Case Report

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A Rare Complication of Testicular Lymphoma: Fournier's Gangrene

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Abstract

Testicular neoplasms represent an uncommon subset of urogenital malignancies, with lymphomatous involvement being an even more infrequent clinical presentation. Fournier's gangrene, a fulminant necrotizing fasciitis affecting the perineal region, is characterized by a polymicrobial pathogenesis. The therapeutic management of this condition is predicated upon three critical interventional strategies: Expeditious and comprehensive surgical debridement, targeted antimicrobial pharmacotherapy, and robust hemodynamic stabilization.We report a rare case of recurrent testicular diffuse large B-cell lymphoma in an 85-year-old diabetic man complicated by Fournier's gangrene, a severe infectious complication.
Keywords: DLBCL, Fournier's gangrene, necrotizing fasciitis, testicular lymphoma, testicular tumor

Introduction

Testicular cancer is one of the rare malignancies of the male urogenital system and is typically diagnosed in younger age groups. However, it can also be encountered in elderly men, in whom it tends to follow a more aggressive course (1). The pathophysiology, histological subtypes, and prognosis of testicular cancers observed in elderly patients may differ from those in younger individuals. One such cancer is testicular lymphoma, which although rare, is the most common testicular malignancy in elderly men (2,3). The spread of local necrosis and infection to the perineal tissues can lead to Fournier's gangrene (FG), a severe and life-threatening condition (4). FG is a life-threatening, polymicrobial, necrotizing soft-tissue infection most commonly observed in men aged 60-70 years. It is characterized by a foul odor and primarily affects the perineum (5). On the other hand, these patients often have comorbidities such as diabetes mellitus, but the number of patients with hematological malignancies and FG is very low (6).

In this case report, we present a patient who underwent right inguinal orchiectomy for a mass in the right testis and subsequently developed a recurrent mass in the right hemiscrotum two years later. Necrosis of this mass, followed by infection, resulted in FG. The case is discussed with respect to patient management, surgical and medical approaches, and complications, with the aim of contributing to the diagnostic and therapeutic process for this rare clinical condition.

Case Reports

An 85-year-old male patient presented to the emergency department with systemic symptoms, including fatigue and fever, and a scrotal neoplastic mass. The patient's comprehensive medical history revealed a seven-year history of type 2 diabetes mellitus and a coronary artery bypass grafting procedure performed eight years earlier. His clinical profile indicated impaired self-management and a significant history of tobacco and alcohol use. Notably, the patient had undergone a right-sided inguinal orchiectomy two years prior, with histopathological examination confirming a diagnosis of diffuse large B-cell lymphoma (DLBCL). The initial surgical intervention demonstrated negative resection margins. However, the patient subsequently discontinued the recommended chemotherapeutic intervention. At the current medical evaluation, the patient's overall clinical status remained relatively stable, with a Glasgow coma scale score of 15, indicating full neurological responsiveness. Of particular clinical significance was the patient's report of a mass in the right hemiscrotum that had progressively enlarged over six months.

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On physical examination, the patient was tachycardic, tachypneic, and normotensive (127/55 mmHg), with a subfebrile temperature (37.6 °C) and oxygen saturation of 97%. A purulent, foul-smelling persisting for two days was observed in the scrotal region. The scrotal skin exhibited hyperpigmentation with dry, black, necrotic desquamation. A mass was identified in the right hemiscrotum (Figure 1). Upon palpation, the mass was found to be fixed to the skin of the right hemiscrotum and exhibited crepitus. The left testis was palpated and found to be adherent to the mass. The proximal parts of the penis and urethra were not palpable, while the distal parts appeared normal. The anoscrotal region was also unremarkable. A 3×2 cm right inguinal lymph node was palpated.

Laboratory test results obtained in the emergency department are summarized in (Table 1). Tumor markers were negative. Abdominopelvic computed tomography revealed a 12×10 cm scrotal mass filling the right hemiscrotum, displacing the corpus cavernosum and urethra to the left. Pockets of air were observed within the mass, and an enlarged right inguinal lymph node was noted.

