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UNILATERAL EPIDIDYMO-ORHITIS TUBERCULOSIS MIMICKING TUMOR OF THE SCROTUM: A CASE REPORT

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Abstract

Introduction: Tuberculosis (TB) is a global disease that can lead to morbidity and mortality if not adequately treated. Globally in 2019, an estimated 10.0 million (range 8.9-11.0 million) people fell ill with TB, and 15% and 40% of them present with extrapulmonary TB (EPTB), of which a considerable proportion have urogenital TB (UGTB). We present a case of unilateral epididymo-orchitis tuberculosis mimicking malignant tumor of the scrotum.

Purpose: To increase the awareness of diagnosing scrotal TB, since it is infrequent and has some symptoms similar to malignant scrotal tumor. It is also to suggest the treatment after diagnosing scrotal TB.

Case report: A 38-year-old male presented to the Surgical Clinic of Lewoleba Regional General Hospital with a painful swelling of the right testis 6 months before admission to the hospital. This enlargement was progressive, getting bigger over time. The right testis' palpation was hard, and immobile, with a well-defined margin. No history of TB medication before. The Gene-Xpert test was positive. We did debridement and an open biopsy of the mass. Category I TB medication was given to the patient with continuous follow-up.

Discussion: UGTB is the infection of the urinary tract or genitalia most commonly caused by *Mycobacterium tuberculosis* (MTB). One kind of UGTB is at the scrotal area. After primary MTB infection at any organ site, direct hematogenous or lymphatic spread from primary MTB lesions leads to MTB seeding into various parts of the urogenital tract. All patients with UGTB should be evaluated for concomitant involvement of the lungs and other organs.

Conclusion: The presentation of scrotal TB is often vague and a high degree of awareness is needed to make the diagnosis. Patients with scrotal TB must be well-diagnosed to be treated properly. The histopathology examination is essential to differentiate scrotal TB from scrotal tumor.

Keywords: scrotal TB, epididymo-orchitis tuberculosis, tumor.

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Introduction

Tuberculosis (TB) is a major cause of ill health, one of the top 10 causes of death worldwide, and the leading cause of death from a single infectious agent (ranking above HIV/AIDS since 2007). UGTB is the most common site [1]. Geographically, in 2019, most TB cases were in the World Health Organization (WHO) regions of Southeast Asia (44%), Africa (25%), and the

Western Pacific (18%) with smaller shares in the Eastern Mediterranean (8.2%), the Americas (2.9%), and Europe (2.5%). Eight countries accounted for two-thirds of the global total: India (26%), Indonesia (8.5%), China (8.4%), Philippines (6.0%), Pakistan (5.7%), Nigeria (4.4%), Bangladesh (3.6%) and South Africa (3.6%). TB occurs in all countries and age groups, with 90% of infections being reported in adults (ages ≥ 15 years). About 558,000 people developed rifampicin-resistant TB, of whom an estimated 458,000 had multidrug-resistant TB (MDR-TB). TB can affect any part of the body. Common sites of EPTB are lymph nodes, pleura, bones, meninges, and the urogenital tract. TB affecting the kidneys, ureters, bladder, prostate, urethra, penis, scrotum, testicles, epididymis, vas deferens, ovaries, fallopian tubes, uterus, cervix, and vulva were initially grouped as genitourinary TB [2, 3].

The differential diagnoses of a swollen scrotum include bacterial epididymo-orchitis, viral orchitis, hydrocele/spermatocele, testicular torsion, traumatic scrotum, or neoplasm. The rarity of scrotal TB has limited clinicians' awareness of TB involving this anatomic site, which may in turn lead to failure to make a timely diagnosis of scrotal TB in a patient with a swollen scrotum. Scrotal TB can be medically cured [4].

Case Presentation

A 38-year-old male presented to the Surgical Clinic of Lewoleba Regional General Hospital with painful swelling of the right testis 6 months before admission to the hospital. The swelling was getting bigger and more progressive over time, with pus production [Fig. 1]. No swelling and pain at the inguinal region. He also experienced difficulty of breathing. Chest pain complaints were denied. He complained of a recurrent fever for the last six months. He experienced a dry cough for several months, and hemoptysis was denied. He experienced a weight loss total of 10 Kg for the last six months. He was never diagnosed with TB or trauma in the past. History of hypertension, diabetes mellitus, and family history of TB were denied.

On the physical examination, he was fully conscious. Vital signs were as follows: blood pressure 110/80 mmHg, heart rate 100 bpm, respiratory rate 22 breaths per minute, temperature 37° C, oxygen saturation by pulse oximetry 95-96%. He wasn't pale and icteric. From the thorax physical examination, there were intercostal retraction, decreased vesicular sound, and ronchi throughout the lung field, with no abnormalities of the cardiac system. The left scrotum was normal, whereas the right scrotum was swollen. A mass in the right scrotum was seen on the genital examination of the scrotal region, which seemed red and presented pus. In palpation, the mass was solid in consistency, unwell-demarcated border, fixated to the surrounding tissue, presented pus, fluctuated sign negative, pain and warm sensation on palpation were positive, with a diameter of approximately 12-14 cm.



