

A RARE CASE OF TESTICULAR TUBERCULOSIS IN THE MIDDLE-AGED MALE: CASE REPORT

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ABSTRACT

Introduction: Tuberculosis is an infection that involves multiple organs. Testicular tuberculosis is a rare type of extrapulmonary tuberculosis, accounting for only 3% of total genital tuberculosis cases. **Objective:** We report a case of testicular tuberculosis in a 40 year old male patient with severe pain in the right testicle for the last one month. **Case(s) Presentation:** Patients with a history of pulmonary tuberculosis and undergoing intensive phase anti-tuberculosis drug therapy. The patient has a fever accompanied by redness, swelling, and puffiness in the scrotal area. Laboratory examination, leukocytosis and no increase in ESR. Testicular ultrasound examination showed swelling in the right scrotum area as well as normal size and hydrocele in the left testicle. **Discussion:** The patient was diagnosed with testicular tuberculosis and underwent orchidectomy on the right testicle, followed by anti-tuberculosis drug treatment for six months, then continued with an anatomical pathology examination. Anatomical pathology results showed specific chronic granulomatous inflammation due to tuberculosis in the right testicle. **Conclusion:** The combination of discontinuation and OAT needs to be done immediately to prevent further complications.

Keywords: Tuberculosis, testicles, urogenital, orchidectomy.

ABSTRAK

Pendahuluan: Tuberkulosis adalah infeksi yang melibatkan banyak organ. Tuberkulosis testis merupakan jenis tuberkulosis ekstra paru yang jarang terjadi, hanya menyumbang 3% dari total kasus tuberkulosis genital. **Tujuan:** Kami melaporkan kasus tuberkulosis testis pada pasien laki-laki berusia 40 tahun dengan nyeri hebat pada testis kanan selama satu bulan terakhir. **Presentasi Kasus:** Pasien dengan riwayat tuberkulosis paru dan sedang menjalani terapi obat anti tuberkulosis fase intensif. Pasien mengalami demam disertai kemerahan, bengkak, dan bengkak pada area skrotum. Pemeriksaan laboratorium, leukositosis dan tidak ada peningkatan ESR. Pemeriksaan USG testis menunjukkan adanya pembengkakan pada area skrotum kanan serta ukuran normal dan hidrokel pada testis kiri. **Hasil:** Pasien didiagnosis menderita tuberkulosis testis dan menjalani orkidektomi pada testis kanan, dilanjutkan dengan pengobatan obat anti tuberkulosis selama enam bulan, kemudian dilanjutkan dengan pemeriksaan patologi anatomi. Hasil patologi anatomi menunjukkan peradangan granulomatosa kronis spesifik akibat tuberkulosis pada testis kanan. **Simpulan:** Kombinasi penghentian dan OAT perlu segera dilakukan untuk mencegah komplikasi lebih lanjut.

Kata kunci: Tuberkulosis, testis, urogenital, orkidektomi.

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INTRODUCTION

Tuberculosis (TB) is a health burden throughout the world, especially in developing countries.¹ Tuberculosis became an epidemic in the 18th and 19th centuries.² Globally, 10.6 million cases of tuberculosis were reported in 2021. Tuberculosis involves all age groups, especially those aged 20-40 years.³⁻⁵ The number of urogenital

tuberculosis is around 20-73% of the total extrapulmonary TB and generally involves the prostate and epididymis. Testicular tuberculosis is only 3% of the total urogenital TB.⁶

The diagnosis of urogenital TB is quite difficult because the clinical symptoms are less typical. Classic symptoms of tuberculosis and swelling of the testicles with pain and/or without scrotal ulceration. Testicular tuberculosis can

clinically resemble other testicular lesions, such as testicular tumor, infarction, or even testicular torsion.⁴ Laboratory, radiological and culture examinations can support the diagnosis.^{3,5} Testicular tuberculosis can be confirmed by fine needle aspiration and testicular cytology or biopsy. Complications of genitourinary TB such as infertility, sexual dysfunction, and kidney failure.¹ Treatment options for testicular TB include antibiotic, anti-tuberculosis and orchiectomy.^{2,4} Here, we report a case of testicular TB in a 40-year-old male patient with thesis tuberculosis who underwent orchiectomy.

