

Isolated tuberculous orchitis presented as epididymo-orchitis: An unusual presentation of tuberculosis

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Abstract

Urogenital tuberculosis (UGTB) is almost 8%–15% of the extrapulmonary site of TB of all kinds, and epididymal involvement is rarer, counted only 28% of UGTB. Isolated tuberculous epididymitis (ITE), without the inclusion of prostate or clinical evidence of renal involvement, is an even more rare entity and is challenging to diagnose. However, isolated epididymis TB presented as a huge scrotal abscess with scrotal sack involvement is exceptionally uncommon. The symptoms of such ITE resemble the epididymo-orchitis or malignant tumor, which results in misdiagnosis or delay in diagnosis. A 32-year-old man, sexually inactive, was presented with a rapid, painless scrotal growth. There was no clinical evidence for TB. Clinical examination of the genitalia revealed an enlarged right testis with intratesticular masses (abscesses) and swollen spermatic cord along with inflamed epididymitis. The radiological and laboratory shows no evidence of TB with clear chest X-rays, normal blood, and urine analysis. There were no symptoms of *Mycobacterium tuberculosis* during the microdot enzyme immunoassay analysis. A repeated magnetic resonance imaging and ultrasonic investigations were performed that revealed findings suggesting a chronic inflammatory process with severe abscess involving the spermatic cord and scrotal sack, which misled the diagnosis of epididymo-orchitis. Later, the extensive formation of superficial abscess breaches the scrotal sack. A pathological investigation of excretion and intrascrotal tissues established the diagnosis of ITE. The patient was kept on anti TB treatment medications for 12 months due to delay in diagnosis (12 weeks), continuous discharge, and severe involvement of epididymitis along with a scrotal sack and spermatic cord and had a remarkable recovery. The delayed diagnosis of ITE could lead to severe complications, which could result in surgical intervention or an orchiectomy. The first line of treatment should be the pharmacological approach for cases of epididymis TB, and surgery should be the 2nd option. A surgical procedure should be considered only in cases where the diagnosis is not established or when there is a strong clinical indication such as abscesses, cutaneous fistulas, or extensive involvement of the epididymis and testis.

Keywords: Epididymitis, isolated tuberculous epididymitis ultrasound, magnetic resonance imaging, testis, urogenital tuberculosis

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INTRODUCTION

Tuberculosis (TB) remains one of the common infections around the world after HIV. It is an ancient disease^[1] which caused millions of people infected each year, resulting in several deaths, thus ranked second in infectious disease worldwide after HIV.^[2,3] It has been estimated that almost one-third of the world population has been infected by TB.^[4] TB is the 9th leading cause of death worldwide and the leading cause in adults with a single infection.^[4] In the past year (2018), the World Health Organization has estimated 10.0 million new active cases reported with the incident frequency from 5 to 500 per 100,000 population per year with a global average of 130. However, TB remained the top infectious killer disease overthought TB-related deaths has fall form 1.6 million in 2017 to 1.5 million in 2018.^[5]

Extrapulmonary TB can develop in several sites. The three most common are the skeleton, genital tract, and central nervous system.^[6] Urogenital TB (UGTB) is the second to third most common infection of the extrapulmonary site of TB, represented almost 8%–15% of all kinds of TB cases. In comparison, epididymal involvement is counted only 27% of GUTB.^[7] In UGTB, the kidney is the most favorite site for infection.^[8] However, the male genital TB (MGTB) is a unique subset of TB involving the prostate, seminal vesicles, vas deferens, tactical, epididymites, or penis.^[9] Tuberculous epididymitis is an essential manifestation of UGTB,^[10] which is the 2nd most common form of extrapulmonary TB.^[11] UGTB other than tuberculous epididymitis is rarer and is challenging to diagnose modern UGTB.^[12] However, the diagnosis of the UGTB remains an enigma as it hides under the umbrella of another infection or disease.^[12] Isolated TB orchitis without epididymis is an even more rare entity.^[13]

When genital organs are involved, the epididymis is the most favorite site. The TB granulomatous may develop within the epididymitis and testicle, but the most affected site is the epididymal tail. Abases and extra-testicular calcifications are possible complications^[14] and epididymo-orchitis as the usual presentation in such a situation. TB Orchitis without epididymal involvement is a rare entity.^[8] However, isolated epididymal TB (ITE) with scrotal mass or intratesticular involvement is even rarer.

