Fournier’s Gangrene Developed from Pressure Ulcers

Mariko Suto,1 Yayoi Nagai,1 Etsuko Okada,1 Sei-ichiro Motegi1 and Osamu Ishikawa1

We report a 66 year-old Japanese man with Fournier’s gangrene developed from pressure ulcers. Pelvic computed tomography (CT) scan confirmed subcutaneous gas accumulation from the scrotum to the gluteal region. Emergent debridment and the administration of systemic antibiotics improved the symptoms. Fournier’s gangrene is a necrotizing fasciitis of the perineal and genital region. Proper treatment for bacterial infection in pressure ulcers is critical and clinicians should be alert to early signs of necrotizing fasciitis. (Kitakanto Med J 2010; 60: 363~365)

Key Words: Fournier’s gangrene, pressure ulcer, leg paralysis

Case Report

A 66 year-old Japanese man has been repeatedly suffered from pressure ulcers in the coccygeal region and has received topical treatment since 2001. His lower body became paralyzed due to an epidural abscess in 1998, and since that time he has been confined to a wheelchair. He has taken oral medications for diabetes mellitus since 1999, and has been treated for neurogenic bladder at a local urology clinic.

On March 22, 2006, the patient developed a high fever and was admitted to the local urology clinic on March 23. Pressure ulcers in the coccygeal region and right side of the anus were remarkably inflamed. Although systemic antibiotic administration was initiated, high fever persisted. On March 30, the scrotum became reddened and swollen, and necrotic changes with black crust developed the next day. X-rays showed subcutaneous gas accumulation. The patient was transferred to our hospital.

His body temperature was high at 38.7°C. However, his vital signs were stable: blood pressure 110/72 mmHg with a regular heart rate of 72 beats/min. A physical examination revealed egg-sized deep ulcers with necrotic tissue on the coccygeal region. On the right side of the anus, a fist-sized, irregular-shaped deep ulcer with necrotic tissue was present with surrounding redness and local heat. His scrotum and

![Image](image1.jpg)

Fig. 1 a-c  Deep ulcers were noted on the right side of the anus and coccygeal region. The overlying skin including the fascia was excised.
penis were remarkably reddish and swollen. On the right side of the scrotum, a walnut sized, well defined ulcer with black and yellowish necrotic tissue was noted (Fig. 1).

Abnormal laboratory findings included hemoglobin 9.2 g/dl, hematocrit 27.9%, RBC $380 \times 10^3$/mm$^3$ and increased WBCs 14,200/mm$^3$. Platelet count was normal at $35.4 \times 10^3$/mm$^3$. Total protein and albumin levels were low at 5.0 g/dl and 1.8 g/dl, respectively. Liver function and renal function were normal. The value of fasting blood glucose was high at 187 mg/dl, and C-reactive protein (CRP) was significantly elevated at 22.5 mg/dl. A urinalysis showed positive occult blood and protein, however, urinary glucose was negative. Chest x-rays showed no abnormalities.

Pelvic computed tomography (CT) scan confirmed subcutaneous gas accumulation from the scrotum to the gluteal region (Fig. 2). Bacterial cultures from affected sites detected Proteus mirabilis, Enterococcus raffinosus and Bacteroides fragilis.

Emergency surgical debridement was performed under general anesthesia on March 31, 2006. After the cystostomy was performed, all necrotic scrotal skin was excised. Since the necrotic changes extended to the fat tissue and fascia around the pressure sores, the overlying skin including the fascia was also excised. Vancomycin and meropenem were empirically administered and insulin was used for glycemic control. Based on the results of bacterial cultures, the antibiotics were changed to ampicillin and gentamicin. After debridement, fever subsided and CRP levels decreased. Residual marginal necrotic tissue was debrided under local anesthesia, as needed. The wounds improved with good granulation tissue. Debridement and skin grafting were performed on May 17, followed by skin flap surgery for the remaining ulcer on July 5.

**Discussion**

Fournier’s gangrene is a necrotizing fasciitis of the perineal and genital region. Infection spreads along the fascial planes and causes soft tissue necrosis. As connective tissue in the scrotum is sparse, bacterial infections tend to spread rapidly. The mortality rate ranges from 3% to 38%.

The underlying local diseases include urological,
colorectal and local skin disease. Jeong, et al. reported that the suspected causes were urological disease in 32.5%, idiopathic in 27.5%, colorectal in 20% and traumatic in 20%. Another report documented colorectal lesions were the leading cause. Alternatively, it may be caused by an altered immune system in association with diabetes mellitus, cancer, alcoholism, leukemia, treatment with steroids, AIDS, renal failure and hemodialysis.

The diagnosis of necrotizing fasciitis is often made clinically. An emergency CT scan leads to early diagnosis and an accurate assessment of disease extent. CT scan not only helps evaluate the perineal structures that can be affected by Fournier's gangrene, but also helps assess the retroperitoneum, to which the disease can spread. Potential findings of CT scans include asymmetric fascial thickening, subcutaneous emphysema, fluid collection and abscess formation.

Fournier's gangrene from pressure ulcers has rarely been reported. In contrast, whereas a total of 61 Japanese patients with necrotizing fasciitis from pressure ulcers have been reported. The complication rates of diabetes mellitus and gas production were high at 45.6% (26/57) and 72.1% (44/61), respectively. Twenty-six of the 57 patients (45.6%) died. Of these gas production was found in 10 patients (37.5%), suggesting that gas production can be a predictor of poor prognosis. Etiological agents included *Enterococcus, Proteus, Bacteroides, Escherichia coli* and *Staphylococcus*, and the incidence of mixed bacterial infection was high. Only 2 patients showed clostridial infection.

Proper treatment for bacterial infection in pressure ulcers is critical and clinicians should be alert to early signs of necrotizing fasciitis. Both administration of broad-spectrum antibiotics and early aggressive surgical debridement are essential for a successful outcome. The effect of hyperbaric oxygen therapy remains controversial, though it is generally agreed that it is useful for the treatment of clostridial infections.

The survival rate of Fournier's gangrene has been reported to be related to anorectal infection, chronic renal failure, the duration of symptoms before hospitalization, the extent of gangrene and serum BUN and creatinine levels on admission. A Fournier's gangrene severity index score has been proposed. A recently proposed laboratory risk indicator for necrotizing fasciitis (LRINEC) could be useful in distinguishing necrotizing fasciitis from other soft tissue infections in the early stages. Accordint to LRINEC, our patient was not in high risk group.

References