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Case Report

A case report of Fournier's gangrene: Imaging ultrasound and computed tomography (CT) scan ☆,☆☆

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ABSTRACT

Necrotizing fasciitis and/or Fournier's Gangrene is a rare, life-threatening soft tissue infection that, if not treated promptly, can immediately develop into systemic toxicity. It affects the genital, perineal, and perineal tissues, predominantly affecting men but can be seen in women. The diagnosis is often made clinically but radiologic examinations are helpful to determine the extent of the infection and can aid preoperative planning. Treatment consists of immediate and aggressive surgical debridement of necrotized tissue, broad-spectrum antibiotics, and early resuscitation. Here, we present a 56-year-old male patient with Fournier's gangrene and describe the physical examination, bedside sonographic, and computed tomography findings. These findings can aid in the evaluation of patients with worrying symptoms so that antibiotics can be administered immediately and specialists can be consulted as needed.

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Background

Necrotizing fasciitis and/or Fournier's Gangrene is a rare, life-threatening soft tissue infection that, if not treated promptly, can immediately develop into systemic toxicity. It affects the genital, perineal, and perineal tissues, predominantly affecting men but can be seen in women [1]. JA Fournier, a French

venereologist, described 5 cases of penis, and scrotum gangrene without an apparent etiology in 1883. The predisposing risk factors are diabetes, alcohol abuse, extremes of age, malignancies, prolonged steroid usage, cytotoxic drugs, lymphoproliferative disorders, malnutrition, and HIV infection. Acute pain, fever, and swelling in the scrotum, as well as wound discharge, are clinical hallmarks of FG [2]. Its cause is poorly understood, and it is frequently induced by minor triggers, such as an insect bite or minor trauma [1]. Early identification, aggressive surgical debridement, multidisciplinary team partici-

Abbreviations: F, G; U, S; C, T.

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Fig. 1 – Shows edematous and mottled discoloration of genitalia and perineum with perineal ulcers.

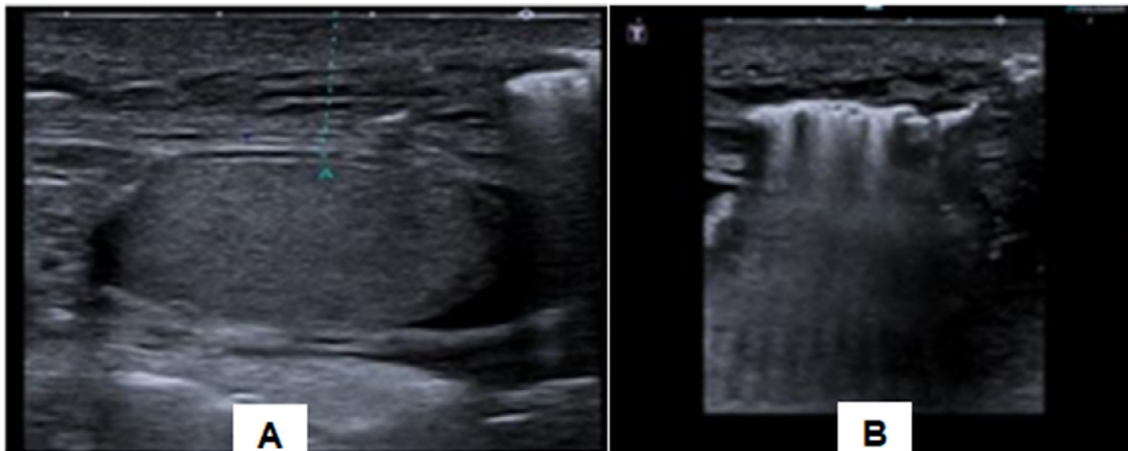


Fig. 2 – A & B Sonographic image show thickened scrotal wall and multiple echogenic foci with dirty shadowing and Reverberation artifact, representing gas in soft tissues.

pation, and effective reconstructive procedures are key factors in survival.

Case report

A 56-year-old male patient came with edematous and mottled discoloration of his genitalia and perineum, as well as purulent discharge from a perineal ulcer (Fig. 1) and a high-grade fever of 39°C. The patients didn't report any recent sexually transmitted infections, genitourinary trauma, or urethral instrumentation. He is a smoker and an alcoholic. His past medical history was unremarkable. Laboratory examinations reported a WBC of 18.400/mm³, a CRP of 100 mg/L, and random blood sugar of 205mg/dL. Blood urea & serum creatinine were within normal ranges. Purulent discharge material from a perineal ulcer was submitted for culture. HIV and STD tests were negative. Blood, urine, and pus cultures were collected. The

patient was transferred to the radiology department for scrotal ultrasound evaluation to rule out epididymo-orchitis since the patient exhibited swelling in both testicles and a low-grade fever. The US evaluation, using a high-frequency probe, revealed a thickened scrotal wall with several echogenic foci, with dirty shadowing representing gas in soft tissues (Fig. 2A and 2B). Both the testes and the epididymis were normal and normal vascularized. For further diagnosis, a contrast-enhanced computed tomography (CT) scan was conducted to determine the extent of the gangrene and the source of infection. It demonstrated regions of fat necrosis and significant gas in the subcutaneous tissue of the scrotum and perineum (Fig. 3). Broad-spectrum antibiotics were administered, and fluid resuscitation was started. An urgent surgical operation under general anesthesia was performed in an emergency to avoid the rapid spread of tissue necrosis (Fig. 4) and the possible development of septic shock. The recovery was completed, and no relapses were observed throughout the follow-up period.