The clinical management protocol was initiated with empirical antibacterial therapy comprising a synergistic combination of broad-spectrum antibacterial agents (meropenem and teicoplanin). Concurrently, urgent surgical debridement was performed to address the infection and mitigate potential systemic complications. During the procedure, both a urethral catheter and a cystostomy catheter were placed. Scrotal exploration revealed that the mass was partially necrotic and infected, and a tissue culture was obtained. Right hemiscrotectomy and left orchiectomy were performed while the urethra was preserved

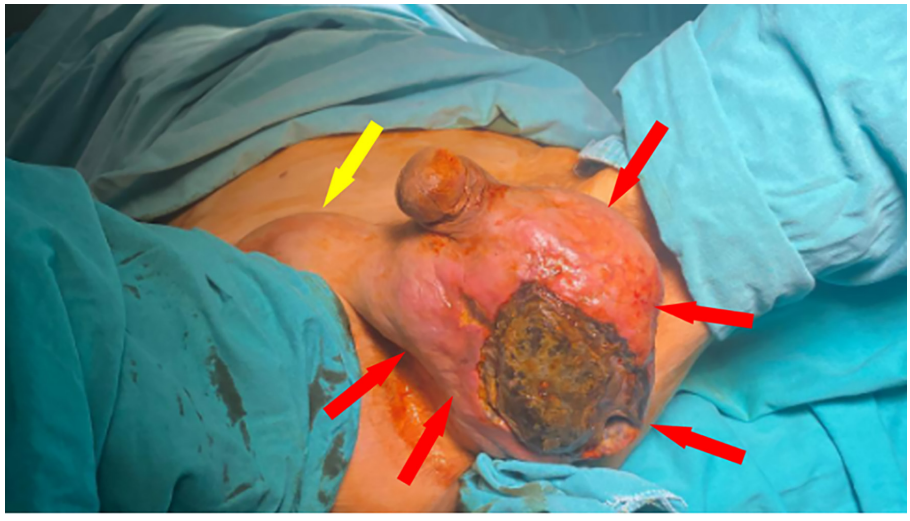

Figure 1. Preoperative image of the patient's testicular mass; the red arrow indicates the right hemiscrotal mass, and the yellow arrow indicates the right inguinal lymph node

Table 1. Blood laboratory results

Parameter	Value	Reference range	Unit
Sodium (Na)	135	135-145	mEq/L
C-reactive protein (CRP)	93.3	0-5	mg/L
Creatinine	1.18	0.6-1.2	mg/dL
Fasting blood glucose	360	70-100	mg/dL
Hemoglobin (HGB)	10.4	13.5-17.5 (male), 12.0-15.5 (female)	g/dL
White blood cells (WBC)	10.31	4.5-11.0	$\times 10^3/\mu L$
Hematocrit (HCT)	31	41-50 (male), 36-44 (female)	%
Lymphocytes (LYMPH)	0.86	1.0-4.8	$\times 10^3/\mu L$
Monocytes (MONO)	0.22	0.1-0.6	$\times 10^3/\mu L$
Neutrophils (NEUT)	9.19	2.0-7.5	$\times 10^3/\mu L$
Eosinophils (EO)	0.01	0.0-0.5	$\times 10^3/\mu L$
Platelets (PLT)	264	150-450	$\times 10^3/\mu L$
Hemoglobin A1c (HbA1c)	6.9	<5.7 (normal), 5.7-6.4 (prediabetes), ≥6.5 (diabetes)	%

Significantly elevated C-reactive protein levels suggest active inflammation. Severely elevated blood glucose levels indicate poor diabetes control. Low hemoglobin and hematocrit indicate anemia. Slightly elevated neutrophils may indicate infection or inflammation. Hemoglobin A1c is in the prediabetes/diabetes range
Note: Reference ranges can vary slightly between laboratories and may differ based on age, sex, and other individual factors. Always consult a healthcare professional for proper interpretation

with a catheter (Figure 2). To maintain urethral perfusion, the urethral catheter was removed postoperatively. Wound care was provided. The inguinal lymph node was left untreated.