CASE(S) PRESENTATION

A male patient, aged 40 years, came with complaints of swelling and severe pain in the right testicle for the past month. The patient also complained of fever. History of pulmonary tuberculosis and the patient has been undergoing intensive phase tuberculosis treatment since 13 days ago. The patient denied any history of sexually transmitted diseases or urinary tract diseases. On physical examination, the patient was conscious, general condition was good, other vital signs were within normal limits. On genital examination, the right testicle was unilaterally swollen, round erythematous, abscessed, mobile, crusted, and fluctuating. There was no palpable inguinal lymphadenopathy (Figure 1).



Figure 1. Redness, oedema, swelling, and abscess in right scrotum.



Figure 2. Chest radiography showing miliary tuberculosis.

Laboratory examination revealed leukocytosis (12.290), increased AST/ALT (190/108), hypoalbumin (2.9), hyperbilirubin (2.6), and increased fibrinogen (492 mg/dL), non-reactive HBsAg, but HIV titers had not been carried out. Microorganism resistance tissue culture and biopsy examination revealed methicillin resistant coagulase negative staphylococci. Chest x-ray showed miliary tuberculosis (Figure 2). Ultrasonography of the left testis showed normal size, minimal hydrocele, and no visible masses, nodules or cysts, while the right testis showed swelling (Figure 3). The patient underwent an orchiectomy (Figure 4), followed by post-orchiectomy follow-up until the third day (Figure 5). Histopathological examination of testicular tissue showed the presence of fibrocollagen connective tissue, including granulomas consisting of epithelioid cells, multinucleated giant Langhans cells, and caseous necrosis in the center surrounded by a dense layer of inflammatory cells, lymphocytes and plasma cells (Figure 6). Apart from that, hyperemic blood vessels and mature fat lobules can also be found. There were no testicular seminiferous tubule components or signs of malignancy.

There is no data on resistance to anti-tuberculosis drugs. The patient has a history of intensive phase TB treatment, namely rifampin 150 mg ((8-12) mg/kg), isoniazid 75 mg ((4-6) mg/kg), pyrazinamide 400 mg ((20-30) mg/kg) and ethambutol 275 mg ((15-20) mg/kg) for 2 months, taking into account the patient's weight (56 kg), 4 pills per day and the second stage with two therapeutic drugs, rifampicin 150 mg((8-12)mg /kg) and 75 mg((4-6)mg/kg) isoniazid, 4 pills per day for 4 months.

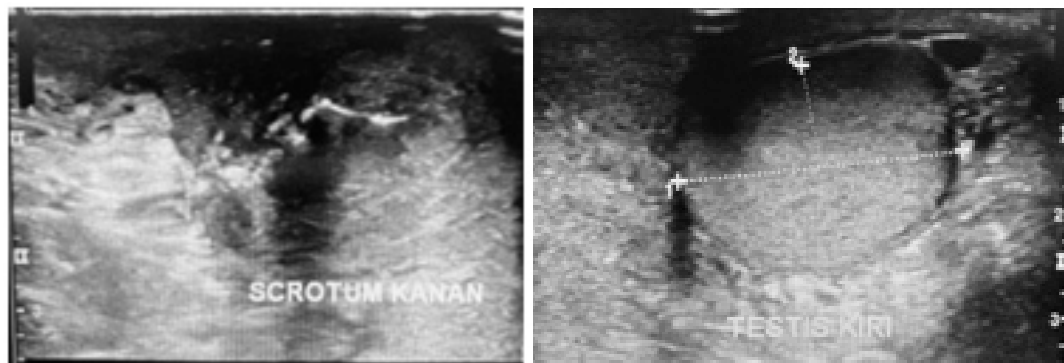


Figure 3. Ultrasonography of testis: hydrocele in the left testicle and oedema in the right scrotal area, and a possible scrotal abscess.



