



Fournier's Gangrene in 21 Years Old Female: A Case Report

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A B S T R A C T

Introduction: Fournier's gangrene, also known as gangrene of the genital region, is an uncommon and rapidly advancing form of necrotizing fasciitis that affects the genitals. The severity and mortality of the disease are dependent upon the overall health status of the patient at the time of diagnosis and the speed at which the infection spreads. **Case presentation:** An unmarried 21-year-old woman presented with a persistent discharge of abscesses in the perineal area. The patient came in ambulatory and showed no indicators of heart or lung discomfort. A pelvic examination was performed, and the following observations were made: A visual examination revealed swelling in the vulvar area on both sides, along with an open wound within the swelling measuring 3×3 cm. The wound was discharging reddish, thick, and foul-smelling fluid. A glucose level of +4 was observed in the urine, and a random blood sugar test yielded a value of 324 mg/dl. The patient received wound debridement, excision, and electrocauterization of genital warts, blood sugar monitoring with insulin administration, and a 14-day course of antibiotics. The patient's condition improved, and they were discharged after receiving 14 days of intravenous antibiotic treatment. **Conclusion:** The treatment of Fournier gangrene requires a comprehensive approach that includes intensive systematic management, broad-spectrum antibiotic therapy, and early surgical debridement. This involves removing the necrotic tissues and surgically draining the peritoneum, scrotum, penis, and inguinal regions.

1. Introduction

Fournier's gangrene, commonly referred to as gangrene of the genital region, is an uncommon and fast-advancing type of necrotizing fasciitis that affects the genitals.¹ In 95% of cases, Fournier's gangrene is able to be diagnosed solely through physical examination.² Fournier's gangrene can manifest in a range of clinical presentations, starting with a localized infection and progressing to extensive areas affected by necrotizing infection. The condition primarily affects elderly males with significant systemic comorbidities, while women are less commonly affected.³⁻⁵

Although there have been advancements in the identification and treatment of the condition, the current mortality rate ranges from 20% to 43%.³ The

mortality rate is elevated as a result of a polymicrobial infection that is linked to extensive tissue death and widespread toxicity throughout the body.⁶⁻⁸ Irrespective of the rigorous treatment approach, the death rate remains elevated. The key characteristic that distinguishes Fournier's Gangrene is the existence of a necrotizing element. This function is intended for patients who require both surgical and supportive treatment. Prompt recognition of symptoms is crucial for determining the likely outcome of a medical condition, and the initial stage of this determination involves having a suspicion. Clinical signs such as swelling, redness, discomfort, hardening, and fever are significant in this process.^{9,10} Utilizing radiological imaging and doing laboratory tests can aid in the process of diagnosing the

condition.^{11,12} We documented a case of a 21-year-old female who exhibited a diagnostic of Fournier's gangrene that was highly indicative of the condition.

2. Case presentation

Ms. TR, an unmarried 21-year-old woman, presented with a persistent discharge of abscesses in the perineal area. One month before admission, the patient experienced pruritus and irritation in the bilateral labial and perineal areas after switching to a different brand of feminine wash. The patient consistently scratches until the affected area becomes red and swollen. There are no additional symptoms present, such as fever, painful urination, abnormal vaginal discharges, or any changes in bladder and bowel habits. No consultation was conducted.

Seven days before admission, the patient experienced ongoing symptoms and a large area of redness and swelling. After consulting at the provincial hospital, the patient was admitted for a 5-day duration. The patient was administered the medications clindamycin and cefuroxime. No surgical intervention took place. The patient was discharged and went home.

Two days before admission, the patient, who had not shown any signs of improvement, still had persistent symptoms and continued to experience discharge from the abscess in the perineal area. As a result, the patient sought consultation at our facility. The patient reported that her mother has diabetes. There are no other inherited diseases, such as asthma, heart disease, hypertension, or cancer. The patient had successfully completed their high school

education. She refuted any consumption of alcohol, usage of illicit drugs, or smoking of cigarettes. She experienced menarche at the age of 11, with a regular monthly cycle lasting for seven days. During this time, she used three moderately moistened pads every day and did not experience any dysmenorrhea. At the age of 19, she engaged in sexual activity for the first time with one sexual partner with whom she lived, and they did not use any form of contraception. However, she did not become pregnant.

