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Fournier's Gangrene in a Case of Cirrhosis

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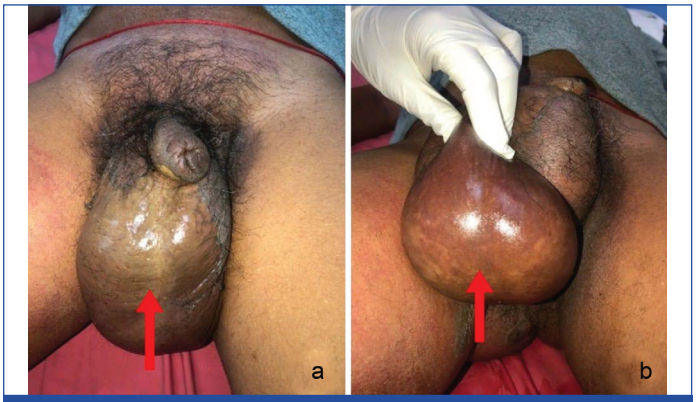
A 42-year-old male, chronic alcoholic , diagnosed case of alcoholic cirrhosis at the age of 34 years with small oesophageal varices on medical management with beta blocker (tablet carvedilol 3.125 mg twice a day) and diuretics (tablet lasilactone 20/50 one tablet once a day) since eight years, with last intake of alcohol eight years back, presented to this hospital with complaints of severe pain with swelling over both testis as shown in [Table/Fig-1a,b]. Patient was also complaining of fever since seven days which was acute in onset and progressive in nature, continuous type of fever which was associated with generalised weakness.

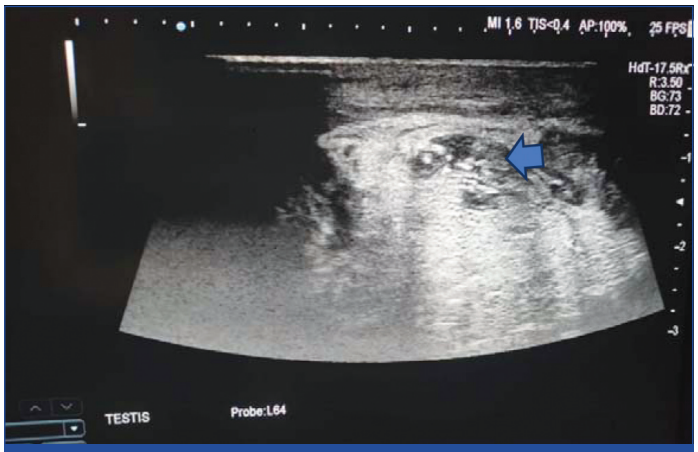


[Table/Fig-1]: a,b) Early changes of Fournier's gangrene (red arrow).

On general examination, patient showed the presence of pallor, absence of icterus, cyanosis, clubbing, lymphadenopathy. The patient was febrile on touch with a pulse rate of 112 beats per minute with a blood pressure of 100/60 mmHg was recorded on supine position on right arm with oxygen saturation of 96% on room air with a respiratory rate of 22 cycles per minute. While systemic examination was unremarkable with no shifting dullness and organomegaly on per abdomen examination.

On local site examination of testis, enlargement of bilateral hemiscrotum with presence of oedema, erythema and tenderness with loss of rugosities and local rise of temperature.

On routine blood investigations, a raised white blood count of 22000 White Blood Cells (WBCs)/microlitre was found with left band shift of immature white blood cells with presence of few toxic granules in the neutrophils suggestive of severe sepsis. Serum lactate was 2.5 mmol/L, C-reactive protein was 45 mg /L and procalcitonin levels 1.7 ng/mL were raised. Liver function test (alanine transaminase-46 u/L, aspartate transaminase-52 u/L, alkaline phosphatase-80 u/L total protein-3.5 g/dL, albumin-2.5 g/dL, globulin-1 g/dL, total bilirubin-1.2 mg/dL, bilirubin conjugated-0.2 mg/dL, bilirubin unconjugated-1.0 mg/dL). Other blood investigations such as coagulation profile, renal function test were unremarkable. A blood culture report showed no growth of any organism. Chest X-ray was normal. Scrotal sonography [Table/Fig-2] revealed inflammatory changes with soft-tissue oedema, fluid collection, and the presence of gas within the bilateral scrotal wall, suggestive of early changes of Fournier's Gangrene (FG).

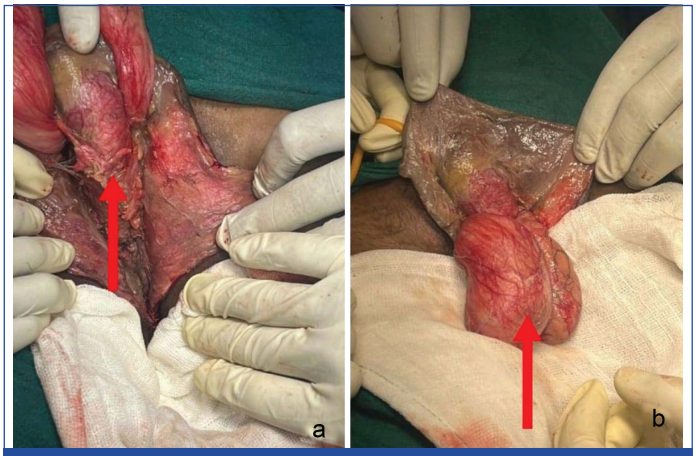


[Table/Fig-2]: Scrotal ultrasonography revealing inflammatory changes (blue arrow).

