

## Uncommon Presentation of Testicular Anomaly: An Insight into Tuberculous Orchitis Diagnostic Challenges in Rural Settings

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**Introduction.** Testicular tuberculosis is very rare, accounting for only 3% of genital tuberculosis cases. Diagnosing testicular tuberculosis is challenging and often only confirmed through post-surgical histopathological findings after an orchiectomy.

**Case.** A 59-year-old male patient came in complaining of a painless, gradually developing expansion in his left testicle. The patient did not have a history of tuberculosis or any related symptoms, including fever, appetite loss, respiratory issues, or significant weight loss. Physical examination and ultrasound suggested a testicular tumor. Due to the absence of definite preoperative diagnostic methods in our settings, we diagnosed the patient with a testicular tumor. Consequently, a left orchiectomy was performed, and the pathologic examination revealed tuberculous orchitis.

**Conclusion.** Given the limited diagnostic tools available and the elusiveness of similar cases encountered, surgery followed by histopathological findings for both treatment and diagnosis might be unavoidable in many cases.

**Keywords:** orchiectomy, testicular tuberculosis, testicular tumor, tuberculous orchitis

### Introduction

New tuberculosis (TB) infections grew to 9.2 million in 2006, with an average incidence rate of 139 per 1,000,000 people, according to World Health Organization (WHO) data from 2008. The majority of instances are found in Asia (55%), followed by Africa (31%). Indonesia has the third-highest number of tuberculosis (TB) patients globally, with around 10% of all TB patients located in the country [1]. Mycobacterium tuberculosis causes TB and manifests in two forms: pulmonary and extrapulmonary [2]. Fifteen percent of TB cases are extrapulmonary, typically involving the genitourinary system, joints, peritoneum, meninges, pleura, lymph nodes, and bones. Only 3% of genital TB cases are testicular TB, a rare condition affecting the reproductive system [2-3].

Clinically, tumors, infarctions, and torsion are among the testicular diseases that testicular TB often resembles. Since malignancies are more common in older individuals, distinguishing between testicular cancer and tuberculosis can be challenging, especially in resource-limited settings [4]. Consequently, diagnosing epididymo-testicular tuberculosis is challenging and is often confirmed through post-surgical histopathological findings

after an orchiectomy, occurring in up to one-fifth of cases [5]. We reported a case of a patient with tuberculous orchitis that mimicked malignancy and underwent a radical orchiectomy.

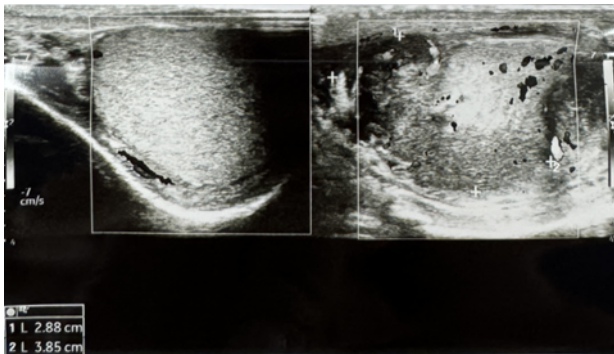
### Case Report

For two months, a 59-year-old man had been experiencing a painless swelling of his left testicle that had been steadily increasing in size. He had no discharge from a sinus or scrotal ulceration. No respiratory symptoms, fever, anorexia, or substantial weight loss were reported by the patient in their medical history, and there was no history of tuberculosis or previous contact with persons who had tuberculosis. The patient had been an active smoker for the past 30 years.

Physical examination results were as follows: vital signs were all within regular parameters. Local examination of the genital region revealed a firm, non-tender mass with an irregular border and nodular surface in the left testicle, measuring approximately 5 cm by 3 cm. The size of the right testicle appeared normal, and there were no discernible inguinal lymph nodes on either side.

Laboratory data were normal except for decreased hemoglobin and lymphocytes. The ultrasonography result revealed a mass in the left testicle measuring 2.88 x 3.85 cm, suggestive of a testicular tumor (Figure 1).