The patient came in ambulatory and showed no indicators of heart or lung discomfort. The patient's vital signs were as follows: blood pressure (BP) of 110/80 mmHg, pulse rate of 110 beats per minute, respiration rate of 20 breaths per minute, and a temperature of 36.8 °C. The examinations of the head and neck showed no yellowing of the whites of the eyes, a pinkish color of the inner eyelids, no congestion of the tonsils and throat, and no swelling of the lymph nodes in the neck. The chest and lungs were examined, and there was symmetrical chest wall expansion, no retraction, and clear breath sounds. The heart exhibited a lack of movement in the area in front of it, along with a rapid heartbeat and consistent rhythm. The abdomen exhibited a flat, velvety, and non-tender appearance. A pelvic examination was performed, and the following observations were made: A visual examination revealed swelling in the vulvar area on both sides, along with an open wound within the swelling measuring 3×3 cm. The wound was discharging reddish, thick, and foul-smelling fluid (Figure 1). The first diagnosis was G0 extensive vulvar abscess, most likely Bartholin's abscess.



Figure 1. Pelvic examination.

Upon admission, the patient was positioned in the dorsal lithotomy position. We performed the recommended diagnostic procedures, including a chest X-ray, full blood count, urinalysis, and blood culture. We initiated the administration of clindamycin at a dosage of 900 mg and gentamycin at a dosage of 120 mg, followed by a subsequent dosage of 90 mg intravenously. The intended purpose was to do irrigation and debridement of the wound. A glucose level of +4 was observed in the urine, and a random blood sugar test yielded a value of 324 mg/dl. The HbA1c test was ordered, and the patient received care from both internal medicine and surgery departments.

The patient received wound debridement (as shown in Figure 2), excision and electrocauterization of genital warts, blood sugar monitoring with insulin administration, and a 14-day course of antibiotics. We performed daily dressing and wound debridement. The patient's condition improved, and they were discharged after receiving 14 days of intravenous antibiotic treatment. The final diagnosis was G0 Fournier's abscess, genital warts, diabetes mellitus, s/p debridement, excision, and electrocauterization of genital warts.



Figure 2. Debridement of Fournier's gangrene.

3. Discussion

Fournier's gangrene, named by the French dermatologist Jean-Alfred Fournier in 1883, refers to a rare and fast-advancing condition known as necrotizing fasciitis.¹ It primarily affects the vaginal, perianal, perineal, and abdominal walls. A polymicrobial infection that causes extensive tissue death and widespread toxicity throughout the body elevates the mortality rate.¹³ Fournier Gangrene typically affects geriatrics and men. It also affects females and children. Fournier gangrene occurs at a rate of 1.6 cases per 100,000 male patients per year. The average age of patients is 50.9 years, and there is a male-female ratio of approximately 10 to 1. Irrespective of the rigorous treatment methods used, the death rate remains significantly high, with an average ranging from 20% to 30%.³

Fournier's gangrene is caused by polymicrobial infections that involve both aerobic and anaerobic organisms.^{14,15} These infections typically arise from genitourinary, colorectal, or soft tissue diseases. The histopathological examination of the affected area reveals the presence of vascular thrombosis, dermal necrosis, infiltration of bacteria, and inflammatory cells. Underlying conditions such as diabetes, renal failure, malignancy, immobility, and immunosuppression are variables that make someone more likely to develop a polymicrobial infection and increase their vulnerability to Fournier's gangrene.¹⁴

