Fournier's Gangrene With Septic Shock and Multiple Organ Dysfunction Syndrome

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Abstract

Fournier's gangrene is a rare, rapidly progressing, and life-threatening infection associated with necrotizing fasciitis in the perineal, genital, and/or lower abdominal regions. Septic shock and multiple organ dysfunction syndrome due to the condition are even rarer events. We describe the case of a 58-year-old man who visited the emergency department with severely painful swelling in the scrotal, perianal, and lower abdominal regions. Physical examination combined with computed tomography and clinical findings led to the diagnosis of Fournier's gangrene with septic shock and multiple organ dysfunction syndrome. Broad-spectrum antibiotics, fluid resuscitation, sedative administration, and several surgeries that included perineum reconstruction were performed successfully, and the patient fully recovered. Comprehensive, timely treatments are critical for treating Fournier's gangrene.

Keywords

Fournier's gangrene, septic shock, comprehensive treatments, surgery operations

Case Report

A 58-year-old man with severely painful swelling in the scrotal, perianal, and lower abdominal regions presented to the emergency department with septic shock and multiple organ dysfunction syndrome (MODS). A physical examination revealed a temperature of 39°C and a pulse of 120 beats per minute; his breathe rate was 30 breaths per minute and he had a blood pressure of 90/50 mm Hg. Additionally, extensive necrosis with areas of crepitus and induration in the scrotum, the lower abdomen, and perineum were observed (Figure 1A). Laboratory tests revealed increases in the white blood cell count (16.21×10^9/L), proportion of peripheral neutrophils (90.7%), aspartate aminotransferase (97 IU/L), urea (29.3 mmol/L), serum creatinine (160 μmol/L), acetate dehydrogenase (445 IU/L), creatine kinase (2107 IU/L), creatine kinase in the muscle/brain (25.4ng/mL), myohemoglobin (1532.0 ng/mL), and troponin I (0.22 ng/mL). Computed tomography (CT) scan revealed subcutaneous emphysema in the lower abdomen, scrotum, perianal fascia, and the edge of the left thigh, in addition to air in the lower abdomen, scrotum, and pararectal fascia (Figure 2). The patient was diagnosed with Fournier's gangrene (necrotizing fasciitis of the perineum) with septic shock and MODS.

Immediately after admission, emergency surgery was performed to excise his scrotum, penis, lower abdomen, and the afflicted portion of his left thigh to divert the pus. Several additional surgeries were subsequently performed, broad-spectrum antibiotics were administered along with sedatives, and fluid resuscitation was also performed during his hospitalization. Ultimately, split-thickness skin grafting was performed to repair his left inguinal skin defect, and local free-style skin flaps and groin flaps were used to reconstruct the perineum. The patient was discharged from the hospital after full recovery; during 6 months of follow-up, the anatomical and aesthetic perineum reconstruction was successfully completed (Figure 1).

Discussion

Fournier's gangrene was first described by the French dermatologist Jean Alfred Fournier in 1883.[1] It is a rare, rapidly progressing, and life-threatening infection associated with necrotizing fasciitis in perineal, genital, and/or lower abdominal regions, and can lead to sepsis and MODS in a short time in the absence of prompt and adequate treatments.[2] Approximately 70% of Fournier's gangrene patients are males;

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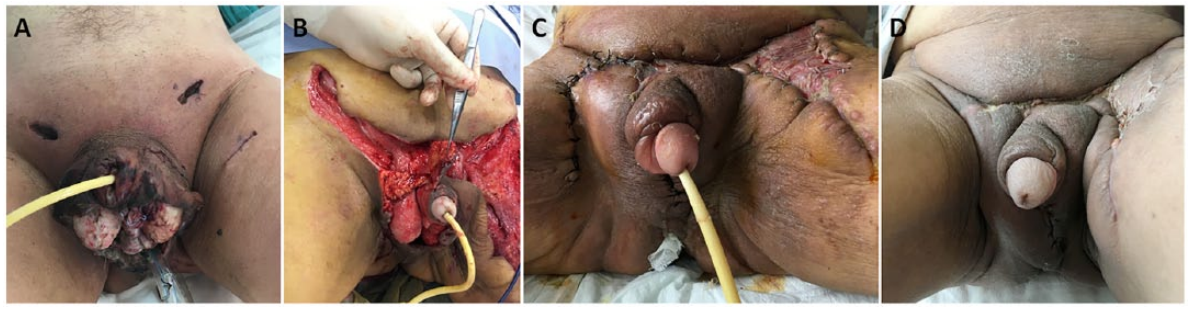

