity, diabetes, immunodepression, malignancy, alcoholism, and vascular disease. However, necrotizing fasciitis has also been reported in young and previously healthy individuals. All our cases had no medical history. The classic symptoms are pain, edema, blisters, and

necrosis; the finger swipe test is useful. Biologically, the LRINC (laboratory rink score) is an interesting tool to aid in diagnosis. [9] In our cases, we didn't calculate the LRNIC score because the diagnosis was evident. Radiologically, x-rays are to be performed in searching for gas formations, as was done in all our cases. Magnetic resonance imaging is very interesting in the early stages. [10] However, to our knowledge, the imaging tools should not delay treatment. The most widely accepted classification of NF is polymicrobial or type 1; this type of infection is caused by both aerobic and anaerobic bacteria. They lead to gaseous infiltration of subcutaneous tissue, similar to gas gangrene. It is the most commonly reported case of NF and is more prevalent in older adults with chronic diseases. Monomicrobic or type 2, is most commonly associated with gram-positive organisms such as group A streptococci and methicillin-resistant Staphylococcus aureus. Endotoxins released by type II NF organisms are responsible for some clinical presentations, including toxic shock syndrome. This type is not associated with a specific age group. [1-11] The medical treatment includes empiric broad-spectrum antibiotics; in fact, it is recommended to use either vancomycin or linezolid in combination with piperacillin-tazobactam, a carbapenem, or ceftriaxone-metronidazole. The clinician can tailor therapy to the specific organism in cases of local antibiogram. [12-13] In our cases, we used a combination of amoxicillin/clavulanic acid, gentamicin and metronidazole with good outcomes. The role of hyperbaric oxygen therapy and IV immunoglobulin G in the management of NF remains controversial. [11] In our patient, we didn't indicate hyperbaric oxygen or IV immunoglobulin because of the good results. Surgery is the gold standard treatment; the affected tissue should be debrided as soon as possible. This should continue daily until the surgical team determines that all necrotic tissue has been removed. Amputation may be required to manage the infection in severe cases involving the extremities [4-6-11], as in our third case.

CONCLUSION

Before causing death, the necrotizing fasciitis cause firstly massive destruction of the soft tissue and bones, even in early diagnosed patients. The diagnosis is challenging because of the lack of specific diagnostic clues. Once it is suspected, based on clinical aspect and LRINC score, «acting fast" is mandatory, and so the orthopedic surgeon should be alerted.

Acknowledgments: Nil

Consent for publication: Consent was obtained from the patient for publication of this case report and accompanying images.

Competing interests: The authors declare that they have no competing interests.

REFERENCES

1. File TM, Jr, Tan JS, DiPersio JR. Group A streptococcal necrotizing fasciitis. Diagnosing and treating the "flesh-eating bacteria syndrome" Cleve Clin J Med. 1998;65(5):241–9.
2. Donaldson PM, Naylor B, Lowe JW, Gouldesbrough DR. Rapidly fa- tal necrotising fasciitis caused by Streptococcus pyogenes. J Clin Pathol 1993; 46(7): 617−20.
3. Lamagni TL, Neal S, Keshishian C, Powell D, Potz N, Pebody R, *et al.,* Predictors of death after severe Streptococcus pyogenes in- fection. Emerging Infect Dis 2009; 15(8): 1304−7.
4. Tang WM, Ho PL, Fung KK, *et al.,* Necrotising fasciitis of a limb. J Bone Joint Surg Br 2001;83(5):709—14.
5. Golger A, Ching S, Goldsmith CH, Pennie RA, Bain JR. Mortality in patients with necrotizing fasciitis. Plast Reconstr Surg 2007; 119:1803–7.
6. Bilton BD, Zibari GB, McMillan RW, *et al.,* Aggressive surgical management of necrotizing fasciitis serves to decrease mortality: a retrospective study. Am Surg 1998; 64:397–400; discussion 401.
7. Descamps V, Aitken J, Lee MG. Hippocrates on necrotising fasciitis. Lancet 1994;344(8921):556.
8. Wilson B. Necrotizing fasciitis. Am Surg. 1952;18(4):416–31.
9. Cheng NC, Su YM, Kuo YS, Tai HC, Tang 26. YB: Factors affecting the mortality of necrotizing fasciitis involving the upper extremities. Surg Today 2008;38: 1108-1113.
10. Kiat HJ, En Natalie 10- YH, Fatimah L. Necrotizing Fasciitis: How Reliable are the Cutaneous Signs? J Emerg Trauma Shock. 2017 Oct-Dec;10(4):205-210.
11. Sarani B, Strong M, Pascual J, Schwab CW. Necrotizing fasciitis: current concepts and review of the literature. J Am Coll Surg. 2009 Feb;208(2):279-88.
12. Miller LG, Perdreau-Remington F, Rieg G, *et al.,* Necrotizing fasciitis caused by community-associated methicillin-resistant Staphylococcus aureus in Los Angeles. N Engl J Med 2005;352: 1445–1453.
13. Maltezou HC, Giamarellou H. Community-acquired methicillin- resistant Staphylococcus aureus infections. Int J Antimicrob Agents 2006; 27:87–96. Epub 2006 Jan 19.