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Case Report

Female Fournier's gangrene: not just a flesh-eating disease of scrotum

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ABSTRACT

Fournier's gangrene (FG) is a severe, rapidly progressing, and potentially life-threatening soft tissue infection that primarily affects the genital, perineal, or perianal regions. Fournier's gangrene in female is considered to be a rare case scenario. The pathogenesis of FG involves a synergistic polymicrobial infection, typically originating from a focus in the genitourinary tract, anorectal region, or surrounding soft tissues of the genital area. The most common initial symptom is pain in the perineal or perianal region. If not promptly treated, the infection can rapidly extend through fascial planes to areas such as the buttocks, abdominal wall, pelvis, and retroperitoneum. Misdiagnosis may delay surgical intervention and increase the risk of mortality. We had a case of female Fournier's gangrene with no comorbidities presented at a younger age and managed surgically with serial debridement under antibiotic coverage followed by secondary suturing. Prompt surgical intervention resulted in good recovery of patient with cosmetically satisfactory scar. The key to a favorable prognosis lies in timely diagnosis, early surgical intervention, targeted antimicrobial therapy, wound care, and comprehensive supportive management.

Keywords: Polymicrobial, Necrosis, Female Fournier's gangrene

INTRODUCTION

Fournier's gangrene (FG) is a severe, rapidly progressing, and potentially life-threatening soft tissue infection that primarily affects the genital, perineal, or perianal regions. It is initially characterized by necrosis of the fascia, which can lead to the destruction of subcutaneous tissue and skin in the affected area.[1,2]

The condition was first described by Professor Jean Alfred Fournier (1832–1914), a renowned venereologist, as acute idiopathic scrotal gangrene in young males.[2,3] Most patients with FG have underlying medical conditions such as diabetes mellitus, alcohol dependence, renal insufficiency, or chronic steroid use, all of which contribute to varying levels of immunosuppression.[4] The pathogenesis of FG involves a synergistic polymicrobial infection, typically originating from a focus in the genitourinary tract, anorectal region, or surrounding soft tissues of the genital area.[5] The most common initial symptom is pain in the perineal or perianal region. The diagnosis is primarily clinical, with typical manifestations including swelling, tenderness, and areas of black necrotic skin. The presence of crepitus may indicate gas-forming bacteria.

If not promptly treated, the infection can rapidly extend through fascial planes to areas such as the buttocks, abdominal wall, pelvis, and retroperitoneum. Nonspecific signs of infection, including erythema, localized warmth, or fever, can mimic conditions like erysipelas, streptococcal myositis, gas gangrene, or streptococcal toxic shock syndrome, complicating early diagnosis. Misdiagnosis may delay surgical intervention and increase the risk of mortality. Radiological imaging, such as CT and MRI, can aid in early detection, particularly in less apparent cases.[6]

Timely and aggressive management-comprising surgical debridement, intravenous antibiotics, and treatment of underlying conditions significantly improves outcomes.[9,10] FG predominantly affects males, with a reported male-to-female ratio of 10:1, and has a high mortality rate ranging from 14% to 45%.[7,8,11]

CASE REPORT

A 29 years old female, housewife, North Indian, presented to the urology department as a referred case from department of dermatology and veneral diseases. She developed itching in the groin region 10 days prior, followed by progressive fever upto 101°F and infective necrosis in the bilateral labia majora. She consulted the dermatology department where broad spectrum beta lactam oral antibiotic was started. Fever and malaise increased, with intense pain in the external genitalia.

She was then referred to the department of urology for further management. She didn't have any co-morbid condition. On physical examination, the patient was seen with malaise, difficulty in mobilizing herself, could not walk due to pain in the bilateral groin area.

Bilateral labia majora were deformed and sloughed off along with increased local temperature, areas of necrosis and ulcer of about 8×4 cm on either side; and output of very foul-smelling material from the ulcer.

