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Case Report

Tuberculous Epididymitis Masquerading as Giant Scrotal Abscess

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Abstract

Epididymal tuberculosis is an uncommon form of genital tuberculosis, but its recognition is crucial for timely treatment and preventing complications.

The clinical presentation of epididymal tuberculosis often mimics more common conditions, like a scrotal abscess, making it difficult to diagnose. This case underlines the importance of maintaining a high clinical suspicion, particularly in a patient with risk factors for tuberculosis or other forms of the disease. The use of diagnostic tests, such as the TB-PCR (Polymerase Chain Reaction), proved pivotal in identifying the cause and distinguishing it from other potential conditions.

The patient's initial management focused on draining the scrotal abscess, but it was the subsequent diagnostic workup that led to the correct diagnosis of tuberculous epididymitis. Following diagnosis, the patient underwent subsequent debridement and started on appropriate anti-tuberculous chemotherapy. This combination of surgical intervention and targeted medication resulted in a favorable outcome, emphasizing the importance of early diagnosis and treatment.

This report serves as a reminder for healthcare providers to consider tuberculosis in the differential diagnosis of scrotal swellings or abscesses, particularly in patients with other forms of tuberculosis or those at higher risk. It highlights the rarity of epididymal tuberculosis, particularly when it presents as an acute scrotal abscess.

Keywords: Tuberculosis; Genitourinary; Epididymitis; Scrotal Swelling; Abscess

Introduction

This case underscores the diagnostic challenge of epididymal tuberculosis, particularly when it presents with non-specific symptoms such as scrotal pain, swelling, or a mass. As part of extrapulmonary tuberculosis, genitourinary tuberculosis is a significant health issue in regions like India, where it contributes to 10-14% of all cases [1]. The spread of renal tuberculosis can involve various genitourinary structures, including the prostate, seminal vesicles, epididymis, and testes. Pulmonary and renal tuberculosis are documented in 50% and 80-85% patients with genital tuberculosis respectively [2]. The global prevalence of tuberculosis, with over 2 billion people affected, underlines the need for awareness of its atypical presentations [3].

Epididymal tuberculosis is particularly difficult to diagnose due to its resemblance to other conditions like testicular neoplasms or abscesses. The presentation of acute scrotal abscesses can be confusing, and without a high index of suspicion, it could be misdiagnosed. In the reported case, the patient's symptoms of scrotal pain and swelling were initially thought to be related to a non-specific abscess. To prevent the impending septicemia, patient was taken

for emergency drainage of scrotal abscess and debridement. The collected pus and sloughed scrotal wall tissue were sent for culture and sensitivity. However, a strong clinical suspicion, along with the use of TB-PCR (Polymerase Chain Reaction), proved essential in reaching the correct diagnosis of tubercular epididymitis.

Prompt diagnosis through such advanced diagnostic tools is critical, as it allows for timely intervention with appropriate anti-tuberculous treatment, improving the prognosis and preventing further complications. The case highlights the need for awareness of this condition in patients presenting with scrotal symptoms, especially in areas with a high burden of tuberculosis.

Case Report

Here we present a case of a 60-year-old male having complaints of painful scrotal swelling and fever with a history of pulmonary tuberculosis two years back. There was gradual increase in the size of swelling in the last 2 months-along with systemic findings like leukocytosis (Wbcs-21,910/ul), anemia (haemoglobin-9.8gm/dl), and raised ESR (112mm/hr), point towards an inflammatory or infectious process. His previous history of pulmonary tuberculosis which was treated with 6 months of anti-tubercular therapy, raises suspicion for a possible recurrence or hematogenous spread of tuberculosis. There was no history of nausea, vomiting, swelling of both legs, shortness of breath, and decreased consciousness. There was no sign of bowel obstruction.

The physical examination reveals a large left scrotal swelling of size 25*18cms with tenderness, erythema, and thickened tender left spermatic cord. As the penile shaft was embedded in the swelling, patient had difficulty in micturition but the urine output was adequate (about 1500ml per 24hrs). Left testis was not palpable. Getting above the swelling was possible. Transillumination test was negative. Right testis, cord structures were palpable and non-tender. The palpable induration and tenderness between the base of the scrotum and the penis suggest localized inflammation or abscess formation, likely related to the epididymis. Serology test for HIV, hepatitis, syphilis was negative. Scrotal ultrasound showed large hypoechoic collection with thick septations, free floating echoes and sedimentations in left scrotal sac measuring approximately 550cc in volume, left testis could not visualized and the left epididymal head was enlarged and heterogeneous in echogenicity with massively increased vascularity. Chest xray and HRCT chest showed apical pleural thickening on right side and fibrobronchiectatic changes noted in the form of septal thickening and traction bronchiectatic changes in the upper lobe with peribronchial cuffing, all suggestive of post Koch's sequalae. The multiple inguinal lymph nodes were palpable on an average reaching 1 cm, and the largest measuring 2.2 cm × 1.0 cm. The abdominal ultrasound revealed no significant abnormality. Prostrate was not palpable during the rectal examination.

