

FOURNIER'S GANGRENE AFTER BILATERAL VASECTOMY-A CASE REPORT

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ABSTRACT

Fournier's gangrene is an acute, rapidly progressing, potentially fatal necrotizing fasciitis affecting the external genitalia, perineal or perianal regions and is caused by a mixed infection with aerobic/anaerobic bacteria, which commonly affects the men, but can also occur in women and children. The most common foci of infection are from gastrointestinal tract, genitourinary tract or less commonly from the cutaneous injuries. The common risk factors includes diabetes mellitus, alcohol abuse, extremes of age, male gender, chronic steroid use, malnutrition and immunosuppression. Uncommonly, Fournier's gangrene has been documented after vasectomy operation-a permanent technique for male partner sterilization. Here we present a case of Fournier's gangrene in an adult male who had undergone bilateral standard vasectomy for permanent contraception and presenting after 7 days with gangrene in the scrotum requiring urgent debridement and broad-spectrum antibiotics.

KEYWORDS

Fournier's gangrene, surgical debridement, vasectomy

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INTRODUCTION

Fournier's gangrene is defined as synergistic, polymicrobial, necrotizing fasciitis of the perineum, scrotum, and penis, which is characterized by obliterative endarteritis of the subcutaneous arteries resulting in gangrene of the subcutaneous tissue and the overlying skin.¹ Fournier's gangrene, is first described by Baurienne, a French venerologist in 1764 and named after Jean Alfred Fournier in 1883. Fournier's original description included five otherwise healthy young males with scrotal gangrene and emphasized the sudden onset of the disease in the absence of a definite cause with a rapid progression to gangrene.^{2,3} Since that time, hundreds of cases have been reported in the literature. The most common causes of the disease are anorectal infections, genitourinary infections or local injuries to the perineal and genital skin.⁴ The pathology of Fournier's gangrene can be briefly summarized as synergistic necrotizing fasciitis resulting in the thrombosis of small subcutaneous vessels of suppurative bacterial infection of the anorectal, perineal, or genitourinary regions, leading to the development of gangrene in the skin.^{2,4} With the developing inflammatory reaction, local infection rapidly spreads to deep fascial layers. This rapidly spreading infection characteristically causes obliterative endarteritis, leading to cutaneous and subcutaneous vascular thrombosis and tissue necrosis.⁴

Vasectomy is a minor surgical procedure which cuts and divides the vas deferens and is the most effective mode of permanent male contraception, and the only method that is widely available. Complications following vasectomy include hematoma, infection, sperm granuloma, and persistent post vasectomy pain. The incidence of infection varies between 12–38%, with an average of about 3.4%.^{5,6} This includes wound, urinary and epididymal infection. Fournier's gangrene is a rare, but potentially lethal, complication. Four cases (including one death) have been reported in otherwise fit young men, although one patient had an intercurrent diarrhoeal illness at the time of vasectomy.⁷⁻⁹

Here we describe a case of Fournier's gangrene after a standard bilateral vasectomy requiring fluid resuscitation, broad spectrum antibiotics administration and primary surgical debridement and wound care of the scrotal and penile skin followed by delayed skin reconstruction.

CASE DESCRIPTION

A 47-year-old male, presented to the Emergency Department with complaints of severe pain in the perineal area for two days. History dates back 10 days ago when he underwent bilateral standard vasectomy for permanent male sterilization as a method of permanent contraception. Since then, the patient had mild pain over the scrotal area, which increased after 7th post-operative day of vasectomy, localized to the right scrotal area and not relieved by the

usual dose of analgesics. The pain was severe enough to hamper daily living, non-radiating, aggravated by movement and not relieved by rest or an analgesics. In the last two days she started developing scrotal swelling, redness which progressed to sloughing of the scrotal skin and foul-smelling discharge. He complained of fever, intermittent type, with chills, rigors and sweating. Body temperature recorded at home was 101 F.

There is no significant past medical history. He consumes alcohol occasionally, CAGE:1/10; he is non-smoker with no chronic illness like Hypertension, Diabetes mellitus, etc.

On examination, patient was ill looking and sweating profusely. Vitals include: BP:100/70 mm of hg, Temperature: 102 F, RR:15/min, Pulse:120/min.

Respiratory, Cardiovascular and Central Nervous System examination was normal.

The abdomen was soft, non-tender with no organomegaly. Bowel sounds were heard normally.

On local examination of the perineum, the scrotum looked red, oedematous with sloughing of the right scrotal skin with thick yellow foul-smelling discharge, the underlying testis was not visible. The scrotum was tender to touch with fluctuation present over the scrotal wall. No crepitus was heard.

Per rectal examination was normal.

Investigations revealed WBC:15000/mm³, Platelets: 160,000, Hemoglobin:13 gm/dl, Urea:40 mg/dl, Creatinine: 1.3, random blood sugar:140mg/dl, PT:14 seconds, INR:1.3, APTT:30 seconds and Serology (Hepatitis, HIV, Syphilis) was negative. Urine analysis revealed WBC:4-8 cells/mm³, RBCs: Nil, Culture of urine shows no growth; blood culture shows no growth. The discharge swab was also taken and sent for gram staining and culture and sensitivity which revealed *E. coli* sensitive to ceftriaxone after 4th day of incubation.

The patient was admitted in surgery ward with appropriate volume resuscitation with normal saline; IV antipyretics, analgesics and PPI were given. Broad spectrum antibiotics were started with Inj. Piperacillin-tazobactam plus Gentamicin plus Clindamycin in Emergency Department. Urgent surgical debridement and removal of all the nonviable necrotic debris was performed. The patient was stabilized, and wound care was done for next 5 days with documentation of healthy granulation tissue. After adequate stabilization and wound care, the patient was referred to tertiary centre in Kathmandu for further need of plastic/reconstructive surgery.