The following laboratory and consultancy studies were reported: 13,500 cells/dl leucocytosis, 90% polymorphonuclear leukocytes and 3% bands, glucose: 98 mg/dL, creatinine: 1.1 mg/dl, uric acid: 5.3 mg/dl. Pus swab taken from the ulcer bed at the time of presentation was reported having no growth, probably as the patient had been taking broad spectrum beta lactam antibiotic for 5 days.

To ensure metabolic control of the disease condition, she was started with injectable broad-spectrum antibiotics and other symptomatic management urgent surgery was planned. Before surgery, patient was again evaluated under anesthesia and it was found to be a necrotizing fasciitis of the genital area, mainly the bilateral labia majora; therefore, a diagnosis of Fournier's gangrene was considered.

During surgery, all dead and necrotic tissue was debrided, all purulent and serosanguineous material was drained a vigorous washing was performed and the surgical area was left open for serial debridement and dressings.

Dressings were changed every 12 hours for the initial 3 days and then every 24 hours for 14 days. Abundant purulent material was obtained for 3 days; then, it gradually decreased. During all this time, a strict vital monitoring was done. Patient was then planned for suturing of the wound.

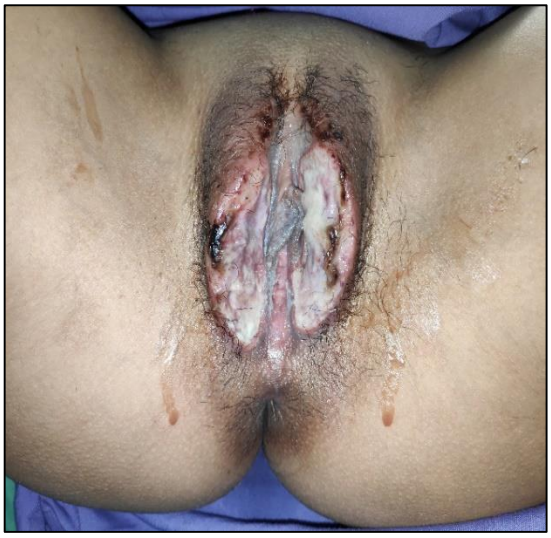

Figure 1: Pre-operative image of the patient.

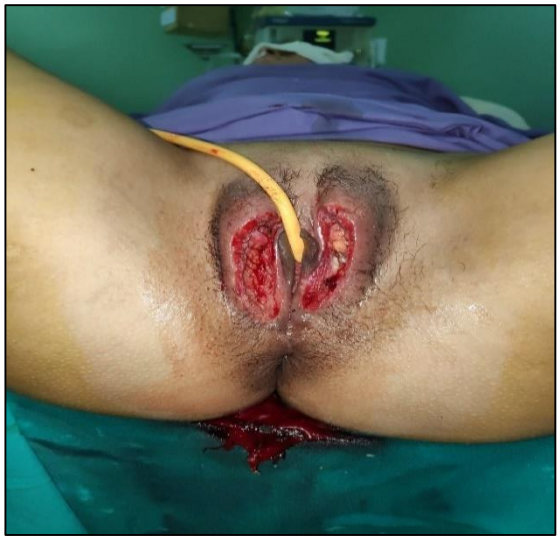

Figure 2: Condition of the ulcer post debridement.

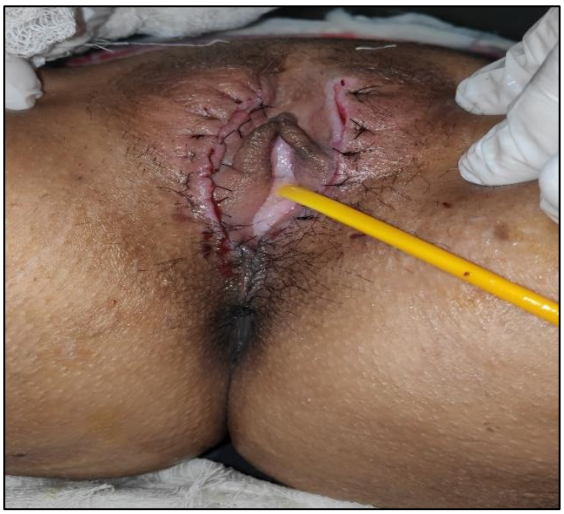

Figure 3: Condition of the ulcer post-secondary suturing.