Figure 1

Based on these findings, the patient was diagnosed with left scrotal abscess and subsequently taken for emergency incisional drainage of abscess and necrotomy debridement under spinal anesthesia. He was also given intravenous ceftriaxone 1 g twice daily and a total of 1500 cc intravenous fluid support per 24 hours. Intraoperatively, the left hemi-scrotum was incised longitudinally, which yielded approximately 850 milliliters of brownish yellow colored pus. The sac wall was thickened and sloughed out. The left testicular tissue was found to be necrotic and considered nonvital, thus a left orchidectomy was done. The entire sloughed out sac was excised. A sample of the purulent discharge was collected and sent for culture in order to identify antibiotic resistance and susceptibility, while the necrotic testicular and scrotal tissue was submitted for histopathology examination for further evaluation. Given the patient's history of tuberculosis, along with the clinical findings of scrotal and epididymal involvement, the diagnosis of tuberculous epididymitis is highly likely. To confirm this, the excised scrotal tissue and aspirate were sent for advanced diagnostic tools such as TB-PCR (Polymerase Chain Reaction). The scrotal wound was left open and packed with EUSOL-soaked sterile mop. Scrotal support was given. Patient was started on higher antibiotics that is injection Piptaz 4.5gm iv BD and injection amikacin 750mg iv OD.

The bacteriological analysis shows the presence of Acid-Fast Bacilli (AFB) stain with low detection of MTB. The finding of pathology shows granulomatous inflammation of epididymis without evidence of malignancy. Histopathology of the specimen reported multiple epithelioid cell granulomas, caseous necrosis, and Langerhans type giant cells in the testis as well as epididymis and spermatic cord. Blood vessels showed congestion and there was infiltration by lymphocytes and monocytes. The TB PCR test result came out to be positive. Based on these findings, a diagnosis of tuberculosis epididymitis and scrotal abscess was made. Patient was thereafter referred to the TB treatment centre and commenced on antituberculosis drug therapy.

The treatment regimen started for this patient, involving an intensive phase followed by a continuation phase, is in line with standard protocols for managing tuberculosis. The initial two months of the intensive phase with Isoniazid, Rifampicin, Pyrazinamide, and Ethambutol are aimed at rapidly reducing the bacterial load and treating the active infection. Following this, the continuation phase involves Isoniazid and Rifampicin alone for four more months to eradicate any remaining bacilli and prevent relapse.

After starting anti-tubercular therapy, the patient underwent debridement two weeks later, which helped to manage the infection and remove any remaining necrotic tissue. The careful dressing of the wound promoted the development of a healthy wound bed. The use of meticulous wound care, along with ongoing treatment, facilitated a favorable healing process. Once the scrotal wound showed healthy red granulation tissue, that is after 2 weeks of daily dressing with Debridase ointment and later on with Hydroheal once slough decreased, secondary suturing was performed, further aiding in wound closure and improving the cosmetic and functional outcomes. A corrugated drain was kept in the scrotal wound while doing secondary suturing. The patient was discharged on post operative day three after removing the corrugated drain. He was advised for daily dressing and asked to follow up after 1 week. On follow up, the suture line had healed and the size of the scrotum was significantly reduced. All the sutures were removed and on six weeks follow up the results were remarkable.