DISCUSSION

Fournier's gangrene is a type of synergistic polymicrobial necrotizing infection (gangrene) of the perineal, genital or perianal regions usually affecting the male genitals but can also occur in females and children.¹⁰ It is a fulminant form of necrotizing fasciitis. Although originally described as



idiopathic gangrene of the genitalia, Fournier's gangrene has an identifiable cause in 75-95% of cases.¹¹ The necrotizing process commonly originates from an infection in the anorectum, the urogenital tract, or the skin of the genitalia.¹² The common causes include perianal, perirectal or ischiorectal abscess, anal fissure, anal fistula, colonic viscus perforation, urethral injury, orchitis, epididymitis, urinary tract infections, hidradenitis suppurativa, trauma (accidental, intentional or surgical) or presence of foreign body. Fournier's gangrene is caused by mixed aerobic and anaerobic organisms which normally exist below the pelvic diaphragm in the perineum and genitalia. Following organisms are the most likely cause: Staphylococcus, Streptococcus, E. coli, Klebsiella, Proteus, Clostridium and rarely Fungi.¹³ With the developing inflammatory reaction, local infection rapidly spreads to deep fascial layers. This rapidly spreading infection characteristically causes obliterative endarteritis, leading to cutaneous and subcutaneous vascular thrombosis and tissue necrosis.⁴ Common risk factors in the development of Fournier's gangrene include: Age > 50 years, male gender, diabetes mellitus, alcohol misuse, immunosuppression, chemotherapy, chronic corticosteroid use, HIV, leukaemia, Liver Disease, debilitating illness, malignancy, cytotoxic drugs.¹² Diabetes mellitus is the most commonly reported comorbidity associated with this disease.¹⁴ The prevalence of diabetes mellitus in patients with Fournier's gangrene varies between 50% and 70%. Alcohol and smoking have also been shown to be associated.¹⁵

Fournier's gangrene is characterized by severe pain that generally starts on the anterior abdominal wall, migrates into the gluteal muscles and onto the scrotum and penis. A number of clinical features may indicate a necrotizing infection, such as tense oedema outside the involved skin, blisters/bullae, crepitus, and subcutaneous gas, as well as systemic findings, such as fever, tachycardia and hypotension. The hallmark of Fournier's gangrene is intense pain and tenderness in the genitalia.¹⁶ The patient can develop systemic involvement manifesting as septic shock or multi organ failure.¹⁶

The main principles of treatment are aggressive hemodynamic stabilization, parenteral broad-spectrum antibiotics and emergency surgical debridement. However, early surgical debridement is the mainstay of this combined treatment as the spread of gangrene is rapid at the rate of 2-3 cm/hr.¹⁷ Necessary debridements are performed by applying a series of re-explorations every 24-48 hours. It has been reported that it requires an average of 3.5 debridement procedures per patient. They are very useful in controlling the extent of necrosis. Urinary and faecal diversion may be necessary to protect the wound from contamination.¹⁹

Empiric broad-spectrum antibiotic therapy should be instituted as soon as possible, until the culture results are available which later helps to guide the therapy. The

antibiotic regimen chosen must have a high degree of effectiveness against staphylococcal and streptococcal bacteria, gram-negative, coliforms, pseudomonas, Bacteroides, and clostridium. Classically Triple therapy is usually recommended. Third generation cephalosporins or aminoglycosides, plus penicillin and metronidazole. Clindamycin may be used as it is shown to suppress toxin production and modulate cytokine production; also use of linezolid, daptomycin, and tigecycline is warranted in cases of previous hospitalizations with prolonged antibiotic therapy which may lead to resistant Bacteroides.¹⁹

As a result of aggressive surgical debridement, the common outcome is large tissue defects. Therefore, wound care is an important part of treatment in Fournier's gangrene. The final step in the treatment is the closure of a large wound defect. Most cases, especially small defect wounds, simply heal secondary. For defects that are slightly larger, primary closure may be sufficient. However, the most commonly used and preferred method for large defect wounds is skin grafts.¹⁸

Fournier gangrene is a true surgical emergency. At minimum, immediate urologic or general surgical consultation is mandatory, and management often requires a multi disciplinary team, including a urologist, a general surgeon, and an intensive care specialist. Transfer to a tertiary facility may be required if these resources are not available at the initial facility. Initial debridement may be performed if required in anticipation of transfer. Arrange for transfer once the patient has been stabilized and resuscitative efforts have begun.

Despite the development of various treatment modalities, antibiotic therapy and intensive care follow-up, Fournier's gangrene is still a fatal disease with a mortality rate of 20-50%.^{19,20}

CONCLUSION

Fournier's gangrene is a polymicrobial infection (mixed aerobic/anaerobic bacteria) of the penoscrotal region that manifests as a rapidly progressive potentially fatal necrotizing fasciitis, most commonly affecting in men > 50 years but can also occur in females and children. Most of the cases have a predisposing and/or triggering factor. Fournier's gangrene following vasectomy is uncommon. The morbidity and mortality in this severe complication depend on early diagnosis and aggressive surgical management with broad spectrum antibiotics. Despite extensive treatment the mortality rate could be as high as 50%.

CONSENT

Informed consent was obtained from the patient and consent copy can be provided on request.

CONFLICTS OF INTERESTS

No conflicts of interest occur among the authors.



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