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A rapidly progressive case of Fournier's gangrene in a young male following a trivial injury to the groin area

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ABSTRACT

Fournier's gangrene is a rapidly progressing and insidious necrotizing infection of the fascia and soft tissues, characterized by its infrequent occurrence and very high mortality rate. It affects men significantly more often. It usually begins in the area of the external genitalia and perineum, and then spreads along fascial planes to other parts of the body. We present a unique case of a 43-year-old man with no history of chronic illnesses, who reported to the Emergency Department with symptoms of quadriceps muscle injury resulting from trauma. Within two days, the patient's condition deteriorated rapidly. The patient was transported to the hospital in a critically severe state. He was lethargic and hemodynamically unstable during transportation. Extensive areas of tissue necrosis were identified during clinical evaluation. Necrosis involved the external genitalia, the perineal region, and extended onto the medial aspect of the right thigh. In light of these findings, the medical team diagnosed Fournier's gangrene. Consequently, the surgeons proceeded with urgent wide debridement under general anesthesia to remove the necrotic tissue. His condition continued to worsen despite comprehensive therapeutic efforts, as the infection proved resistant to treatment. The characteristics of this case highlight the importance of assessing patients—especially following trauma to the perineal and genital area—for developing signs of gangrene, and the need for increased clinical vigilance. Prompt recognition combined with a swift treatment approach plays a vital role in avoiding serious complications, including sepsis and death.

Keywords: Fournier's gangrene, necrosis, necrotizing fasciitis, surgical debridement, surgical necrosectomy

1. INTRODUCTION

Fournier's gangrene (FG) is a rare, rapidly progressing disease also known as necrotizing fasciitis. It involves the perineum, external genitalia, and/or lower abdominal regions. The condition manifests as a rapidly spreading inflammation and infection along fascial planes. It carries a high mortality rate due to the rapid onset of sepsis and multiorgan failure. It was initially termed FG after the French

dermatologist Jean Alfred Fournier, who described the necrotizing infection in 1877 (Zhou et al., 2019).

Men are overwhelmingly more affected by this disease than women, with an average prevalence of 84% (range: 52–100%) (Voelzke and Hagedorn, 2018). The incidence in males is 1.6 cases per 100,000 men. This condition most commonly affects men between the ages of 50 and 79 (Leslie and Foreman, 2025). The higher incidence in men results from risk factors that are more prevalent among males. Among the most significant risk factors are diabetes, alcoholism, nicotine addiction, trauma and infections in the urogenital area, obesity, peripheral vascular disease, as well as conditions associated with immunosuppression, such as hematologic malignancies, acquired Immunodeficiency Syndrome (AIDS), chronic steroid therapy, chronic renal failure, and malnutrition (Tosun et al., 2022). Here we present a case of rapidly progressing FG in a healthy young adult following trauma.

2. CASE PRESENTATION

A 43-year-old Caucasian male of Polish nationality, with an unremarkable medical history, arrived at the Emergency Department (ED) with pain in the right inguinal area after lifting a heavy concrete bag at work two days earlier. An orthopedic surgeon conducted further evaluation. On examination, a small hematoma on the anteromedial surface of the right thigh has been revealed. The hematoma developed a few hours after the injury. Swelling and tenderness of the surrounding tissues were noted as well. Muscle testing showed that quadriceps function was preserved. Due to the absence of prior medical history and other clinical symptoms, the examining doctor recognized signs of a partial quadriceps muscle injury, and the patient left the hospital the same day. Two days later, the patient, in a severe general condition and hemodynamically unstable, was readmitted to the ED with symptoms of septic shock. There was hypotension, high fever, tachycardia, tachypnea, and altered mental status.

Upon admission, physicians identified massive tissue necrosis in the area of the scrotum, penis, and the anteromedial surface of the right thigh (Figure 1). The assessment confirmed the diagnosis of FG.