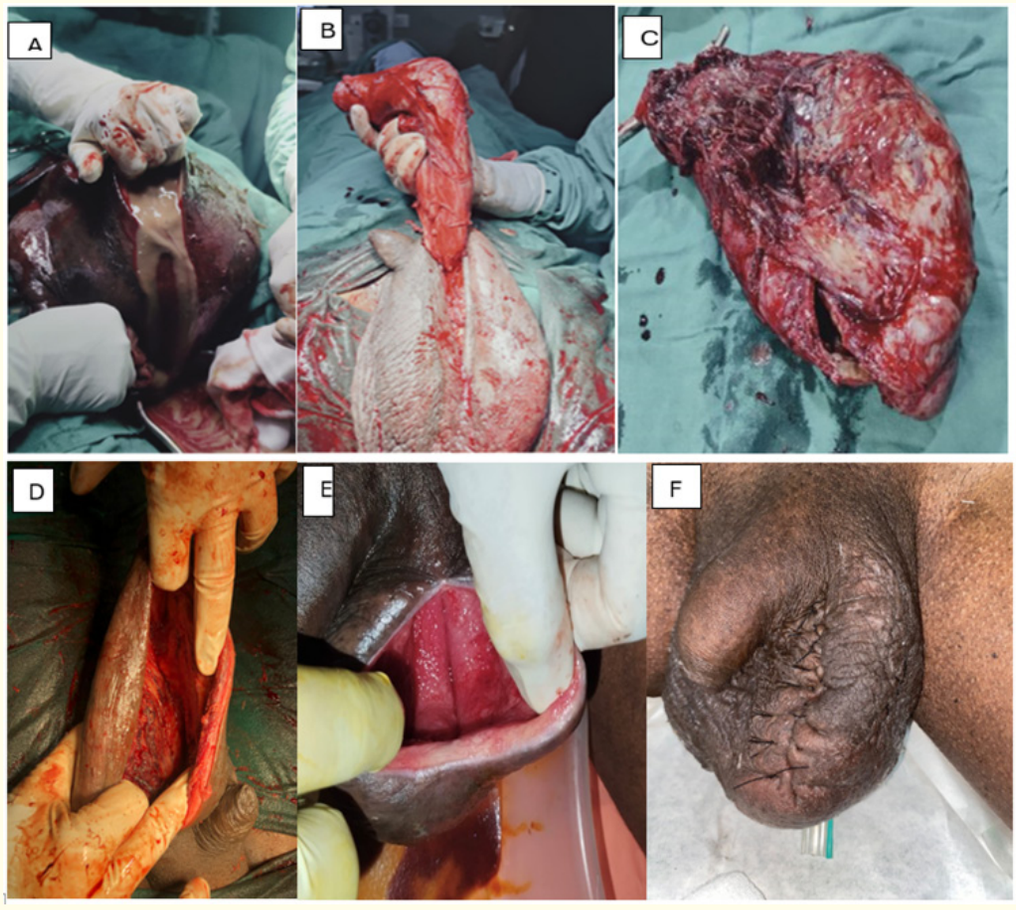

Figure 2: [A] About 850ml pus drained out of left scrotal abscess, B] The thickened sac along with sloughed out testis dissected from surrounding scrotal wall, C] The sloughed out scrotal sac excised, D] Scrotal wall appearance after left orchidectomy, E] Appearance of healthy granulation tissue after 2 weeks of daily dressing and debridement, F] Secondary suturing of the scrotal wound and placement of corrugated drain.

Discussion

This detailed description emphasizes the complexity of diagnosing genitourinary tuberculosis (GUTB), particularly epididymal tuberculosis. Genitourinary tuberculosis is indeed the second most common extrapulmonary form of TB, following peripheral lymphadenopathy [4]. Tuberculosis of scrotum occurs as a secondary infection in about 7% of the patients having tuberculosis [5,6]. Its occurrence is particularly notable in individuals with a history of pulmonary tuberculosis, as the infection typically spreads hematogenously from the lungs to the kidneys and then to other genitourinary organs, including the prostate, seminal vesicles, epididymis, and testes. Clinical history is the most critical step in diagnosing genitourinary tuberculosis (GUTB). The important considerations while obtaining the medical history are prior TB infection, immunocompromised states, such as human immunodeficiency virus/acquired immunodeficiency syndrome, travel to endemic areas, and immigration [7].

The presentation of genitourinary tuberculosis can vary, with persistent sterile pyuria (white blood cells in the urine without bacterial growth) or hematuria (blood in the urine) being common findings. In this context, epididymal tuberculosis-a relatively uncommon manifestation-can present as scrotal changes such as hardening, nodules, scrotal fistulae, or, in rare cases, hydrocele [8]. Bilateral involvement is seen in 34% of cases. The chronic nature of tuberculous epididymo-orchitis often leads to an insidious onset, with gradual scrotal changes that may not initially be recognized as tuberculosis.

While urine PCR is a highly sensitive and specific diagnostic tool for GUTB, its use was not included in this case. The urine PCR method has shown 95.5% sensitivity and 98.12% specificity, making it an ideal diagnostic approach for detecting Mycobacterium tuberculosis in the urine, especially when there are few bacilli present [9]. PCR provides quick results (within 24 to 48 hours) and plays a critical role in diagnosing active TB infections, especially in cases where culture results may take longer. However, PCR cannot distinguish between active and latent TB infection, which is a limitation.