Figure 4. Orchiectomy.



Figure 5. Post of debridement (day 3).

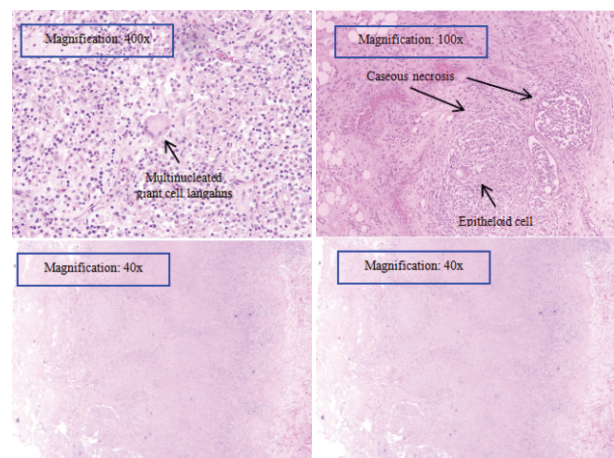


Figure 6. Histopathology of a hematoxylin and eosin-stained section of the testis (magnification $\times 40$; $\times 100$; $\times 400$) showing granulomas consist of epithelioid cells, Langhans multinucleated giant cells, and central caseous necrosis surrounded by a dense layer of inflammatory cells, lymphocytes and plasma cells.

DISCUSSION

Tuberculosis (TB) is an infectious disease caused by *Mycobacterium tuberculosis* (Mtb). *Mycobacterium tuberculosis* is a small, non-motile and aerobic bacterium which most often affects the lungs.⁸⁻⁹ Urogenital tuberculosis is the second most common form of extrapulmonary TB, but testicular TB is very rare. Risk factors for TB include malnutrition, HIV infection, diabetes, substance abuse, poor housing, smoking, long-term immunosuppressive and steroid drugs, and chronic kidney disease.^{5,7,9}

Genital tuberculosis is more common in men under 50 years of age.¹⁰ Regional symptoms of genitourinary TB such as low back pain, abdominal pain, hematuria, urinary tract obstruction, dysuria, nocturia, polakiuria, pain in the scrotal area, testicular swelling (generally unilateral), while systemic complaints include fever, night sweats, and weight loss. The initial symptom in most patients is a painful scrotal mass.^{1,3,5,11} The most common predilections are prostate, epididymis and seminal vesicles, and testes. In this case, a man, 40 years old, testicular pain and fever, but the diagnosis was more helpful because he had a history of TB and was undergoing intensive phase anti-tuberculosis treatment. The patient is also a non-smoker and non-alcoholic. History of immunosuppression and urogenital problems is unknown. Immunosuppression conditions, especially those caused by human immunodeficiency virus (HIV) infection, increase the risk of TB infection. The mechanism by which TB bacilli spread to the testicles is still controversial.⁷

The pathogenesis of extrapulmonary TB is related to the spread of *Mycobacterium tuberculosis* (MTB) nuclear droplets to the alveoli where phagocytosis occurs in the alveolar macrophages. These infected macrophages are carried to the lymphatic channels, regional lymph nodes, or in the bloodstream to any part of the body, one of which is the testicles.¹² Then, MTB is spread hematogenously through the bloodstream from the primary focus of the lung to the genitourinary tissue, causing infections in the kidneys, epididymis, testicles, prostate and seminal vesicles. However, retrograde extension of the prostate and seminal vesicles to the epididymis and testis can also occur. The primary focus with necrotic areas of the epididymis extends to the testicles. This primary effect causes lymphangitis and lymphadenopathy in the hilum,

thus forming a primary focus (Gohn's focus). The MTB reactivation can cause an inflammatory response and can result in the formation of giant or Langhans cells.¹³ Testicular tuberculosis is usually transmitted directly from epididymitis, because hematogenous spread of testicular TB rarely occurs due to the presence of a tight and impenetrable blood-testicular barrier, so tubercle inoculation which is transmitted through blood is rare.^{1,5}