Histopathological examination of the specimen confirmed. The tumor had infiltrated the testicular parenchyma, surrounding soft tissue, and scrotal structures, invading the rete testis, hilum, epididymis, and tunica. The surgical margins were intact, and no lymphovascular invasion was detected. Tissue cultures revealed growth of *Staphylococcus* and *Enterococcus* species.

In the postoperative period, daily wound care was performed, and no additional surgical debridement was required. After ten days follow-up, the patient was referred to plastic surgery for further management. The surgical site was left to heal by secondary intention. Systemic chemotherapy was planned following histopathological confirmation of DLBCL; however, it could not be initiated due to the patient's unexpected death in a traffic accident two months after the operation.

This patient was treated according to standard urology protocol. The surgery was performed after obtaining the required written informed consent. As the patient's identity remained undisclosed, consent for publication was also obtained. Following the patient's death, additional consent for publication of all clinical information and images was explicitly obtained from the patient's next of kin/family.

Discussion

Testicular cancer is among the rare malignancies of the urogenital system in men and is typically diagnosed in younger age groups. However, it can also occur in elderly men, in whom it tends to follow a more aggressive course (1). The pathophysiology, histological subtypes, and prognosis of testicular cancer in elderly patients may differ from those in younger individuals. While the distribution of seminomatous and non-seminomatous tumors may vary, elderly individuals have been reported to exhibit higher rates of metastatic spread (4). Additionally, although rare, testicular lymphoma is the most common testicular malignancy in elderly men. This disease typically manifests as the DLBCL subtype and accounts for approximately 5-7% of testicular malignancies in the elderly population (2,3). Patients with primary testicular lymphoma have a high risk of metastasis, with frequent spread to the central nervous system, contralateral testis, and lymph nodes (1,4). The local necrosis and infection of these masses can extend to the perineal tissues, leading to FG, a severe and life-threatening condition (4).

FG is a life-threatening necrotizing soft tissue infection, usually of polymicrobial etiology, that primarily affects the perineal region. In male patients, scrotal involvement is common, while testicular involvement is relatively rare. Anatomically, testicular blood flow originates directly from the aorta, whereas perineal blood flow is supplied by the pudendal artery. The infection typically spreads through Colles' fascia (superficial perineal fascia), extending into Buck's and dartos fasciae, allowing further progression into the scrotal and penile tissues (5). In the pathogenesis of FG, dermatological defects in the perineal, anal, or urogenital regions typically play a significant role, while idiopathic cases are less frequently encountered (7).

The necrotizing process in FG involves complex pathological mechanisms characterized by the infiltration of polymorphonuclear cells and fibrinoid coagulation within the feeding arterioles, occurring in the presence of multiple microorganisms (8). Epidemiologically, FG predominantly affects men and is rarely reported in women and the pediatric population (9). The average age at diagnosis is 60-70 years, and these patients often have comorbid conditions (10).

Clinically, severe genital pain, rapidly progressive cellulitis, and signs of systemic toxicity are characteristic (5,7). Prodromal symptoms such as fever and lethargy may appear up to seven days before the onset of perineal edema and severe pain. As the disease progresses, affected genital skin tissue may exhibit darkening, purulent discharge, and subcutaneous crepitus, while pain may decrease due to necrosis of nerve tissue. Despite the presence of a characteristic foul odor, cutaneous manifestations may not fully reflect the severity of the underlying tissue damage. To prevent the rapid progression of the infection, urgent and aggressive surgical debridement of all necrotic tissue, hemodynamic stabilization, and initiation of broad-