Due to the absence of definite preoperative diagnostic methods and the unclear presentation of the mass, our final diagnosis concluded that the etiology of the testicular tumor was unclear. Consequently, a left radical orchiectomy was performed (Figure 2).



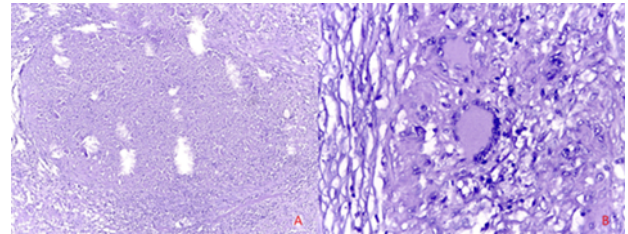
**Figure 1.** Ultrasonography examination shows a mass in the left testicle measuring 2.88 x 3.85 cm



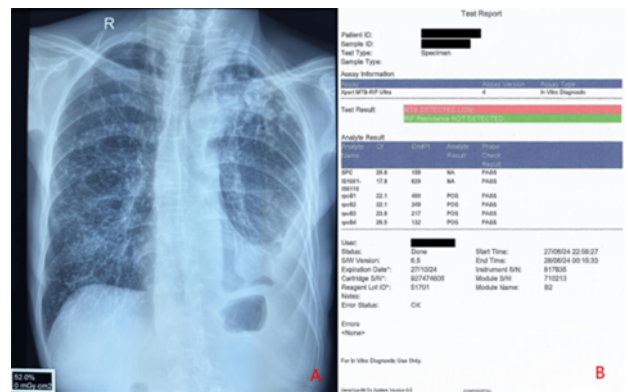
**Figure 2.** Gross specimen following radical orchiectomy showing an enlarged testicular mass with attached spermatic cord. A ruler is shown for size reference

Unexpectedly, the histopathological examination revealed tuberculous orchitis, not malignancy (Figure 3). The patient was then diagnosed with tuberculous orchitis. A chest x-ray and rapid molecular test using Xpert MTB/RIF were performed to evaluate possible tuberculosis in other parts of the body, revealing positive pulmonary tuberculosis (Figure 4). Consequently, a

standard category 1 TB treatment regimen consisting of 2-month intensive phase (Isoniazid, Rifampicin, Pyrazinamide, Ethambutol) followed by a 4-month continuation phase (Isoniazid, Rifampicin) was started for the patient.



**Figure 3.** A) Histopathological findings revealed caseous necrosis of testicular tissue. B) Histiocytes form granulomas surrounded by lymphocytes, polymorphonuclear neutrophils, and Langhans type multinucleated giant cells.



**Figure 4.** A) An X-ray of the chest reveals a pattern of persistent active tuberculosis in the lungs, specifically in the lower left lung, as well as dense opaque pleural effusion. B) Xpert MTB/RIF result revealed *Mycobacterium tuberculosis* activity detected at a low level with no evidence of rifampicin resistance.

## Discussion

In most cases, a lung infection is the initial cause of genitourinary tract tube involvement [1]. Despite the controversial mechanisms of its exact spread, TB epididymo-orchitis typically occurs when tubercle bacilli retrogradely move from the urinary system to the prostate through reflux, then are canalicularly transmitted to the seminal vesicles, deferent ducts, and epididymis. Hematogenous and lymphatic dissemination are other potential routes of testicular involvement, in addition to local spread or retrograde seeding from the epididymis [4].