Figure 1. (A) Photograph of the operative field after performing emergency debridement, including a bold incision and drainage. Partial excision of the scrotal sac and a section of the tunica vaginalis surface that had an irregular, inflamed appearance was also performed. (B) Under general anesthesia, with patient in the lithotomy position, a large extensive soft tissue defect was observed in the lower abdomen, scrotum, perianal fascia, and the edge of the left thigh. (C) Split-thickness skin grafting was performed to repair the left inguinal skin defect, and the local free-style skin flaps and a right groin flap were used for perineum reconstruction. (D) During the follow-up period of 6 months after surgery, no wound problems were observed. Anatomical and aesthetic reconstructions of the perineal and inguinal regions were successfully achieved.

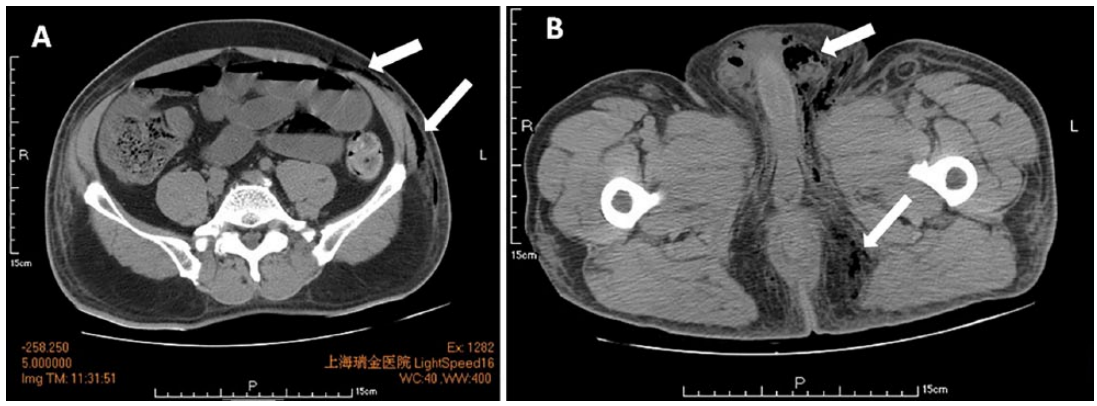

Figure 2. Computed tomography (CT) image of the lower abdominal, scrotal, and perineal regions. The CT scan shows subcutaneous emphysema in addition to air in the lower abdomen, scrotum, and perianal fascia (arrows).

in particular, the elderly men and those with diabetes or chronic alcohol use disorder are at an increased risk.[3] However, our patient had no medical history of diabetes or chronic alcohol use disorder.

Physical examination combined with CT, ultrasonography, and clinical findings have been shown to accurately diagnosis Fournier's gangrene.[4] In patients with this disease, CT images can reveal perirectal abscesses and trace of fascial air along the perineum, scrotum, and lower abdomen. Moreover, the anatomic areas of involvement as determined by CT can potentially assist in planning the surgical approach. It is critical that initial adequate management such as rapid diagnosis, radical debridement, drainage, and administration of broad-spectrum antibiotics commence immediately on disease diagnosis, as these early urgent interventions can reduce mortality rates.[5] After surviving of the early stage, skin grafting and/or a skin flap can been introduced to reconstruct the soft tissue defects. In this patient, split-thickness skin grafting was performed to repair the left inguinal skin defect, and the local freestyle skin flaps as well as a right groin flap were used for perineal reconstruction. Both these surgeries were anatomically and aesthetically successful.

Declaration of Conflicting Interests

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