Despite the absence of urine PCR in this case, diagnostic methods such as culture and Ziehl-Nielsen (ZN) staining would still be valuable, as they can confirm the presence of acid-fast bacilli and provide additional support for the diagnosis of tuberculous epididymitis. The lack of acid-fast bacilli on urine culture in this case does not rule out the diagnosis of GUTB, particularly since other diagnostic modalities, like PCR of tissue specimens, were used to confirm the presence of Mycobacterium tuberculosis. This case illustrates the importance of high clinical suspicion and utilizing a combination of diagnostic techniques to accurately identify genitourinary tuberculosis, especially in patients with a prior history of pulmonary TB. Given the potential for severe complications, early and appropriate diagnosis is crucial to ensure effective treatment and minimize damage to the affected organs.

This case provides a fascinating and rare presentation of tuberculous epididymitis as a scrotal abscess, which initially led to the clinical diagnosis of Fournier's gangrene. The clinical picture of a painful, inflamed, tender scrotal mass in a patient with a prior history of pulmonary tuberculosis is complex, and the initial misdiagnosis highlights the difficulty in identifying genitourinary tuberculosis (GUTB) in its less common forms.

The presentation of scrotal abscess is rare in genitourinary tuberculosis, with only one other similar case found in the literature, which also involved lung, lymph node, and splenic involvement. This makes it crucial to maintain a high index of suspicion for tuberculosis, particularly in patients with a history of pulmonary tuberculosis and nonspecific scrotal symptoms.

In this case, the diagnosis of tuberculous epididymitis was confirmed by the TB-PCR test performed on the biopsy taken from the scrotal abscess wall. The high sensitivity and specificity of the TB-PCR test were pivotal in identifying the underlying cause, emphasizing the importance of molecular diagnostic tools in such rare presentations. PCR offers the advantage of rapid results (within 24-48 hours), which helps avoid delays in diagnosis and treatment, an important factor in managing infections like tuberculosis that require prompt attention.

After initial surgical drainage of the abscess and meticulous debridement of sloughed scrotal wall, the positive TB PCR test and histopathological examination revealing tuberculous granulomas, the treatment regimen was outlined in this case following established guidelines for genitourinary tuberculosis. The initial 6-12 weeks of chemotherapy with four anti-tubercular drugs (Isoniazid, Rifampicin, Pyrazinamide, and Ethambutol) aims to reduce the bacillary load and treat the active infection. Following this, a continuation phase with two drugs (Isoniazid and Rifampicin) for an additional 3-6 months is recommended [10]. The short-term treatment approach is favored due to factors like the good renal vascularization, high urinary drug concentration, and low bacillary load in the urine, all of which contribute to high efficacy and good patient compliance [10].

The case underscores the importance of early and accurate diagnosis in managing complex cases like tuberculous epididymitis. The successful use of anti-tubercular therapy and early inter-

vention allows for positive patient outcomes, preventing further complications and preserving organ function. As this case demonstrates, a multidisciplinary approach involving clinical suspicion, advanced diagnostics (like PCR), and careful medical/surgical management is key to achieving favorable outcomes in genitourinary tuberculosis.

Conclusion

Tuberculosis should always be considered as a differential diagnosis when treating patients with scrotal masses, persistent scrotal pain, or other related symptoms, especially in those with a history of pulmonary tuberculosis. By following a routine practice of considering tuberculosis as a possible cause, physicians can be more proactive in ordering tests such as TB-PCR, which can help confirm the diagnosis early, even in cases where the clinical presentation does not immediately suggest tuberculosis.

Treatment of scrotal abscess includes surgical drainage and administration of appropriate antibiotics according to its causative organism. Early diagnosis and prompt treatment of scrotal abscess is necessary, since chronic and severe cases usually result in nonviable testicular tissue and necessitates orchidectomy, as happened in this case. The non- viability of the testis may have resulted due to cumulative ischemia of the testicles from multiple mechanisms: inflammatory infiltration causing compression of the spermatic cord, thrombosis secondary to venous congestion and/or bacterial exotoxins.

The timely diagnosis of tuberculous epididymitis allowed for appropriate treatment with anti-tubercular therapy, preventing potential complications such as infertility, and ensuring the preservation of scrotal function. This approach not only helps in saving lives but also plays a critical role in reducing the burden of extrapulmonary tuberculosis, which is often underrecognized and underreported.

This case emphasizes that early diagnosis and targeted treatment based on a strong clinical suspicion can make a significant difference in the management of genitourinary tuberculosis and highlights the importance of raising awareness about the disease, especially in high-prevalence regions.

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