The presentation of testicular TB is often unclear, and more common differential diagnoses are usually considered before an incidental diagnosis of tuberculosis is made. Particularly, testicular teratomas and seminomas pose difficulties in distinguishing testicular TB from malignancies [6]. Symptoms of genitourinary TB are related to the affected organs and may include back pain, abdominal pain, hematuria, urinary tract obstruction, dysuria, nocturia, scrotal pain, testicular swelling, or lesions on the external genitalia such as the penis, vulva, and vagina. Affected individuals may experience systemic signs of tuberculosis, including fever, night sweats, and weight loss [7]. Physical findings like scrotal thickening and epididymal enlargement can suggest an infectious diagnosis, along with either a painful or painless testicular mass [6]. In contrast, the patient in our case did not exhibit any obvious signs of tuberculosis or sinus discharge, only a painless enlargement of the left testicle.

Because ultrasound imaging (USG) has low specificity, a biopsy may be necessary to make an accurate diagnosis. Epithelioid granulomas can be detected through cytology and fine-needle aspiration biopsy (FNAB) [3]. Due to the risk that scrotal invasion may lead to the spread of neoplastic cells, FNAB is sometimes limited in cases of testicular tumors. However, young people with testicular growth and typical testicular tumor symptoms may benefit from FNAB, especially if they have epidemiological risk factors for tuberculosis [5].

Given that our team has limited diagnostic resources, such as FNAB and tumor markers like lactic acid dehydrogenase (LDH), human chorionic gonadotropin (hCG), and alpha-fetoprotein (AFP), we diagnosed the patient with a testicular tumor. Given the difficulty of establishing a pre-surgery diagnosis of testicular TB, often, invasive measures such as orchiectomy followed by post-surgery histopathological examination are performed. Histopathological examination revealed tuberculous orchitis instead of malignancy. Without histopathological results, diagnosing testicular TB may not be possible.

Treatment recommendations for genitourinary TB in Indonesia last for 6 months, with a longer duration (9 to 12 months) in immunocompromised patients [7]. Our findings align with a retrospective study conducted by Yin Huang et al., In circumstances when the symptoms are not specific, tuberculous epididymo-orchitis (TBEO) can be mistaken for an infection or cancer because there aren't any preoperative diagnostic tools that are very sensitive and specific. As a rule, TBEO is

treated with standard anti-tuberculosis chemotherapy [8].

However, in cases showing poor response to chemotherapy or atypical presentations, like our patient's, surgical intervention may be required. Recurrence rates are low for TBEO patients who undergo surgery and conventional anti-tuberculosis treatment. To manage comorbidities and reduce the likelihood of recurrence, a triple therapy including chemotherapy, surgery, and medication is recommended for advanced TBEO, especially in regions where TB is endemic [8].

Evaluation of treatment response other than clinical improvement alone in TBEO should be done. World Health Organization guidelines for extrapulmonary tuberculosis recommended that, when microbiological examination is available, a complete bacteriological response is confirmed by conversion to a negative mycobacterial culture or nucleic acid amplification test. However, limited sensitivity of these methods in genitourinary disease remains as an issue [9]. In accordingly, the European Association of Urology guidelines recommended that serial radiological evaluation, preferably with scrotal USG and magnetic resonance imaging in selected cases should be done, defining radiological response as regression or resolution of existing epididymal or testicular lesions, abscesses, or fistulous tracts [10]. The existing literature however, suggested that radiological improvement may be delayed relative to clinical and microbiological response, often becoming apparent at a later stage or at the end of antituberculosis treatment [11]. Therefore, assessment of treatment response based on a combination of clinical evaluation, bacteriological and radiological criteria, should be used at all times for patients with TBEO.

## Conclusion

Tuberculous orchitis cases are elusive, and both clinical presentation and symptoms typically mimic testicular tumors, especially in patients without prior marked clinical or supporting evidence of TB. Multiple disciplinary approaches should always be employed for patients presenting with a mass of unknown origin. Given the limited diagnostic tools available and the elusiveness of similar cases encountered, especially in regions where TB is endemic such as Indonesia and Africa, surgery followed by histopathological findings for both treatment and diagnosis might be unavoidable in many cases. Subsequently, further examination and tuberculosis pharmacological regimens were only

started after both surgical and histopathological examination results were obtained.

### Conflict of Interest

The authors define no conflict of interest.

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