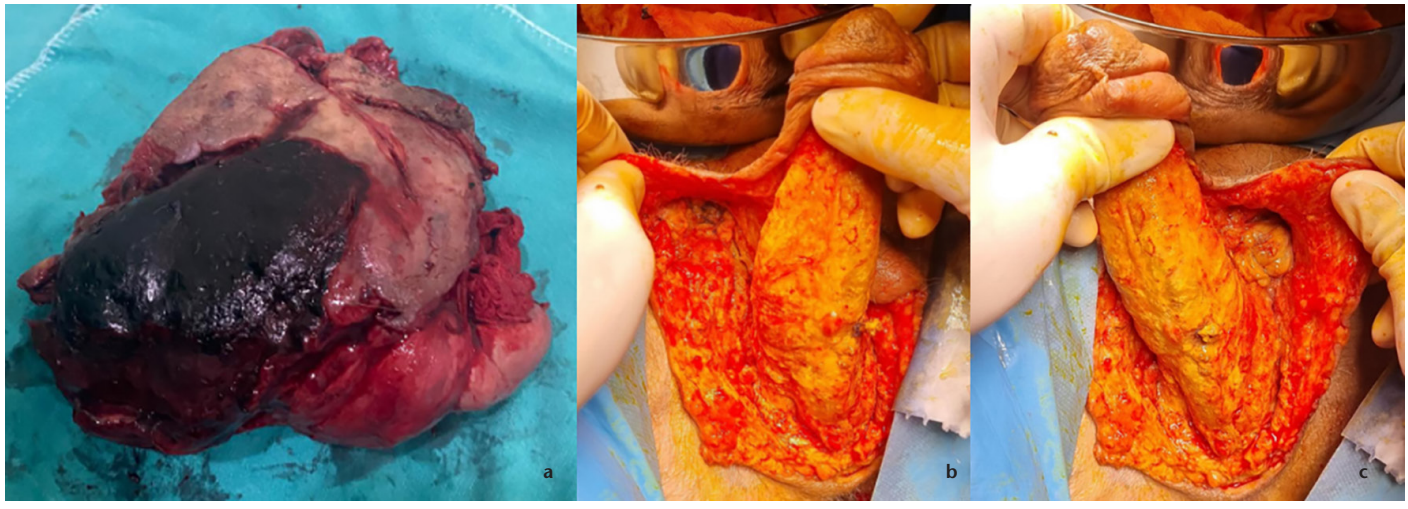

Figure 2. Postoperative excised testicular mass and surgical site; **a)** Excised testicular mass; **b)** Post-excision view of the right side of the scrotum and penis; **c)** Post-excision view of the left side of the scrotum and penis

spectrum prophylactic antibiotic therapy are crucial (5). Despite advancements in modern medical approaches, mortality rates associated with FG have remained relatively stable over the past 25 years, with recent epidemiological studies reporting rates between 7.5% and 19.8% (10).

Only a few cases reporting the coexistence of B-cell lymphoma and FG have been described. To date, 44 cases of FG associated with oncohematological malignancies have been described (6), with DLBCL identified in only four. In most cases, FG developed as a complication of an existing hematologic malignancy, due to neutropenia (11,12) or post-biopsy infection (13), or it was diagnosed incidentally during surgery (14). Uniquely, our patient developed FG due to necrosis of a scrotal mass. Unlike previous reports, FG in our case resulted from direct tumor necrosis rather than from immunosuppression or invasive procedures, highlighting the importance of considering lymphoproliferative disorders in patients presenting with scrotal FG.

Primary testicular lymphoma is a malignancy with a substantial risk of recurrence. In cases of relapse, chemotherapy and radiotherapy are the recommended therapeutic modalities (2). However, lymph node dissection and excision of recurrent masses are generally not preferred interventions. Consequently, in our case, the infected mass was surgically excised. Following FG management, the patient was scheduled for oncological follow-up and monitoring, but he died.

Conclusion

Testicular masses may result in severe infectious complications, such as FG. Timely and appropriate recognition and management of infectious complications are paramount, as are the comprehensive evaluation and treatment of the underlying pathological condition.

Ethics

Informed Consent: This patient was treated according to standard urology protocol. The surgery was performed after obtaining the required written informed consent. As the patient's identity remained undisclosed, consent for publication was also obtained. Following the patient's death, additional consent for publication of all clinical information and images was explicitly obtained from the patient's next of kin/family.

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Contribution: There is not any contributors who may not be listed as authors.

Footnotes

Authorship Contributions

Surgical and Medical Practices: S.Ç., Concept: A.T., C.A., S.Ç., Desing: A.T., C.A., S.Ç., Data Collection or Processing: A.T., C.A., S.Ç., Literature Search: A.T., C.A., S.Ç., Writing: A.T., C.A., S.Ç.

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