Laboratory examinations related to testicular TB such as tumor markers, indicators of inflammation and TB infection, such as alpha-fetoprotein (AFP), β -human chorionic gonadotropin (β -HCG), luteinizing hormone (LH), follicle stimulating hormone (FSH), estradiol (E2), ESR, CRP, TB antibodies, and so on. In some cases, there was an increase in ESR and CRP as inflammatory mediators.¹ In this case, leukocytosis (12,290), increased AST/ALT (190/108), hypoalbumin (2.9), hyperbilirubin (2.6), and increased fibrinogen (492 mg/dL), and non-reactive HBsAg were found.¹⁴ However, tumor marker screening was not carried out. Research shows that 25% of seminoma testicular neoplasms can have an increase in beta-hCG without an increase in AFP and nonseminomatous germ cell tumors in which beta-hCG and AFP can be increased in 80%-85% of cases.¹⁵

In this case, ultrasonography of the left testicle showed minimal hydrocele and the right testicle appeared swollen. The presence of fluid in the testicles, as in this case, is also a symptom that is rarely found in cases of testicular TB.¹¹ Testicular cancer is suspected on ultrasound with the presence of hypoechoic, dense, and vascularized intratesticular lesions.¹⁶ The ultrasound appearance of lymphoma and seminoma is often homogeneous, but non-seminoma tumors are heterogeneous. Tuberculosis involvement of the epididymis and testis can be classified into four types depending on the ultrasound findings, such as diffuse enlargement either heterogeneous hypoechoic or homogeneous hypoechoic, nodular enlargement, heterogeneous hypoechoic, and miliary. Other associated ultrasonic findings include scrotal skin thickening, calcifications, hydroceles, scrotal abscesses, and sinus tracts.¹⁴ The use of color doppler on ultrasound is useful for detecting testicular tuberculosis due to testicular torsion.⁵ Chest x-ray examination (miliary tuberculosis) also supports this diagnosis.¹⁷ The CT scan usually shows an irregular testicular mass with heterogeneous or peripheral contrast enhancement,

and a hydrocele, with or without calcification. Magnetic resonance imaging generally shows heterogeneous intrascrotal signal intensity with multiloculated clusters.¹⁸ Patients with seminoma show slightly lower intensity than normal testicular tissue on T2WI, so tuberculous granulomas usually appear hypointense on T2-weighted (T2W) images and show variable contrast enhancement.^{4,17}

Testicular fine-needle aspiration biopsy (FNAB) and cytology may show epithelioid granulomas, and bacilli can be detected by acid-fast staining (ARB). Acid-fast staining (ARB) positivity can be detected in approximately 60% of tuberculosis cases.³ Fine needle aspiration cytology (FNAC) examination can play a role in bilateral testicular neoplasms and lesions in the solitary testicle. Fine needle aspiration cytology (FNAC) not a routine screening for testicular cancer. If a biopsy is indicated, it is usually obtained by inguinal exploration of the testicle.^{8,15} Findings of epithelioid granulomas and AFB on Ziehl-Neelsen staining of ultrasound-guided FNAC material obtained from testicular swelling to confirm the diagnosis of tuberculous orchitis.⁴ In addition to FNA examination, biopsy from surgical excision can differentiate between malignant and nonmalignant causes.¹⁹ Pathological findings showed that the space-occupying lesion was characterized by multiple fusional granulomas with central caseous necrosis and was surrounded by fibrous connective tissue and chronic inflammatory cells.¹ During that time, the very dense caseous mass can rupture externally, resulting in a fistula forming.¹²