ITE is defined as the tuberculous epididymitis without clinical evidence of either renal or prostate involvement, is a rare entity among various clinical presentations of UGTB.^[15] ITE condition is challenging to diagnose, and clinically, this condition may resemble epididymo-orchitis, malignancy, and sarcoidosis.^[16] Moreover, the clinical manifestation of

this rare situation may variable and include fever, painless or painful scrotal swelling, increase frequency of urination, suprapubic pain or painless testicular swelling, flank pain, dysuria with sterile pyuria and in more advanced cases fistulas and infertility.^[7,8,17] It may be difficult to diagnose, and often late, epically due to poor symptoms and larceny between the first infection and the clinical manifestation that usually occurs above 30 years of age after exposure to the bacterium.^[18,19] In most of cases, it has been seen the genital track is less affected compared to the urinary tract, and epididymis is the first choice of genital TB in man.

In some specific cases, the surgical approach is needed to confirm the diagnosis.^[8] However, Radiological imaging has a vital role in distinguishing testicular pathology. It is required to differentiate between intratesticular and extra testicular locations of disease. Furthermore, it can evaluate internal architecture determining whether cystic, solid, or complex lesions are present, thus guiding clinical versus surgical management.

This article reports a case of an adult male treated at King Abdulaziz University Hospital (KAUH), with an initial presentation of Scrotal swelling supposed to be epididymo-orchitis. Later, postoperative diagnoses of isolated epididymal TB with the complication of extra testicular abuses with sectoral involvement and superficial spermatic cord. Histopathologic examination of the internal tissue of ruptured scrotal skin and culture of the abscess, followed by the literature review on the best diagnosis conducted, treatment, follow-up and managed by anti TB treatment (ATI) therapy for 1 year.

CASE REPORT

A 30-year-old young married male, nonsmoker, and sexually inactive for more than 9 months presented in the department of internal medicine, KAUH with the complaint of right testicle painless swelling, tenderness, and localized redness with a mild periodic fever for more than 30 days. His history was remarkable. Clinical examination of the chest [Figure 1], and abdomen found to be healthy. The patient had a hernia repair surgery on his right side almost ten years before. On physical examination, the patient was not afebrile, with a regular heart rate, blood pressure of 125/80, and normal respiratory rate and oxygen saturation.

Clinical examination of the genitalia revealed an enlarged right tactical with intratesticular masses (abuses) and swollen spermatic cord along with inflamed epididymitis. The right lymph nodes were also examined to be palpable.

While the left testis, spermatic cord, epididymitis was found extraordinary. The prostate was also found remarkable during the rectal examination.

Complete blood counts, biochemistry tests, and serum tumor markers, including prostate-specific antigen, alpha-fetoprotein, and beta-human chorionic gonadotropin, lactate dehydrogenase, were all within normal levels. Urine analysis was found without pyuria, and urine culture examination reveals no evidence of *Mycobacterium tuberculosis* or *Mycobacterium bovis*. There was no hematuria, urinary retention, urgency, frequency, or hesitancy with urination. The urine culture showed no bacterial growth. The patient was not immunocompromised, with no weight loss, night sweats, cough, and HIV/AIDS found to be negative. The chest X-ray was clear [Figure 2]. These results and symptoms resemble with epididymo-orchitis.

A scrotal ultrasound was performed as part of the initial investigation. The images of ultrasonography (UGS) show multiple hypoechoic, solid nodules throughout the right testis [Figure 1a], and the largest one was measured 0.391 cm × 0.308. The right testicle appeared with intratesticular hypo-echogenicity and increased vascularity and was deformed in shape with a measurement of 4.34 cm × 2.28 cm [Figure 1b]. The right spermatic cord has been observed to be thickened and hypoechoic with dimensioned 0.95 cm × 0.6 cm. The right epididymal head and body were enlarged and heterogeneous in echogenicity with massively increased vascularity, observed heterogeneous and hypervascular. There was a heterogeneous fluid collection noted that the most inferior aspect of the inguinal canal. The epididymal head is enlarged and heterogeneous in echogenicity with massively increased vascularity [Figure 1c]. The superficial extra testicular abscess extended to the scrotum and involved the scrotum sack [Figure 1d]. The UGS findings were inconsistent with the detail of magnetic resonance imaging (MRI). The detailed MRI reveals intrascrotal heterogeneous signal intensity posterior medial to the right testis, multiloculated, multiseptated, and peripherally enhancing collection extending superiorly and anterior to the inguinal canal measuring 5.7 cm × 3 cm [Figure 3a]. The Right testis is replaced with multiple hypointensities on T1 and T2, enhancing post-contrast [Figure 3c].