DISCUSSION

Fournier's gangrene (FG) was traditionally considered a disease exclusive to males; however, cases in females have also been reported.[12] Interestingly, the ICD-10 code for FG (N49.3) falls under the classification of inflammatory disorders of the male genital organs, with no equivalent diagnostic code for females.[13] Despite this, data on FG in females remains scarce, even in large case series. For instance, a review of seven recently published articles from various regions, encompassing a total of 486 patients, revealed no female cases.[14-20] One possible explanation for the lower prevalence in females could be the natural drainage of the female perineum via the vaginal route. Additionally, many of the studies were conducted in urology clinics, potentially leading to an overrepresentation of male patients.

Necrotizing fasciitis, a rare and life-threatening soft tissue infection, is a medical and surgical emergency. It can be categorized into four types (1) polymicrobial, often originating from bowel flora (2) monomicrobial, derived from the skin or throat (3) Gram-negative monomicrobial and (4) fungal.[21,22]

The etiology of FG is predominantly polymicrobial, involving microorganisms from the genitourinary and anorectal tracts, as well as the genital skin. Specific causes in females include Bartholin's gland or vulvar abscesses due to infected cysts, episiotomy wound infections, hysterectomy, or septic abortions. While *Fusobacterium necrophorum* is the most commonly reported pathogen, other microorganisms such as Bacteroides species, groups B and C Streptococci, *Streptococcus oralis*, *Fusobacterium nucleatum*, *Streptococcus intermedius*, *Staphylococcus epidermidis*, Enterococcus species, *Proteus mirabilis*, and *Arcanobacterium haemolyticum* have also been implicated.[23]

The pathophysiology involves bacterial infection leading to obliterative endarteritis, ischemia, and subsequent tissue necrosis.24 Various risk factors and comorbidities are associated with FG, including advanced age, hypertension, chronic renal disease, obesity, liver disorders, alcoholism, congestive heart failure, peripheral vascular disease, smoking, immunosuppression, HIV, cachexia, diabetes mellitus, and malnutrition.[24-26]

Diagnosis is primarily clinical, with severe pain-often described as "pain out of proportion"-as the most common presenting symptom. This pain is attributed to the spread of fascial ischemia, accompanied by nonspecific inflammatory signs.[27] In the present case, the patient's age at presentation was notably younger than the typical range of 50–70 years. Preoperative radiological diagnostics were not conducted to avoid delays in treatment. In the authors' opinion, imaging modalities such as MRI or CT scans should be reserved for rare instances, as timely surgical intervention is critical in such emergencies. Clinical assessment often suffices for diagnosis, with surgical intervention serving both diagnostic and therapeutic purposes. In the early stages of disease progression, prompt and radical debridement of infected and necrotic tissues is paramount. Intraoperatively, uncompromising debridement-guided by the principle "be bloody, bold, and resolute"-is essential.[27]

Surgical management must be complemented by broad-spectrum intravenous triple antibiotic therapy (e.g., penicillin, lacosamide, and carbapenems), along with supportive measures such as analgesics and antipyretics.

CONCLUSION

This case, along with evidence from other reports, suggests that FG can manifest at a younger age than previously thought, even in patients without predisposing comorbidities. The key to a favorable prognosis lies in timely diagnosis, early surgical intervention, targeted antimicrobial therapy, wound care, and comprehensive supportive management. In the presented case, these strategies contributed to a successful outcome.

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