Fournier's Gangrene

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ABSTRACT

This article provides an overview of the diagnosis and treatment of Fournier's gangrene, a necrotizing fasciitis of the perineal, genital, or perianal areas, which commonly affects men. The article will highlight the symptoms of the condition and the pertinent anatomy.

Keywords: anatomy, antibiotic therapy, emergency department, Fournier's gangrene, nurse practitioner

A 22-year-old man presents to the emergency department (ED) with a 2-day history of right-sided scrotal swelling, redness, and pain. The patient does not remember any particular trauma to the area. Examination reveals marked swelling and pain on the right side of the scrotum. The area is tender on palpation. There is also marked erythema extending from the scrotum to the lower abdominal area.

In the ED, the patient is categorized according to the Manchester triage scale as a category 2 patient. This high category is because of his scrotal pain.[1] The majority of scrotal pain can be attributed to 1 of 3 common diagnoses: testicular torsion, epididymitis, or torsion of the appendix testis.[2] As a nurse practitioner (NP), you recognize the importance of seeing and referring this patient to either the surgeons or urologists because from the history you recognize that this could be a possible urologic emergency like torsion of the testes.[3]

After recording the patient's observations, you notice that he has a temperature of 38.8°C, a tachycardia of 118 beats/min, and is hypotensive with a blood pressure of 99/49 and a respiratory rate of 24. This leads you to suspect that the patient may becoming septic because he has more than 2 systemic inflammatory response syndrome markers for sepsis present.[4] Systemic inflammatory response syndrome is defined as a response to a variety of severe clinical insults having 2 or more of the following: temperature $> 38°C$ or $< 36°C$, heart rate > 90 beats/min, respiratory rate > 20, and $PaCO_2 < 32$.[4]

Having realized that this was the case, another diagnosis occurs to you as the NP—Fournier's gangrene, a severe infective necrotizing fasciitis that requires urgent management to prevent serious consequences for the patient.

INTRODUCTION

Fournier's gangrene is an infective necrotizing fasciitis of the perineal, genital, or perianal areas, which commonly affects men but has been reported in women and children.[5] It is a rare condition with a reported incidence of 1.6 per 100,000 males, with a peak incidence in the 5th and 6th decades of life.[6] The incidence in children is even rarer, with less than 60 pediatric cases being reported in the literature and the majority being in those under 3 months old.[7] There is nothing in the literature about the incidence of Fournier's gangrene within the female population, other than to state that it occurs.

Fournier's gangrene was named after a noted French venereologist and dermatologist Jean Alfred Fournier in 1883; however, the condition had previously been described in the literature by Avicenna in 1877 and Baurienne in 1764.[8] Fournier described the condition as the abrupt onset of rapidly fulminating idiopathic genital gangrene in previously healthy young men.[9] Today, the eponym now applies to necrotizing perineal infections in both men and women.[10]

Predisposing Factors

Although originally described by Fournier as an idiopathic condition, there have since been several conditions linked to Fournier's gangrene that should raise the practitioner's suspicion of Fournier's gangrene being present (Table 1). Causes that may have a more

direct role in its development tend to be of a urogenital, anorectal, or gynecologic nature. A further breakdown of possible causes is provided in Table 2.

Etiology

Fournier's gangrene is no longer thought to be solely idiopathic with an identifiable cause found in 95% of cases.[11] The vast majority of cases are from perineal and genital skin infections.[12] These infections then spread to the abdominal wall, which allows normal microbial flora to penetrate the sterile spaces of the fascia.[11] It has been identified that the most common etiology for men is hemorrhoidectomy and perianal abscess in women.[13]

Symptoms

Fournier's gangrene often starts with a period of genital discomfort and pruritus. After this, there is a sudden and rapid onset of hyperalgesia to the perineal region.[14] Initially, the appearance of the skin may mask the extent of any subdermal gangrene; this may lead to a delay in any diagnosis being reached.[15]

A patient with the condition will present with local swelling, discomfort, fever, erythema, local hardening of tissues, and bruising to the scrotum/perianal area.[16] Patients will also complain of a characteristic fetid odor, which can be attributed to the anaerobes in the infection.[11,16] Clinical examination of the area may reveal crepitus caused by the gas-forming organisms under the skin.[5] As the condition progresses, there may be cyanosis, blistering, or bronzing of the skin and induration of the skin—all of which are features of deep tissue infection.[17] As the condition worsens, the necrotic patches may start to appear on the overlying skin (Figures 1-3).[5] Unless this condition is treated aggressively, the person is likely to proceed from sepsis to septic shock and, ultimately, multiple organ failure and death.[5]

It has been identified that there are 4 characteristic phases of Fournier's gangrene:

- Phase 1 (the first 24-48 hours): nonspecific symptoms associated with local hardening, pruritus, edema, and erythema
- Phase 2 (the invasive phase): short with local and regional inflammatory manifestations
- Phase 3 (the necrotic phase): rapid worsening of the condition, evolving into septic shock in 50% of patients

Table 1. Conditions Linked to Fournier's Gangrene

Diabetes
Alcohol abuse
Immunosuppression
Chemotherapy
Chronic corticosteroid use
HIV
Leukemia
Liver disease
Vulvar or Bartholin abscesses
Episiotomy
Hysterectomy

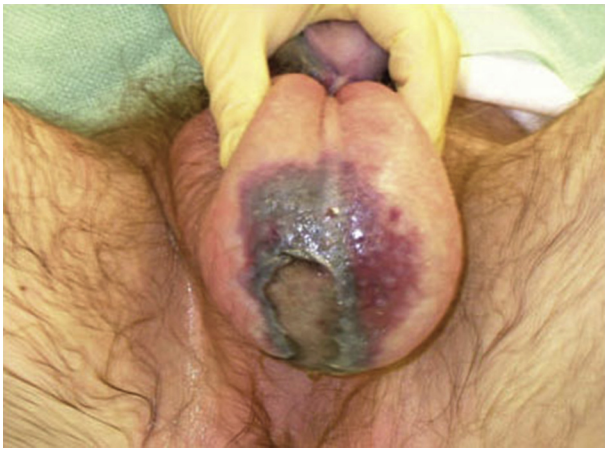
Data from Czymek et al,[42] Schecter et al,[10] Shyam and Rapsang,[11] and Tran and Hart.[44]

Table 2. Possible Causes of Fournier's Gangrene

Urogenital	Anorectal	Gynecologic
Urethral stricture	Perianal abscess	Bartholin abscess
Indwelling catheter	Rectal biopsy	Septic abortion
Traumatic catheterization	Anal dilation	Episiotomy
Urethral calculi	Hemorrhoidectomy	Coital injury
Prostatic biopsy	Rectosigmoid cancer	Genital mutilation
Vasectomy	Appendicitis	
Intracavernosal cocaine	Diverticulitis	
Genital piercing		

Data from Czymek et al,[42] Efem,[45] Schecter et al,[10] Shyam and Rapsang,[11] and Thwanini et al.[5]

Figure 1. Early Fournier's gangrene.



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