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Case Report

Extensive fournier gangrene with retroperitoneal involvement in a diabetic patient

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ABSTRACT

Fournier's gangrene is a rare, rapidly progressive, fulminant form of necrotizing fasciitis of the genital, perianal and perineal regions extending to the abdominal wall between the fascial planes. It is secondary to polymicrobial infection by aerobic and anaerobic bacteria with a synergistic action. A 42 year old male who is an alcoholic and diabetic on irregular treatment presented with scrotal swelling and pain for 5 days following a trauma. On examination, patient was febrile, tachypneic and had tachycardia. His scrotum was edematous and erythematous on right side with crepitus. Abdomen was warm on right side till umbilicus and had crepitus. He was in sepsis and had diabetic ketoacidosis, prerenal azotemia and mild impairment of liver function. A diagnosis of extensive Fournier gangrene with retroperitoneal involvement was made. Patient underwent scrotal exploration and aggressive debridement serially. Testis was spared. As patient improved with good wound care and glycemic control, wound was closed. Though our patient had retroperitoneal involvement without peritonitis, he was deferred laparotomy which significantly reduced the morbidity and mortality. It is one of the few reported case in the literature with retroperitoneal involvement.

Keywords: Extensive fournier gangrene, Necrotising fasciitis, Retroperitoneal involvement

INTRODUCTION

Fournier's gangrene (FG) is a rare, rapidly progressive, fulminant form of necrotizing fasciitis of the genital, perianal and perineal regions, which may extend up to the abdominal wall between the fascial planes. It is secondary to polymicrobial infection by aerobic and anaerobic bacteria with a synergistic action. The cause of infection is identifiable in 95% of cases, mainly arising from anorectal, genito-urinary and cutaneous sources.[1] After first description, understanding of this disease has considerably changed and its clinical features and pathogenesis have been well defined. Predisposing factors believed to contribute to the development of the disease are diabetes mellitus, alcoholism, malignancies, immunosuppression, liver, and renal disease. In the majority of cases, aerobic and anaerobic bacteria are synergistically involved as a result of anorectal and urogenital trauma and/or infection.[2]

Retroperitoneal spread of fournier's gangrene is not a common condition. It may arise due to primary source being genitourinary or anorectal. There are only few cases in the literature discussing the extensive spread of Fournier gangrene to abdominal wall, peritoneum and even to the retroperitoneal cavity. We hereby report such a case with retroperitoneal spread.

CASE REPORT

A 42 years old male who is a laborer by occupation and alcoholic came to emergency ward with complaints of scrotal swelling and pain for 1 week and abdominal pain for 2 days. Patient has trauma to scrotum which was

inflicted by his son 1 week back following which he developed scrotal pain. He developed scrotal swelling which gradually increased in size. Now the patient has abdominal pain over the right iliac fossa which is dully aching and radiating to the groin. History of fever present for the past 5 days which is low grade, intermittent and it subsides on taking medication. No history of burning micturition. No history of constipation/diarrhea and bleeding per rectum. He is a diabetic on irregular treatment. He is on oral hypoglycemic agents.

On admission, he was tachypneic (respiratory rate 28 per min) and had temperature of 40°C. He was dehydrated and resuscitated with IV fluids. He had tachycardia with pulse rate of 130 per min and chest was clear.

On examination, scrotum was edematous and erythema was seen in right side of scrotum. Skin not necrotic and no excoriation was seen. Crepitus was felt in the scrotum and it was extending to the abdomen till the level of umbilicus on the right side. Testis was felt on both sides, cord was thickened on right side and testicular sensation was normal. Penis was normal. No inguinal lymphadenopathy. There was no gross skin changes seen on the soft abdomen but warmth and crepitus was noted till the level of umbilicus on right side.

Routine blood investigations were done. White blood count was 36,000 per cu.mm, urea was 74 mg/dl, and creatinine was 1.6 mg/dl. He had elevated direct bilirubin of 2 mg/dl. Random blood sugar was 428 mg/dl and urine acetone were positive. Other investigations were within normal limits. Patient was found to be in severe sepsis and had prerenal azotaemia and mild impairment in liver function. Patient had diabetic ketoacidosis and hence rehydration and insulin infusion was started. FGSI was 9 and predicted a higher mortality for this patient.

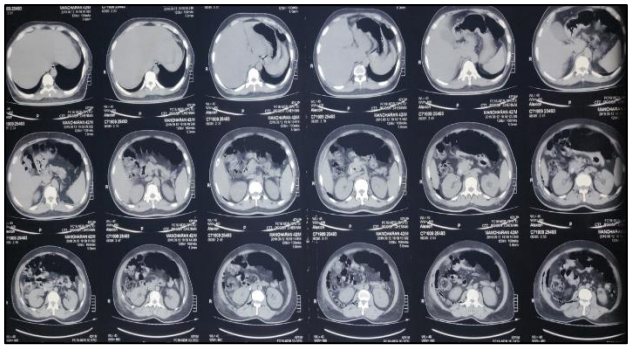

Figure 1: CT abdomen upper cut section showing air in the extraperitoneal space.

Ultrasound of the scrotum was done and gave a diagnosis of scrotal abscess. CT abdomen and pelvis was taken which showed air in the subcutaneous, extra peritoneal and retroperitoneal plane which was extending till the level of first lumbar vertebra (Figure 1 and 2). Blood and urine culture were sterile. Serology for HIV, hepatitis B and C were negative. Clinically a diagnosis of extensive Fournier gangrene extending to the retroperitoneum was made.