Fournier's gangrene is primarily an infectious condition that affects the superficial and deep layers of the fascia.¹⁶ It is crucial to have a clear grasp of the anatomical connection between the skin and the subcutaneous structures of the perineum and

abdominal wall. The Camper fascia supports the area of skin above the inguinal ligament. This layer varies in thickness and contains the blood vessels that supply the skin. The Scarpa fascia is a separate layer located beneath the Camper fascia. The scarpa fascia in the perineum merges with the Colles fascia, also known as the superficial perineal fascia. It is crucial to take into account several significant anatomical connections. If there is a possible gap between the Scarpa fascia and the deep fascia of the anterior wall (external abdominal oblique), an infection in the perineum can spread to the anterior abdominal wall. The scarpa and Camper fascia join together and connect to the clavicles, preventing an infection that started in the perineum from spreading upward. A localized infection near the entry point initiates the development of Fournier gangrene. In the end, a destructive inflammation of the inner lining of the arteries, known as obliterative endarteritis, occurs. This causes the blood vessels in the skin and underlying tissues to die, resulting in restricted blood flow and allowing germs to multiply. Infection of the superficial perineal fascia, also known as Colles fascia, can spread to the penis and scrotum via the Buck and Dartos fascia. It can also migrate to the anterior abdominal wall through the Scarpa fascia, or vice versa. It restricts movement in these directions by connecting to the perineal body and urogenital diaphragm in the back, as well as to the pubic rami on the sides. The labia majora are anatomically equivalent to the male scrotum throughout development.^{16,17} When examining the affected tissue, the subsequent findings are pathognomonic of Fournier's gangrene: (1) the superficial and deep fascial planes are necrotic; (2) the nutritional arterioles undergo fibrinoid coagulation; (3) infiltration of polymorphonuclear cells; and (4) The microorganisms found in the affected tissues have been identified.¹⁷

The host's weakened immune system, often due to concurrent systemic conditions, allows microorganisms to cause infection. The etiologic factors allow the bacterium to enter the perineum; impaired immunity creates a favorable environment for the infection to start, and the virulence of the microorganism facilitates the disease's rapid

progression. Accidental, intentional, or surgical trauma, along with the presence of foreign bodies, can all contribute to the condition. According to the literature, the following factors have been documented as triggering factors: (1) Thoracic trauma; (2) Superficial soft-tissue injuries; (3) Genital piercings; (4) Penile self-injection with cocaine; (4) Urethral instrumentation; (5) Penile prosthetic implants; (6) Intramuscular injections; (7) Steroid enemas (administered to treat radiation proctitis); (8) A foreign body in the rectum. Septic abortions, vulvar or Bartholin gland abscesses, hysterectomy, and episiotomy are all established sources of infection in women. Anal intercourse in males can elevate the likelihood of perineal infection, either due to direct injury to the area or the transmission of bacteria from the rectum.¹⁸

Urgent patient resuscitation, broad-spectrum antibiotic medication, and surgical debridement are the essential components of management for this life-threatening illness.¹⁹ The objective of treatment is to diminish the overall toxicity, arrest the advancement of the infection, and eradicate the bacteria responsible. In order to manage Fournier's gangrene, it is necessary to administer a broad spectrum parenteral antibiotic regimen upon a broad spectrum in order to manage Fournier's gangrene. Future culture and sensitivity findings may alter antibiotic selection.²⁰ At present, there are no specific suggestions for the best antibiotic treatment for Fournier's gangrene. The management of patients with this condition is based on the instructions provided by the local hospital. Swift and thorough elimination of dead and damaged tissue is the critical measure to stop the infection's progression. The need for promptly performing surgical debridement is recognized, as any delay of even a few hours significantly raises the likelihood of mortality. Typically, the disease rarely affects the deep fascia and underlying muscle, so there is no need to remove them. However, it is crucial to emphasize that the severity of the infection cannot be determined just based on the extent of skin tissue death, and it is necessary to perform a surgical investigation. Properly removing dead tissues and excising non-living tissues sufficiently is considered

vital for survival. The literature has recommended performing extensive debridement, which involves removing a significant amount of tissue, including a small area of healthy tissue surrounding it. Thoroughly examining the incision and repeatedly removing dead tissue are essential steps to managing the infection.¹⁸⁻²⁰

4. Conclusion

Fournier's Gangrene is an uncommon and aggressive form of necrotizing fasciitis that affects the vaginal, perianal, perineal, and abdominal walls. When suspecting a condition, promptly implement a multidisciplinary approach, including immediate referrals to departments like surgery and medicine.

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