A six-month anti-TB chemotherapy regimen consisting of rifampicin, isoniazid, pyrazinamide, and ethambutol for the first 2 months, followed by rifampicin, and isoniazid for the next 4 months is highly effective in ensuring complete resolution of testicular TB lesions.⁴ Patients with and without HIV infection have similar responses to antituberculosis therapy, but sometimes adverse drug reactions occur more frequently in patients with HIV infection. The higher risk of recurrence in HIV patients remains unclear. The recommended initial treatment for all forms of extrapulmonary TB unless the patient is known or suspected to be resistant to first-line drugs, using a six- to nine-month regimen (two months of isoniazid, rifampicin, pyrazinamide, and ethambutol, followed by isoniazid and rifampicin for four to seven months). Nonhepatotoxic drugs (streptomycin, levofloxacin, and ethambutol) are given first while monitoring

AST and ALT levels. When AST and ALT levels gradually normalize, rifampicin, isoniazid, and pyrazinamide can be continued. The principle of ARV therapy is to be given as soon as possible after TB therapy can be tolerated.¹³

Surgery is indicated if there is no response to drug treatment or if abscess formation occurs. As in the case, the indication for right orchiectomy is due to the condition of edema and abscess in the testicle, and suspicion of testicular malignancy.^{15,20} Despite effective surgical treatment, patients still require regular anti-tuberculosis therapy for 3-6 months after surgery and close follow-up.¹⁶ Direct observation therapy (DOT) and clinical monitoring for up to 10 years after receiving antituberculosis therapy have been recommended.⁹ Epididymectomy, orchiectomy, and epididymo-orchietomy are surgical options that can be performed for advanced TB epididymo-orchitis.²¹ Testicular tuberculosis can have a major impact on fertility. Sperm mobility and count may decrease due to secondary atrophy. Thus, to prevent impacts on fertility, early diagnosis and treatment are adequate and fast at the early stages of the disease.⁵

CONCLUSION

Testicular TB is a type of extrapulmonary TB and is rare. Testicular TB is a disease that can be cured, but diagnosis is still difficult. Testicular tuberculosis should be considered if a unilateral heterogeneous mass is present, especially in young men with suspected TB infection or history. Several examination modalities such as laboratory, radiology, and biopsy can help confirm the diagnosis of testicular TB. OAT administration and surgical excision can be carried out immediately to prevent further complications, especially infertility.

REFERENCES

1. Li S, Chen B, Fang X, et al. A better understanding of testicular and/or epididymal tuberculosis based on clinical, ultrasonic, computed tomography, and magnetic resonance imaging features at a high-volume institute in the modern era. *Quant Imaging Med Surg.* 2021;11(6):2465-2476. doi:10.21037/qims-20-1005
2. Sadeghi A, Chaikin D, Calhoun S. Testicular tuberculosis: An uncommon complication after treatment of urothelial carcinoma. *Radiol Case Reports.* 2020;15(11):2285-2293. doi:10.1016/j.radcr.2020.07.030