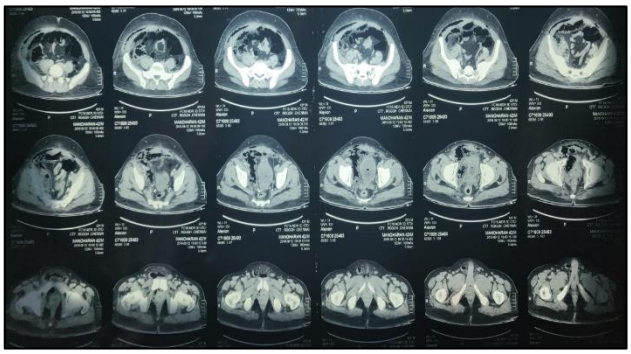

Figure 2: CT abdomen lower cut section showing fournier gangrene with retroperitoneal involvement.

RESULTS

Emergency surgical debridement was planned. Patient was taken for surgery and scrotal exploration was done and about 200 ml of foul smelling discharge was noted (Figure 3). Incision was made in the right side of the abdomen and slough was removed. EOA was sloughed out and it was removed (Figure 4). Thorough wash with hydrogen peroxide and iodine solution was given. On splaying the internal oblique muscle and reaching the extra peritoneal space, no active discharge was noted. Muscle was healthy and hence it was spared. As there was no signs of peritonitis, laparotomy and further exploration was deferred.

Figure 3: Scrotal exploration showing sparing of bilateral testis.

Infection extended to the left side and scrotum was excised as it became gangrenous. Abdominal incision made on left side and debrided. The scrotal and abdominal incision was connected on right side and daily dressing was done. He underwent five surgical debridement under anaesthesia and had regular dressing for 2 months. After better wound care and glycaemic control, wound started healing well (Figure 5) and patient general condition improved well.

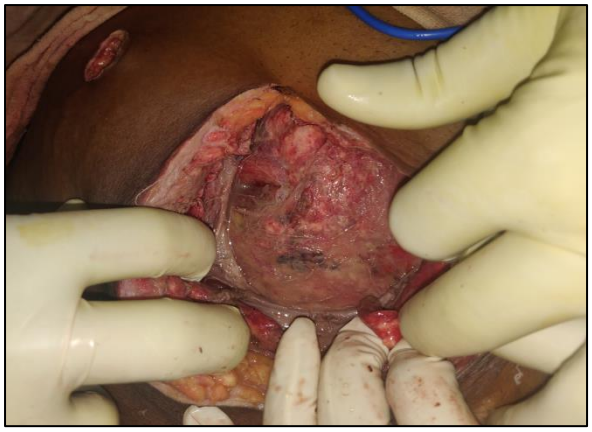

Figure 4: Incision over the right iliac fossa showing sloughed out EOA.

Figure 5: Granulated tissue after surgical debridement.

Figure 6: Secondary suturing of the defect with right testis placed in right thigh.

Pus culture was taken serially which showed *Proteus mirabilis*, *Escherichia coli* and *Pseudomonas aeruginosa*. He was put under specific and broad spectrum antibiotics and other supportive measures. His blood parameters normalised. Plastic surgery opinion was sought and advised closure of the wound. With plastic surgery assistance, wound was closed (Figure 6) and patient was discharged after 3 months of admission.

DISCUSSION

Fournier's gangrene is known for its fast and extensive spread along the fascial planes to the abdominal wall and even to the thorax. The infection spreads through the superficial fascial plane (Colles fascia) to the deep fascial planes involves the scrotum and testis through bucks and dartos fascia. The testis is usually spared due to different blood supply. Fournier's gangrene pathophysiology usually begins with microthrombosis of the small subcutaneous vessels that leads to gangrene of the skin, and subsequent rapid spread of bacteria along the muscular fascia taking advantage of the relatively poor blood supply.

Goel et al reported a similar case of retroperitoneal involvement in Fournier gangrene in a 55 year old patient. He was treated aggressively and laparotomy with diversion ileostomy was done for that patient. But patient expired because of late presentation.[3] Rene et al reported a similar case with extensive scrotal and abdominal wall involvement in 47 year old diabetic patient who was treated with vacuum dressing SSG.[4] Emilio et al suggested that unnecessary surgical perforation of these planes should be avoided during debridement to prevent extension of the infection to unaffected areas. This is especially true if the necrosis remains in the retroperitoneal space, and the peritoneum has not been violated. If needed, re-exploration can be done after 24 to 48 hours.[5] Similar principle was followed for our patient.

Diabetes is an important risk factor for developing fournier's gangrene. These patients need extensive debridement but that does not correlate with increased mortality. Aggressive excision, repeated debridements, appropriate antibiotics, and aggressive wound care can provide acceptable outcomes even in diabetic patients with FG.[6]

Our case had a very rapid progression of infection. Early diagnosis and radical surgical debridement along with good diabetic control saved the patient. Though there was crepitus and air in the retroperitoneum, a diagnosis of Fournier gangrene was made as there was no evidence of myonecrosis.

CONCLUSION

Though our patient had retroperitoneal involvement, he was deferred laparotomy as there was no peritonitis which significantly reduced the morbidity and mortality. It is one of the few reported case in the literature.

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