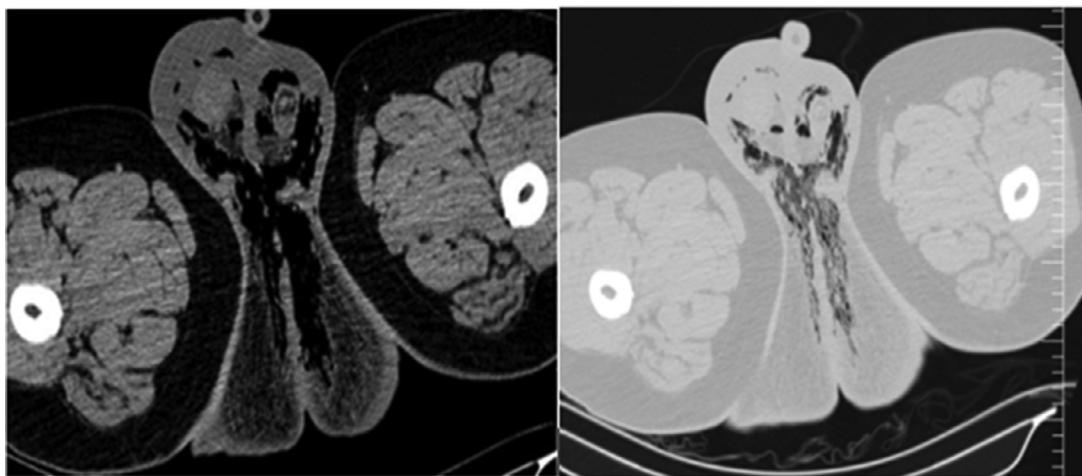


Fig. 3 – Axial NECT images of the scrotum confirm scrotal wall thickening and subcutaneous gas consistent with Fournier gangrene.



Fig. 4 – Perineal and scrotal region after necrosectomy.

Discussion

Fournier's gangrene has a wide range of clinical manifestations, ranging from the gradual onset and slow progress to the abrupt onset and fulminant course, with the latter being the more frequent [3]. Depending on the source of infection, the infection usually begins as cellulitis around the portal of the entrance, which is usually in the perineum or perineal area. Local signs and symptoms are frequently severe, accompanied by substantial pain, and edema. The patient also exhibits significant systemic symptoms, which are generally out of proportion to the local extent of the infection. Because of the presence of gas-forming organisms, the crepitus of inflamed tissues is a typical symptom [4]. Even though Fournier's gangrene is generally diagnosed clinically (crepitus on palpation), imaging methods may be useful in situations when the presentation is unusual or there is concern about the real extent of the disease. The US is helpful for distinguishing intra-scrotal abnormalities and often displays thickened and swollen scrotal walls with the increased flow on

color Doppler examination. The testis and the epididymis usually appear normal. The presence of subcutaneous gas in the scrotum is the most important finding. In the USG, gas is detected as echogenic foci with posterior acoustic "dirty" shadowing [5]. There may be evidence of gas inside the scrotal wall prior to clinical crepitus. The US is also helpful in distinguishing Fournier's gangrene from other diseases that affect the inguinal–scrotal area, as well as differentiating subcutaneous gas from infectious disease to bowel gas of inguinal–scrotal hernia [6]. In certain circumstances, CT could be used to identify the exact location, and source of scrotal gas or to rule out retroperitoneal or intra-abdominal disease processes. A CT scan demonstrates asymmetric fascial thickening, any associated fluid collection or abscess, fat stranding around the affected components, and subcutaneous emphysema resulting from gas-forming bacteria [7]. CT may also demonstrate the underlying etiology of Fournier's gangrene, such as a perianal abscess, a fistulous tract, or an intra-abdominal or retroperitoneal infectious disease.

Conclusion

Fournier's gangrene is a potentially fatal fulminant type of infective necrotizing fasciitis involving the perineal, genital, or perianal regions. Although Fournier's gangrene is commonly diagnosed clinically (crepitus on palpation), emergency ultrasound and, in certain situations, computed tomography (CT) can lead to an early diagnosis with an accurate evaluation of the disease extent. The US of testes is a significant diagnostic tool because it may distinguish Fournier's gangrene from other urogenital disorders that induce scrotal discomfort, erythema, and swelling by demonstrating the presence of intra-scrotal gas, which is a pathognomonic indication of this condition. A multimodal approach is commonly used to treat this condition, which includes early resuscitation, broad-spectrum antibiotics, and rigorous surgical debridement with future reconstructive surgery.

Declarations

Ethics approval and consent to participate

Ethical approval for this study was waived by ethical committee of Mogadishu Somali Turkey, Recep Tayyip Erdogan Training, and Research Hospital.

Patient consent

The Patient was invited and written informed consent was obtained for his anonymized information to be published in this study.

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Authors' contributions

AME wrote the case report and discussion. MK examined the radiological films and wrote the radiology report. FAOO approval of the final version

Availability of data and materials

The data that support the findings of this study are available in Mogadishu Somali Turkey, Recep Tayyip Erdogan Training

and Research Hospital information system. Data are however allowed to the authors upon reasonable request and with permission of the education and research committee.

Declaration of Competing Interest

The authors have no affiliation with any organization with a direct or indirect financial interest in the subject matter discussed in the manuscript.

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