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Case Report / Olgu Sunumu

## MASSIVE PELVIC CELLULITIS MIMICKING Fournier's GANGRENE: A CASE REPORT AND REVIEW OF THE LITERATURE

Fournier Gangreni'ni Taklit Eden Massif Pelvik Sellülit: Olgu Sunumu ve Literatür Derlemesi

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### ABSTRACT

**Introduction:** Fournier's gangrene (FG), a localized form of necrotizing fasciitis (NF), is a rapidly progressive infectious disease that particularly affects the genital area. Cellulitis, however, is a mild disease that affects the skin and extremities.

**Case Report:** We report a case involving a 71-year-old woman with a rash, extending from her thigh to her breast, which had begun two days prior to her visit to the ER. She was referred to our clinic with an initial diagnosis of extensive pelvic cellulitis mimicking Fournier's gangrene. Following the first assessment (blood glucose >500 mg/dL, pyrexia of 38.3 °C), she was admitted to the intensive care unit, where she received antibiotics and dressings and was monitored. Showing a good recovery, she was discharged in two weeks.

**Discussion:** In the diagnosis and treatment of Fournier's gangrene, significant advancements have been made since it was first described by Jean-Alfred Fournier in 1883. The disease's morbidity and mortality, however, is still between 25% and 35%.

**Conclusion:** In patients with FG, early diagnosis and aggressive treatment are highly recommended.

**Key Words:** Cellulitis, debridement, Fournier's gangrene, necrotizing fasciitis

### ÖZET

**Giriş:** Fournier gangreni Nekrotizan fasiitin lokalize formu olup, genellikle genital bölgede görülen ve hızlı ilerleyen enfeksiyöz bir hastalıktır. Sellülit ise daha çok ekstremitelerde ve deride görülen daha ılımlı bir hastalıktır.

**Olgu Sunumu:** 71 yaşında bayan hasta, öyküsünde son 2 günde gelişen her iki uyluktan başlayıp memelere kadar uzanan Fournier gangrenini taklit eden geniş pelvik sellülit ile başvurdu. İlk değerlendirmeden sonra (Kan şekeri >500 mg/dl, ateş 38,3 oC) hasta yoğun bakıma alındı, hastaya antibiyotik tedavisi verildi ve sık aralıklarla pansumanlar yapıldı. Hasta iki hafta içerisinde şifa ile taburcu edildi.

**Tartışma:** 1883 yılında Jean-Alfred Fournier tarafından tanımlanan Fournier gangreni tedavisinde, o zamandan beri önemli gelişmeler olmuştur. Ancak, morbidite ve mortalitesi hala yüksektir (%25–35).

**Sonuç:** Fournier gangrenli veya bizim hastamızdaki gibi geniş pelvik sellülitli hastalarda, tanı erken konulmalı ve tedavi gecikmeden yapılmalıdır.

**Anahtar Kelimeler:** Sellülit, Debridman, Fournier gangrene, nekrotizan fasiit.

### INTRODUCTION

Cellulitis is an acute infection of the lower dermis and subcutaneous fat tissue, with initial

symptoms of tenderness, pain and/or erythema on the extremities.<sup>1,2</sup> Fournier's gangrene (FG) or localized necrotizing fasciitis (NF) of the genital area is a rapidly progressive infection

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of the perineal or genital area and proceeds from the deep subcutaneous tissue and fascia.<sup>3,4</sup> In patients with FG, superficial skin and muscle tissue are preserved, but multiple organ failure can occur.<sup>4,5</sup>

Causes of cellulites and FG include *Streptococcus pyogenes*, *Staphylococcus aureus*, anaerobes and members of the *Enterobacteriaceae*.<sup>1,6</sup> Trauma, surgery, advanced age, diabetes mellitus and immunosuppression constitute the etiology and are among the risk factors.<sup>6,7</sup> Early diagnosis, antibiotics, debridement and close follow up are recommended.<sup>6-8</sup>

The following presents a case of extensive pelvic cellulitis mimicking Fournier's gangrene that was treated and followed-up on at our department.