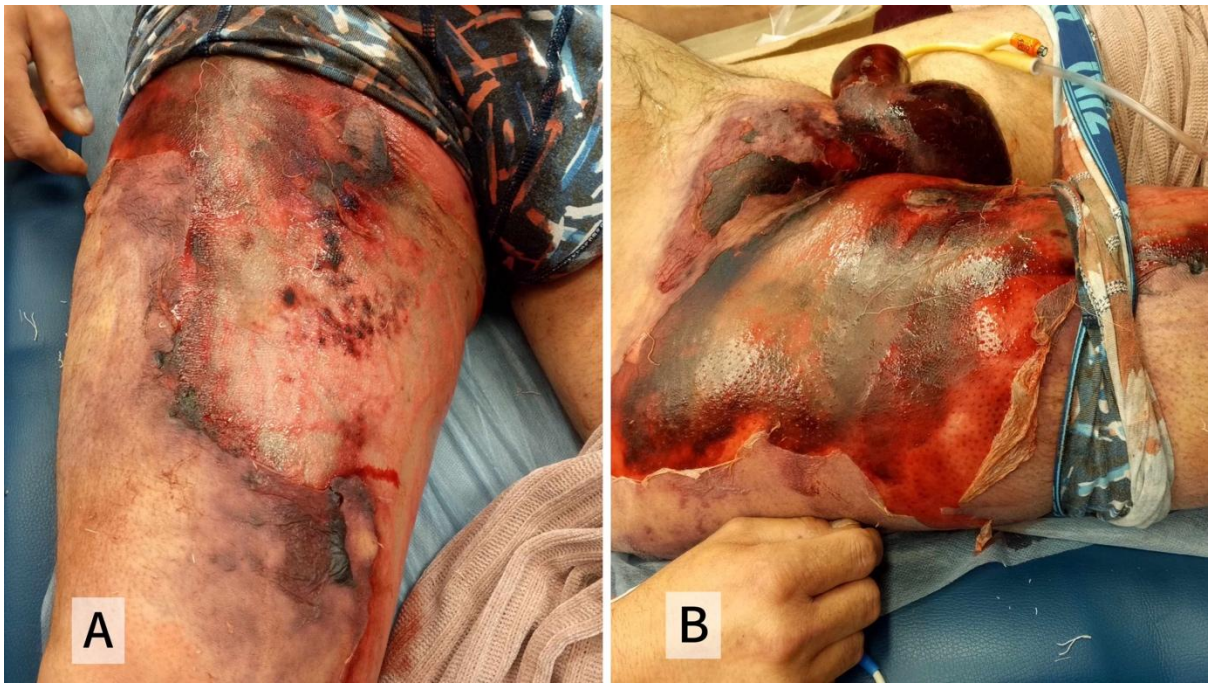

Figure 1: Preoperative photographs demonstrating necrotic tissue involvement of the anteromedial thigh (A), scrotum, and penile structures (B).

3. ASSESSMENT

Early in the hospital course, the medical team performed computed tomography (CT) scans of the pelvis and right thigh, revealing marked swelling of the subcutaneous soft tissues of the right lower limb and a large amount of fluid in the scrotum. Venous blood was obtained for laboratory and bacteriological testing, indicating elevated inflammatory markers (a very high level of procalcitonin) and lactic acidosis. Microbiological testing of blood confirmed streptococcal sepsis caused by *Streptococcus pyogenes*.

4. MANAGEMENT

Based on the clinical assessment, bacteriological and imaging tests, antibiotic treatment was initiated. The patient was urgently scheduled for surgical debridement of necrotic tissue by a multidisciplinary urology and surgical team under general anesthesia. Extensive necrosectomy was performed involving the external genitalia, right thigh, and right lower leg, with dissection down to the fascial plane. The microbiology laboratory analyzed the specimens for identification. Culture of the wound swab revealed colonization of the affected area by *S. pyogenes*, *S. epidermidis*, *E. coli*, and *E. faecalis*, which can be explained by prior contamination of the wound. Due to progressive necrosis of the subcutaneous tissue and skin, extending to the posterior aspect of the thigh and circumferentially involving the lower leg, surgical intervention was mandatory. A complete necrosectomy of devitalized skin and subcutaneous tissue was performed, along with the removal of isolated areas of fascial necrosis in the thigh region (Figure 2).

During the surgery, the patient sustained a sudden cardiac arrest. Following intubation and resuscitative management, the attending physicians transferred him to the emergency care unit, where he unfortunately died the next day.

Figure 2: Postoperative photograph after the first surgical debridement; open drainage in place to evacuate exudate from postoperative wounds (C).

5. DISCUSSION

FG, a rare necrotizing infection of the soft tissues of the perineum, represents a true medical emergency characterized by a high mortality rate. It usually arises from a localized source of infection, even a superficially insignificant injury from shaving. The infection penetrates into deep fascial planes rapidly, which leads to its quick progression. It involves obliterative arteritis, significant tissue necrosis, and gangrene (Molla et al., 2023).

An efficient clinical assessment facilitates the selection of the appropriate antibiotic therapy, thereby improving the development of an optimal clinical management strategy. On the initial admission to the hospital, the patient did not exhibit classic signs of FG,

including symptoms of systemic illness. The patient had only mild local manifestations of infection. The patient's clinically atypical presentation of FG was reassuring because FG may initially manifest insidiously with discomfort, tenderness, or localized redness in the genital or perineal area. These subtle and nonspecific local symptoms do generally not cause alarm, which leads to delayed suspicion of the possible threat and implementation of direct treatment. The clinical presentation became clearer during the second hospital admission, with progression of cutaneous and subcutaneous inflammation, typical skin necrosis, and systemic involvement.

FG is primarily a clinical diagnosis. Imaging diagnostics are helpful in solving diagnostic problems and confirming FG. Plain radiographs can detect gas in soft tissues, and ultrasonography is helpful in examining the scrotal wall. Among other methods, computer tomography is the most useful in the diagnosis of FG, providing vital information on both the progression and the extent of lesions. Immediate surgical removal of the lesion, combined with carefully selected antibiotic therapy, is the basis for treating FG. This given approach greatly limits the effects of both toxins and bacteria. This supports further treatment and complete eradication of the infection (Hota, 2012).

6. CONCLUSION

FG is a rapidly progressive, severe, and insidious infection that requires diagnostic vigilance, as early symptoms may be nonspecific and mimic less critical conditions such as cellulitis. Urgent intervention, including early surgical management and empiric broad-spectrum antimicrobial therapy, is essential for achieving favorable clinical outcomes. Such an interdisciplinary approach significantly reduces mortality.

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Author contributions

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All authors have read and agreed with the published version of the manuscript.

Informed consent

Written & Oral informed consent was obtained from individual participants included in the study. The patient consented to the publication of photographs.

Ethical approval

Not applicable.

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Conflict of interest

The authors declare that they have no conflicts of interests, competing financial interests or personal relationships that could have influenced the work reported in this paper.

Data and materials availability

All data associated with this study will be available based on the reasonable request to corresponding author.

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