3. Ali AM, Dogan A, Ali MA, Çakmak BS. Testicular Tuberculosis: Two Rare Case Report. *Int Med Case Rep J.* 2023;16(May):339-343. doi:10.2147/IMCRJ.S408874
4. Das A, Batabyal S, Bhattacharjee S, Sengupta A. A rare case of isolated testicular tuberculosis and review of literature. *J Fam Med Prim Care.* 2016;5(2):468. doi:10.4103/2249-4863.192334
5. Rajabi MH, Gharaei HA, ArabAhmadi A, Yarmohammadi M. Isolated tuberculosis of testis: A case report. *Casp J Intern Med.* 2021;12(1):111-114. doi:10.22088/cjim.12.1.111
6. Viswaroop BS, Kekre N, Gopalakrishnan G. Isolated tuberculous epididymitis: A review of forty cases. *J Postgrad Med.* 2005;51(2):109-111.
7. Kharbach Y, Retal Y, Khallouk A. Is orchietomy avoidable in testicular tuberculosis mimicking malignancy? A case report. *African J Urol.* 2021;27(1). doi:10.1186/s12301-021-00244-9
8. Agbo CA, Lawal M, Jibrin D, Enjugu JE. An isolated testicular tuberculosis mimicking testicular cancer in north-central Nigeria. *Infez Med.* 2020;28(1):78-81.
9. Abraham S, Izaguirre Anariba DE, Dua K, Mir M, Ankireddypalli A. A case of testicular tuberculosis mimicking malignancy in a healthy young man. *Ther Adv Infect Dis.* 2016;3(3-4):110-113. doi:10.1177/2049936116655261
10. Alves da Trindade JG, Siquara-De-sousa AC, Goulart Corrêa D. Testicular tuberculosis. *Rev Soc Bras Med Trop.* 2023;56(1):56-59. doi:10.1590/0037-8682-0221-2023
11. Surya PA, Faadilah AH, Indarjadi I, Wirjopranoto S, Jamhari MAH, Azmi YA. Tuberculosis Testis In Middle-Aged Male As A Rare Case Of Genitourinary Tuberculosis: A Case Report. *Medicra (Journal Med Lab Sci.* 2023;6(2):74-78. doi:10.21070/medicra.v6i2.1720
12. Shugaba AI, Rabi AM, Uzokwe C, Matthew RM. Tuberculosis of the testis: A case report. *Clin Med Insights Case Reports.* 2012;5:169-172. doi:10.4137/CCRep.S9451
13. Purnomo WA, Kusmiati T, Soedarsono S. Testicular Tuberculosis in an HIV Positive Patient Co-infection with Pulmonary Tuberculosis Mimicking Malignancy: A Case Report. *J Respirasi.* 2020;6(2):45. doi:10.20473/jr.v6-i.2.2020.45-48
14. Venyo AK grey, Venyo AK grey. Tuberculosis of the Testis , Epididymis , Scrotum and Scrotal Contents and Tuberculosis of the Penis and Urethra?: A Review and Update. 2023;13(5):1-28. doi:10.31579/2690-1919/325
15. Sharma A, Nagalli S, Varughese AT, Ayvazian AM. A Review of the Diagnostic Use of Fine-needle Aspiration Cytology for Tuberculosis Epididymo-orchitis: To Do or Not to Do. *Cureus.* 2020;12(1):10-13. doi:10.7759/cureus.6532
16. Harya SA, Nhungo CJ, Lori JM, Mitamo AA, Mkony CA, Ogweyo P. Isolated testicular tuberculosis mimicking testicular malignancy in a 45-year-old male treated at a tertiary hospital. Case report and literature review. *Int J Surg Case Rep.* 2024;117(March):109511. doi:10.1016/j.ijscr.2024.109511
17. Nepal P, Ojili V, Songmen S, Kaur N, Olsavsky T, Nagar A. "the Great Masquerader": Sonographic pictorial review of testicular tuberculosis and its mimics. *J Clin Imaging Sci.* 2019;9(27):1-6. doi:10.25259/JCIS-14-2019
18. Gündo?du E, Ayd?n N. Revista da Sociedade Brasileira de Medicina Tropical Images in Infectious Diseases A rare malignancy mimicker: echinococcus alveolaris. 2024;(October 2023):1-2.
19. Civelli VF, Heidari A, Valdez MC, Narang VK, Johnson RH. A Case of Testicular Granulomatous Inflammation Mistaken for Malignancy: Tuberculosis Identified Post Orchiectomy. *J Investig Med High Impact Case Reports.* 2020;8. doi:10.1177/2324709620938947
20. Carrillo-Sanabria G, Dávila-Aranda B, Cairo-Huaringa R, Maita-Hinostroza R, Chumbes-Pérez J. Tuberculosis orchiepididymitis in insulinodependent Type 2 diabetes Mellitus: Case report. *Rev la Fac Med Humana.* 2022;22(2):408-412. doi:10.25176/rfmh.v22i2.4792
21. Issack FH, Bogale NT, Hassen SM, et al. Unilateral Testicular Infarction a Very Rare Complication of Genital Tuberculosis: A Case Report and Literature Review. *Res Reports Urol.* 2023;15(October):479-484. doi:10.2147/RRU.S434046