## CASE REPORT

A 71-year-old, female patient was evaluated at the emergency room for a rash, extending from the thigh to the breast, which had begun two days prior to her visit. The patient had a history of diabetes mellitus and hypertension, but no history of allergies, traumas, burns or surgery. Her body mass index was 31 kg / m<sup>2</sup> (BMI), and she had a blood pressure of 100/70 mmHg and a pulse of 114 bpm. On physical examination, the rash was seen to extend from the bilateral distal thigh to just below the breast and was red and warm to the touch. In the left knee, a black necrotic area, 2 cm in diameter, was discovered. A significant increase in temperature was found in the inguinal area, which, after being aspirated with a 10 cc syringe, had no pus or necrotic content (Fig 1). In the laboratory analysis, the white blood cell count measured  $12.6 \times 10^3 / \mu\text{L}$ , glucose

520 mg / dl, ketones and blood in urine 3+/3+, respectively, urea 88 mg / dl, creatinine 1.2 mg / dL, sodium 124 and potassium 3.3 mEq / l. The patient's HbA1c and **C-reactive protein** (CRP) (normal range 0 to 1) were 13.9 and 10.1 mg / dl, respectively. Subcutaneous edemas were observed in the right lateral and posterior abdomen wall, but in the computed tomography that was conducted to evaluate the necrotizing fasciitis, there was no air density collection or abscess found under the skin. The patient was admitted to the intensive unit care with a diagnosis of NF and extended pelvic cellulitis after undergoing consultations with infectious diseases, dermatology and internal medicine departments.

On the first day, the patient was monitored and a subclavian central catheter was inserted to study her hemodynamics. A dosage of 250 cc of 0.9% NaCl with 25 units of crystalline insulin was started to reduce blood glucose. The patient's hemodynamic levels were monitored at regular intervals. Blood cultures and urine cultures were taken, followed by the administration of piperacillin-tazobactam (3x 4.5 gr intravenously) and 1% of izokonazol nitrat (2 x 10 gr) and in 0.9 % of 1000 cc with 2-3% acid boric (eau boriqu) every 2 hours. The rash was marked with pencil for controlling (Fig 1).

On the second day, blood glucose levels varied between 220 and 300 mg / dl and urine output was adequate. The patient was not febrile and continued to receive the dressing with acid boric solution treatment.

On the fourth day, the patient's general condition was good and blood glucose was between 110 and 150 mg / dl. CRP was 5.2

mg/ dl and the progress of the patient's generalized rash had stopped. No problems were detected in the vital signs of the patient, and she began to take food orally. No isolates were found in the blood and urine cultures. The patient was taken to the general surgery service (Fig. 2).

On the twelfth day, her rash had significantly subsided and the patient was discharged in good health (Fig 3.). Her general condition is now stable and she receives followed-up care as an outpatient.



**Figure 1.** View on first day.



**Figure 2.** View on day 3.



**Figure 3.** View on day 12.

## DISCUSSION

Fournier's gangrene was first described by Baurienne in 1764, but since 1883 it has been

designated Fournier's gangrene on account of Jean-Alfred Fournier's work in advancing a better understanding of the disease<sup>1</sup>. FG, usually affecting men more than women, is a rapidly progressive infectious disease of the perianal and genital area. Its estimated incidence is 1.6-3.3/100,000 for men and has a male-female ratio of approximately 10:1.<sup>3</sup> In contrast to cellulitis, it can be life threatening and may cause multi-organ failure.<sup>2</sup>

FG and cellulitis are associated with various risk factors, including diabetes mellitus, hypertension, alcoholism, advanced age, malnutrition or obesity, chronic renal failure, chronic liver disease, malignancies and other conditions causing immunosuppression.<sup>1-3</sup> In the etiopathogenesis of FG, thrombosis of the small subcutaneous vessels and necrosis of the overlying skin occur.<sup>2-4</sup> Our patient was 71 years old, obese and had diabetes mellitus and hypertension.

While cellulitis generally has mild symptoms, such as tenderness, pain and erythema on the extremities, Fournier's gangrene has more severe symptoms, including a sudden intense pain in the scrotum, prostration, pallor, and pyrexia.<sup>3-5</sup> In our patient, a red rash began to appear within two days and she experienced pain in the inguinal and scrotal areas.