Consistent to the UGS, no hydrocele has been confirmed. The multiple inguinal lymph nodes have been observed on average, reaching 1 cm, and the largest measurement of the Benin inguinal lymph node has been measured 2.2 cm × 1.0 cm. The right seminal vesicle shows heterogeneous signal intensity on T2 and enhancing

postcontrast [Figure 3b]. The Right seminal vesicle has been seen lesion. The prostate shows a right basilar lesion that shows restriction and low signal intensity and T1 and T2 measuring through 1 cm × 1.4 cm. The patient did not respond to 4 weeks of antibiotics (Ciprofloxacin 500 mg twice/day). The Inguinal canal was more liquified, and extra testicular abscess managed to repute the scrotal sack [Figure 3d]. The tuberculin test was found positive with the central indurate zone measuring 34 mm.

Isolated epididymal TB was considered, and the culture of abscess and biopsy of internal scrotal tissues was performed since there was a possibility of a malignant tumor. 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 inconsistent with the Bacteriological analysis. The Tuberculin test also confirmed the diagnosis of isolated TB epididymis. The patient received anti TB treatment with isoniazid (INH), rifampicin (RMP), ethambutol, and pyrazinamide (PZA) for three months, which was reduced to INH and RMP for the next 9 months. The ATT course was extended due to the continuous discharge; 6 months later, no sign of the disease was clinically or radiographically noticed. Some author suggests the rifampicin as intravenous injections in the case of ITE treatment.^[12] The pictorial presentation of the patient during the treatment is depicted in Figure 4a-f.

DISCUSSION

Despite the advancement in anti-TB therapy and the strict implementation of well-known TB measures, TB remains one of the major diseases worldwide. This is compounded by the HIV that had to make it a common infection^[17] and is the global epidemic with more than 2 billion population infected worldwide.^[20] An estimated 10 million people fall in people who fell ill with TB in 2018, a number that has been relatively slightly reduced in recent years compared to 2017. TB-related deaths dropped from 1.6 million in 2017 to 1.5 million in 2018.^[5]

TB is a serious infection and can involve any organ in the body. Pulmonary TB is the most common presentation. The extra TB is also a significant clinical problem because sometimes it became difficult to rule out, and the situation may simulate malignant tumors with diagnostic and treatment challenges.^[21] A hefty of cases have been reported with various sites of extrapulmonary TB, including lymph nodes (the most common type), UGTB, abdominal organs, CNS, skin brain, and spine.^[22]

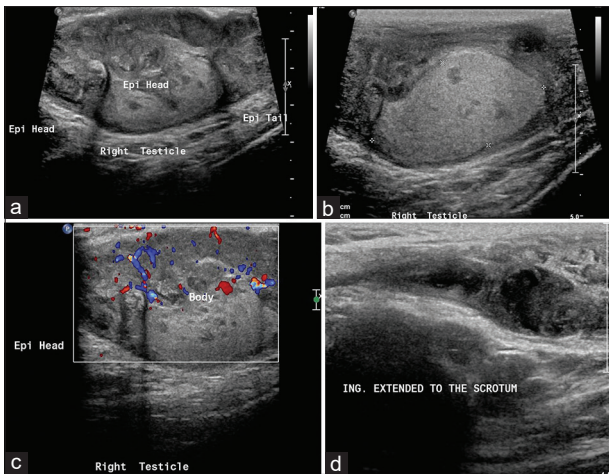


Figure 1: (a-d) The ultrasonography images of a 32-years male with the right testicular showing swelling and deformed shape with 4.34 cm × 2.28 cm (b). Image shoes heterogeneous echogenicity with multiple patches of hypoechoic spots distributed throughout the testicle (a). The right testicle shows hypervascularity with multiple, hypoechoic, solid nodules in the most substantial measures 4.2 mm × 5.8 mm throughout the testicular (a). The Right epididymal head and body are enlarged, heterogeneous in echogenicity with massive vascularity, and are hypervascular (c). There is a heterogeneous fluid collection noted that the most inferior aspect of the inguinal canal. The extra testicular abuses extended to the scrotum (d)