Several differential diagnoses were considered. Acute epididymo-orchitis typically presents with scrotal pain, swelling, erythema, and fever, and ultrasonography usually demonstrates involvement of the epididymis and/or testis; however, it does not show subcutaneous gas formation. Scrotal cellulitis represents a superficial skin infection characterised by erythema and tenderness but lacks fascial necrosis or gas in the soft-tissues. Testicular torsion generally presents with acute severe scrotal pain, and Doppler ultrasonography reveals reduced or absent testicular blood flow; systemic sepsis and subcutaneous gas are not observed. Incarcerated or strangulated inguinal hernia may present as painful scrotal swelling and can be associated with symptoms of bowel obstruction, while ultrasonography typically demonstrates herniated bowel loops within the inguinal canal or scrotum. Scrotal abscess presents as a localised fluctuant swelling with pus collection but without fascial spread or widespread necrotising involvement. Perianal abscess with scrotal extension may cause pain in the perianal region with possible extension into the scrotum; however, it is usually localised in the initial stages.

The patient was started on higher antibiotics of injection meropenem 500 mg intravenous thrice a day with injection clindamycin 600 mg intravenous thrice a day, injection pantoprazole (proton pump inhibitor) 40 mg intravenous once a day, injection albumin 20% intravenous once a day, intravenous fluids, daily dressing was done, pulse, blood pressure, monitoring was done. Adequate aggressive intravenous fluid resuscitation, haemodynamic and urine output monitoring, correction of electrolyte imbalances, albumin infusion, proton pump inhibitor therapy, adequate analgesia, nutritional support, and daily sterile wound care. Glycaemic monitoring and multidisciplinary care were ensured to optimise recovery and prevent complications.

An emergency surgery opinion was taken in view of early changes of Fournier's gangrene, and urgent extensive surgical debridement was performed under general anaesthesia with the patient in the supine position. All necrotic and devitalised tissue was excised until healthy bleeding margins were achieved. Copious saline irrigation was performed, the testes were preserved as they were viable, and the wound was left open and managed with daily sterile dressings to allow drainage and monitoring, while the patient continued on broad-spectrum antibiotics; delayed reconstruction was planned after satisfactory granulation and infection control as shown in [Table/Fig-3].



[Table/Fig-3]: Post debridement of the scrotal sac; a) Normal shaft of penis post-debridement of necrotic tissue with red arrow; b) Normal bilateral testis with red arrows post-debridement of necrotic tissue.

Post debridement, the patient's condition improved gradually with resolving sepsis and was eventually discharged on oral antibiotic course for seven days with beta blockers and diuretics for his chronic liver disease. On follow-up, the patient had no similar complaints ruling out any recurrence of Fournier's gangrene.

The infection was usually polymicrobial and synergistic with both aerobic and anaerobic organisms. Commonly, isolated aerobic bacteria include *Escherichia coli*, *Klebsiella* species, *Streptococcus* species (particularly Group-A Streptococcus), and *Staphylococcus aureus*. Among anaerobes, Bacteroides species and Clostridium species are frequently implicated. These organisms act synergistically, producing enzymes and toxins that promote rapid fascial necrosis and gas formation. This crippling illness results in the development of fascia necrosis, cytokine cascade activation, endothelium damage, and thromboplastin activation, which forms disseminated microthrombosis of the fascia-feeding vessels and ischemic necrosis of fascia [1,2].

Various aetiological factors for Fournier's gangrene are immunocompromised states like Human Immunodeficiency Virus (HIV), chronic liver disease like cirrhosis of liver, systemic lupus erythematosus, obesity, malignant neoplasm, diabetes mellitus, trauma, paraphimosis, extravasation of urine, perirectal or perianal infections, perianal infections, circumcision, extremes of age and malnutrition [3].

While Fournier's gangrene usually presents late with severely necrosed debilitated state with a poor prognosis and increased rate of mortality, early changes of Fournier's gangrene can be detected by looking at subtle local signs such as pain and redness with erythema in the genitals, oedema and shiny tense local skin, increased temperature of local site [4], like in present case. Fournier's gangrene remains a formidable disease associated with serious complications and high mortality. Fournier's gangrene is an extremely rare disease that occurs 1.6 cases/100000 men per year among 0.02-0.09% of total admissions to surgical hospitals [1].

Chronic liver disease has been identified as a significant risk factor for the development of Fournier's gangrene. Patients with chronic liver disease are known to have a compromised immune system, which creates a favourable environment for the occurrence and progression of FG. The impairment of innate immunity, adaptive immunity, and immune regulation due to persistent immune disorder caused by chronic liver disease enhances the susceptibility of patients to sepsis, thereby increasing the risk of FG [5]. Patients with co-morbidities such as chronic liver disease are at a higher risk of developing FG, and the presence of multiple co-morbidities simultaneously can further elevate the incidence and severity of FG. Moreover, studies reported a significant association between chronic liver disease and a higher mortality rate in FG patients, indicating the detrimental impact of chronic liver disease on the prognosis of FG [5].

In addition to highlighting the underlying immunocompromised condition, the present case emphasises the importance of being concerned about the urogenital and anorectal areas as possible sites of life-threatening infection in patients with liver disease, particularly when alcohol consumption is involved. Looking for Fournier's gangrene and being vigilant about its early changes can help detect Fournier's gangrene before it is too late like in the present patient, where Fournier's gangrene was detected by vigilantly diagnosing and not overlooking its early changes hence leading to better and early management by debridement and skin grafting which prevented mortality, like in the present case.

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