The most frequent causes of cellulitis, which is usually monobacterial, are *S. aureus* and beta-hemolytic streptococcus. Recent years have seen an increase in the number of patients with community-acquired methicillin-resistant *S. aureus* (MRSA).<sup>1,3,5</sup> In addition to these factors, *Pseudomonas aeruginosa*, *Aeromonas hydrophila* and *Vibrio vulnificus* may cause cellulitis, and after contact with animals,

especially cats or after being bitten by a dog, *Pasteurella multocida* and *Erysipelothrix* can also cause cellulitis. FG, on the other hand, is usually multifactorial, involving anaerobes, members of the enterobacteriaceae, *Streptococcus*, *Staphylococcus aureus* and enterococci.<sup>3,6</sup> Paty et al.<sup>5</sup> reported that *E. coli*, *Bacteroides* and streptococci are the most frequently isolated bacteria in FG.

In patients with FG, clinical symptoms, biochemical markers, ultrasonography and computed tomography can be used for diagnosis, prognosis and predicting mortality.<sup>4,6</sup> Ulug<sup>6</sup> reported that laboratory tests measuring serum urea, creatinine (higher values), sodium and potassium levels (lower values in non-survivors) may have prognostic value. Acute dermatitis, burns, post-operative urticaria, cutaneous inflammation associated with gout and herpes zoster infections should be considered in differential diagnoses.<sup>5,6</sup>

FG requires general surgery and is a urological emergency that needs to be treated immediately.<sup>6</sup> Upon early diagnosis, treatment should be initiated promptly.

Antibiotic therapy, surgical debridement and hyperbaric oxygen (HBO) can be used in patients with FG and cellulitis.<sup>6</sup> In patients with rapidly progressive forms, asplenia, neutropenia, immunosuppression, cirrhosis or cardiac-renal failure, treatment should be started parenterally, and following a clinical check-up, oral therapy should be taken in consecutive doses.<sup>1,2,6</sup> In community-acquired cases of cellulitis, cefazolin (4 x 1.0 gr/IV), cefadroxil (1-2 x 1.0 g/oral), cephalexin, clindamycin or erythromycin may be given. Ampicillin-sulbactam (4x1-3 g/day/IV) is a

good option in some resistant pathogens and linezolid (zyvoxid 2 x 0.6 g / IV or oral) or glycopeptides (teicoplanin 1 x 400 mg/day/IV, vancomycin 4 x 500 mg/day/IV) should be used in cases of methicillin-resistant *Staphylococcus aureus*. Treatment is completed in 14 days, and in patients with recurrent streptococcal infection, 1.2 MU/month of IM benzathine penicillin can be used for one year or 250 mg of erythromycin orally twice a day or 1 g of penicillin V orally twice a day.<sup>1-3,6</sup>

As of recently, hyperbaric oxygen (HBO) has been increasingly used as a treatment option for FG. Capelli et al.<sup>6</sup> reported that HBO therapy inhibits the growth of anaerobic bacteria in the affected tissues (clostridia involved), prevents further extension of tissue necrosis and reduces systemic toxicity. Initial radical debridement of necrotic tissue positively contributes to prognosis and mortality. A study conducted by Kara<sup>7</sup> demonstrated that surgical debridement of the lesions and drainage must be performed early in the course of the disease and aggressively, with extensive excision of the necrotic tissue.<sup>7,8</sup>

Sepsis and acute respiratory distress syndrome (ARDS), disseminated intravascular coagulopathy, septic shock, acute kidney failure, hepatic failure and multiple organ failure are the most frequent causes of death in cases of FG.<sup>8</sup> Tahmaz et al.<sup>8</sup> reported that in patients with co-morbidities (diabetes, malnutrition, obesity), the treatment of the underlying disease has a positive effect on the prognosis of FG. Apart from these treatments, Mallikarjuna et al.<sup>9</sup> detailed how the irrigation of wounds using 0.025% of sodium hypochlorite or the enzymatic debridement of

the wounds by application of lyophilised collagenase and honey can be used in the treatment of FG. Regardless of the treatment, Anaya et al.<sup>10</sup> reported that localized necrotizing fasciitis or FG has a high mortality rate, estimated to be 25% to 35%. Our patient was followed up closely in the intensive care unit and the appropriate antibiotics and dressing were used to treat the infection. Finally, the patient was discharged in good condition.

## CONCLUSION

In patients with FG and massive pelvic cellulitis, early diagnosis of the disease is important and antibiotics or early surgical treatment should be administered.

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