

## Case Report

# Fournier's Gangrene in a Patient with a Bladder Cancer: A Lethal Association

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**Abstract:** Fournier's gangrene is a rare and life-threatening condition. It mainly affects men. Progress in resuscitation has reduced its mortality rate but it remains very high. We report a case of Fournier's gangrene in a 30-year-old male patient admitted to our emergency room for 24 hours history of a bilateral painful scrotal swelling with fever. In his prior history the patient was followed for squamous cell carcinoma of the bladder with ureteral meatus invasion and renal failure. On physical examination we noted a severe sepsis: temperature was 39.2° Celsius, pulse rate was 115 beats per minute, respiratory rate was 26 breaths per minute, blood pressure was 80/60 mmHg. We noted a bilateral and painful scrotal swelling with snow crepitation in bursae and edema of the penile. The Fournier's Gangrene Severity Index was 17. After hydroelectrolytic resuscitation, a surgical debridement was performed. An antibiotherapy with third-generation cephalosporin and imidazole was administered. The patient died of septic shock 24 hours after the debridement. Through this clinical case we showed that Fournier's gangrene has a severe prognosis. FGSi is an interesting predictive score in the evaluation of the patient's vital prognosis. The association between FG and bladder tumor worsens the patient's vital prognosis. Bladder cancer and Fournier's gangrene realize a lethal association.

**Keywords:** Fournier's Gangrene, Lethal, Bladder Cancer

## 1. Introduction

Fournier's gangrene (FG) is a rapidly progressive necrotizing fasciitis of the perineum and external genitalia resulting from a polymicrobial infection whose cause may be urogenital, colorectal, and cutaneous [1]. Sometimes the etiology is not established and FG is qualified idiopathic.

FG is a life-threatening emergency. Progress made in resuscitation have contributed to a decrease in the mortality rate. It decreased from 80% to under 40% [2]. Nevertheless, this mortality remains high.

Many advances have been made in the management of FG such as the use of Hyperbaric Oxygen Therapy and Vacuum-Assisted Closure...[3]. Early diagnosis and adequate management are necessary to reduce morbidity and mortality [4].

We report a case of FG occurred in a patient with locally advanced bladder cancer to describe the prognosis of the FG. The informed consent of the parents was obtained.

## 2. Case Report

A 30-year-old male patient was admitted to our emergency room for 24 hours history of a bilateral painful scrotal swelling with fever. The patient was followed for squamous cell carcinoma of the bladder with ureteral meatus invasion and renal failure. On physical examination we noted a severe sepsis: temperature was 39.2° Celsius, pulse rate was 115 beats per minute, respiratory rate was 26 breaths per minute, blood pressure was 80/60 mmHg. We noted a bilateral and painful scrotal swelling with snow crepitation in bursae and edema of the penile (Figure 1). Serum creatinine was 8mg/dl,

serum sodium 123mmol/l, serum potassium 3.1mmol/l, hematocrit rate 32% and a leukocytosis of 25,000 cells/mm<sup>3</sup> predominantly neutrophils. The Fournier's Gangrene Severity Index (FGSI) was calculated at 17. After hydroelectrolytic resuscitation the patient underwent surgical debridement with scrotal bipartition (Figure 2). An antibiotherapy with third-generation cephalosporin and an imidazole was administered. The patient died of septic shock 24 hours after the surgical debridement.

### 3. Discussion

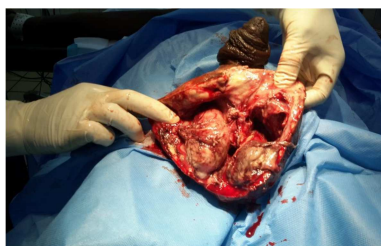
FG is a rare condition that affects both men and women. However, there is a male predominance with a ratio of 10:1 [5-7]. The explanation is that woman has a better drainage of the perineum through vaginal discharge [1]. The age of onset varies between 30 and 60 years old [1]. However some cases have been reported in children [8].

FG was first defined as an idiopathic entity by Jean Alfred Fournier in 1883 [9]. But today etiology is identified in 75-100% of cases. In a few cases, the FG is called idiopathic corresponding to the primitive gangrene described by Fournier in which no etiology was identified. FG is a polymicrobial infection whose source can be genitourinary, colorectal, skin or idiopathic [3]. Conditions predisposing to FG include diabetes mellitus and chronic alcoholism, smoking, renal failure, liver damage, cancer and HIV infection [10]. All these factors result in immunosuppression which favors the development of the infection. Diabetes mellitus is the most common and important predisposing factor [5, 11].

In the literature, prostate cancer and rectal cancer are reported to be associated to FG [12-14]. García Marín *et al* [7] reported two cases of FG in patients with bladder cancer. Our patient was followed for locally advanced bladder cancer.



**Figure 1.** The external genitalia before debridement.



**Figure 2.** After debridement.

FG is an urological emergency. Any delay in diagnosis and treatment engages the patient's vital prognosis. Treatment is

made of a therapeutic tripod including haemodynamic stabilisation, broad spectrum antibiotics, and surgical debridement [1]. Surgical debridement consists of excising all non-viable tissue.

FG is a severe life-threatening infection [5]. Despite advances in resuscitation, mortality rate remains very high. The mortality rates reported in the early series were around 80%. But recently, studies reported mortality rates under 40% [2]. Prognostic scores have been established to quantify the severity of infection and predict the probability of survival or death. The most commonly used score is FGSI. This scoring system uses common vital sign and laboratory data. It was established by Laor *et al* [15]. A score over 9 is associated with a 75% chance of dying, while a score less than 9 is associated with a probability of 78% to survive [15]. Serum creatinine is an important prognostic factor in the FG. Ruiz-Tovar *et al* [16] have shown that when the creatinine level was greater than 1.4 mg/dl mortality was twice as high. Also if the hemoglobin level was below 10g/dl the risk of death was 9.6 times higher [16]. Our patient had a FGSI score at 17 with serum creatinine 8mg/dl, and hemoglobin level of 8.5g/dl. This score predicts a high probability of dying. Our patient died 24 hours after the debridement. Hematuria is the main clinical sign of bladder cancer. Squamous cell carcinoma is the most frequent histological type of bladder cancer [17]. These bladder tumors are diagnosed most often in advanced stage leading to an obstructive renal failure. This is the case in our patient. Anemia due to hematuria and obstructive renal failure are both pejorative prognostic factors of the FG. So bladder tumor and FG realize a lethal combination.

In a meta-analysis, El-Qushayri *et al* [18] showed that factors correlated to a higher risk of mortality were: diabetes, heart disease, renal failure, and kidney disease. Also they showed that there was no correlation between malignant disease and mortality. Nevertheless in our patient obstructive renal failure due to ureteral meatus invasion by tumor can constitute a pejorative prognostic factor.

### 4. Conclusion

Through this clinical case we showed that Fournier's gangrene has a severe prognosis. FGSI is an interesting predictive score in the evaluation of the patient's vital prognosis. The association between GF and bladder tumor worsens the patient's vital prognosis.

Urogenital malignancies like bladder cancer can cause FG as well as colorectal tumors. Several factors determine the prognosis of the FG. But we think that the rapidity of the treatment and the presence of comorbidities are the major factors of the vital prognosis.

### Abbreviations

FG: Fournier's gangrene

FGSI: The Fournier's Gangrene Severity Index

HIV: Human Immunodeficiency Virus

## Conflict of Interest Statement

All the authors do not have any possible conflicts of interest.

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