Figure 3: (a-d) A 32-years male sagittal magnetic resonance imaging T1-weighted (a) and axial T2-weighted (c) images show intrascrotal heterogeneous signal intensity posterior medial to the right testis, multiloculated, multiseptated and peripherally enhancing collections. A T2 weighted axial image (b) The right seminal vesicle shows the heterogeneous signal intensity and enhancing postcontrast. The sagittal T2-weighted image shows the extension of collections to interior and exterior to the inguinal canal (d)

UGTB is the uncommon presentation of TB and comprises 8%–15% of the extrapulmonary TB. Isolated genital involvement has been reported 28% of the UGTB. The diagnosis of isolated epididymal TB is rare. Therefore it can be misdiagnosed.^[8] ITE, which is defined as the TB epididymitis without clinical and laboratory evidence of renal involvement, is unique and challenging to diagnose.

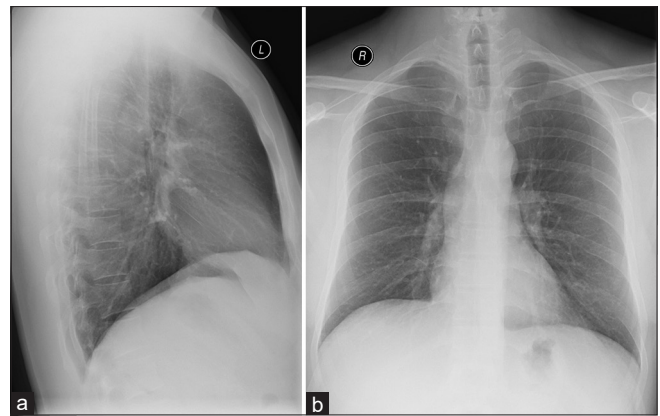


Figure 2: Chest radiography of the patient with no sign of tuberculosis

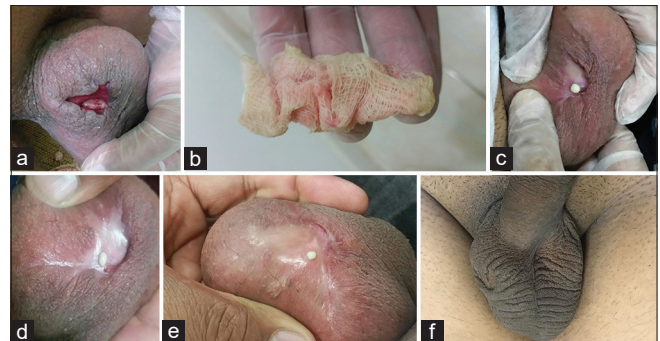


Figure 4: Figure of the ruptured scrotum of a 32-years male having multiple pockets of the intrascrotal abscess. The arrow shows the excretion of the abscess at the time of diagnosis (a). Discharge or abscess from the scrotum on a cotton swap after the rupture of the scrotal skin (b) Discharge of abuses after 3 months of diagnosis during treatment (c). The discharge and orifice after 5 months at diagnosis (d). (d) Depicts the healed scrotum after 6 months of completion of medications

However, some authors have a conflict about the existence of true ITE because the initial laboratory and radiological investigation may fail to reveal the renal involvement^[23] might be because of low sensitivity.^[24] Kho and Chan^[25] have reported a 40 years old patient with the diagnosis of ITE with the treatment of the ATT and surgical approach. Papadopoulos *et al.*^[7] has also published a young man of 32-year-old age with epididymitis TB cured with the treatment of ATT course. Borges *et al.*^[18] have presented a case of an ITE with complications of a 32-year-old male patient with the treatment of 6 months ATT, then surgical intervention, right orchid-epididymectomy through the inguinal canal, due to the possibility of malignant neoplasm of the epididymis. Kho and Chan^[25] as reported a 20 years young boy with a slow-growing painless scrotal mass for 2 months suspicious for a right para-testicular tumor. A repeat scrotal ultrasound revealed findings suggesting a chronic inflammatory process rather than a malignancy. The frozen section of the lesion confirmed the ultrasonographic findings, and the pathology established the diagnosis of ITE.

A 44-year old man presented with 4 months history of left scrotal mass and had undergone left orchidectomy following a preliminary diagnosis of testicular tumor. Histopathology revealed testicular TB.^[26] TB orchiepididymitis, in another case, was also preliminarily misdiagnosed as scrotal tumor.^[27] Felix t. Oben, *et al.*^[28] have also reported a 22 years old man with tuberculous epididymitis with retroperitoneal and mediastinal involvement. The patient was recovered with the 9 months first-line ATT medication. ITE is usually reported in young adults. Viswaroop *et al.*^[23] have reported the median age year range (21-years to 37 years). The discussed cases and our case fall in the same year range.

ITE is the entity that is usually presented without any specific clinical symptoms at a young age, as we have seen in our case; therefore, there remains a probability of misdiagnosis or leads to the diagnosis of the testicular tumor^[29] or epididymo-orchitis. The specific presentation of ITE is painful scrotal swelling, epididymis swelling with groin pain, dysuria, fever, and marked tenderness of the area in other inflammation of malignancies. ITE can also be presented as a painless scrotal mass. In our case, clinical findings were painless scrotal swelling, tenderness, and localized redness with a mild periodic fever for more than 30 days without coughing and clean chest radiography. Moreover, urine culture and urinalysis were found negative. Therefore, the tuberculous epididymitis where urine culture is negative, and there is no renal involvement, the diagnosis becomes more difficult.

Moreover, the radiography (UGS and MRI) illustration cannot differentially diagnose ITE from malignant diseases.^[30] Up to now, ITE has shared the imaging findings as those for the chronic inflammatory process or a testicular tumor. Even more, the radiological imaging (US, CT, and MRI) shows heterogeneous lesions in the enlarged epididymitis, with or without hydroceles, septation, extra testicular classifications, scrotal abscess, or scrotal sinus track.^[23,31] Hence, the accurate diagnosis relies on the pathological material obtained from fine-needle aspiration cytology (FNAC) or surgical intervention to the epididymis.^[23,32,33] However, there is a change of possible lymphatic spread of malignant cells due to FNAC if malignancy has been proven in later stages. Therefore, treatment should be adopted with minimal surgical intervention. But Until now, fine needle aspiration cytology or the surgical removal of the affected area was the cornerstone for the diagnosis of ITE.^[34,35]

It is challenging to differentiate between epididymo-orchitis from the isolated tuberculous epididymitis^[27] as both can be presented with similar conditions and symptoms affecting

the testis and epididymitis. The most notable radiological finding of isolated tuberculous epididymitis (ITE) is the enlargement of epididymitis and marked heterogeneity of the echotexture of the epididymis. When sonographic findings are equivocal or suboptimal, MRI can be used as a problem-solver. In magnetic resonance Epididymo-orchitis generally appears with heterogeneous areas of low signal intensity on T2-weighted images. The epididymis may be enlarged and hyper enhancing on contrast-enhanced T1-sequences. Heterogeneous enhancement of the testis with hypointense bands may also be seen,^[36,37] as seen in our case.

ITE can be cured with the combination of an oral regime of isoniazid, rifampicin, ethambutol, and PZA daily. According to the European urology guideline, the therapy varies from 2 months to 2 years.^[35] In specific cases of UGTB like HIV/AIDS patients or in case of a reoccurrence chance, the treatment should be given 9–12 months.^[35] Standard chemotherapy is effective only for the early diagnosed form of UGTB. In a complicated form, a modified scheme with anti-TB drugs in combination with pathogenetic therapy is indicated. Destructive forms of MGTB cannot be cured by chemotherapy, so surgery is necessary.^[35,38,39,40] The patients with tuberculous epididymitis with the suspect of the testicular lesion where the differential diagnosis between ITE and epididymo-orchitis or testicular tumor is practically difficult, then fine needle aspiration cytology is suggested after confirming the all tumor markers negative.

CONCLUSION

Isolated epididymis TB should be considered as the differential diagnosis with a case presentation of testicular mass even though it is a rare disease and difficult to diagnose. The first line of treatment should be the Pharmacological approach for cases of epididymis TB. The surgery should be the option when a patient did not respond to the pharmacological treatment. A surgical procedure should be considered only in cases where the diagnosis is not established or when there is a strong clinical indication such as abscesses, cutaneous fistulas, or extensive involvement of the epididymis and testis. A diagnostic algorithm should include minimally invasive diagnostic approaches such as FNA might be effective for an accurate diagnosis. The aim of this article to present such type of extrapulmonary TB and to elucidate and bring more insights to this rare diagnosis and to conduct it adequately.

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Informed consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patients have given their consent for their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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