Figure 1. Clinical appearance of right scrotum (anterior and lateral views)

The complete blood count test was normal; hemoglobin (Hb) 10.0g/dL, white blood cell (WBC) $7.1 \times 10^3/\mu\text{L}$, and platelets $356.10^3/\mu\text{L}$. The liver function test was normal; SGOT (AST) 29u/l and SGPT (ALT) 16u/l. The kidney function test was normal; ureum 21mg/dl and creatinine 0.6mg/dl. The

blood glucose test was normal; 103mg/dl. The urinalysis test showed leukocyturia and hematuria, with no bacteriuria. The Gene-Xpert test was positive and showed sensitivity to rifampicin. The posteroanterior chest X-ray showed pleural effusion on the right hemithorax and pericardial infiltration.

The interpretation of the scrotal ultrasound test was bilateral chronic hydrocele, in homogenous hyperechoic structure, firm border with increasing vascularisation in the right scrotum that depicted right epididymo-orchitis mass as the differential diagnosis, and inflammation on cutis & subcutis at the left scrotum with normal condition of left testis/epididymis [Fig. 3].

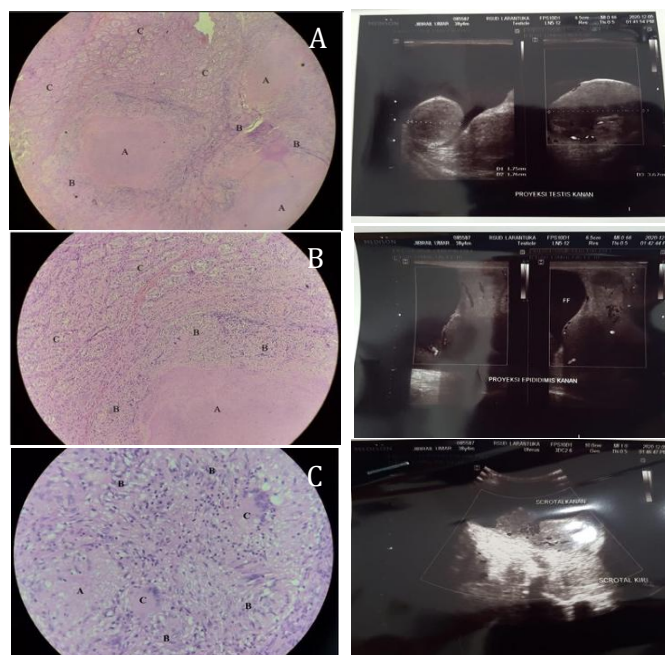


Figure 2. Histopathology of the right testis



Figure 3. Ultrasonography of the left & right testes

We did debridement and an open biopsy of the mass in the operating room. The result of histopathology examination was that the right testis' tissue contained large areas of caseous necrosis [Fig. 2 ABC – A], surrounded by many granulomatous structures containing Datia Langhans cells [Fig. 2C – C]. The structure of such granulomas consisted of epithelioid histiocytes and mature lymphocytes [Fig. 2 ABC – B]. No visible neoplastic processes nor signs of malignancy. The conclusion was a chronic inflammation of granulomatous tuberculosis.

Discussion

UGTB is the infection of the urinary tract or genitalia most commonly caused by *Mycobacterium tuberculosis*. UGTB term was invented by Hans Wildbolz in 1937. Following pulmonary tuberculosis, 2% to 20% of individuals can develop UGTB after 5 to 25 years [5].

Risk factors for developing TB include malnutrition, HIV infection, diabetes, chronic renal and liver disease, alcohol and substance abuse, smoking, homelessness, genetics, vitamin deficiency, immunosuppressive drugs, renal transplantation, chronic renal disease, dialysis, and end-stage renal failure [3].

After primary MTB infection at any organ site, direct hematogenous or lymphatic spread from primary MTB lesions

leads to MTB seeding into various parts of the urogenital tract. UGTB results from primary infection or the reactivation of the initial infection. MTB from the kidney can enter and lodge in the urothelium, ureter, bladder, urethra, seminal vesicles, and testes. UGTB is one of the most common late manifestations of an earlier symptomatic or asymptomatic pulmonary TB infection [6, 7].

Scrotal TB refers to TB of the testis, epididymis, and vas deferens. A study of 29 patients with scrotal TB showed that 25% had evidence of active pulmonary TB. In these 29 patients, the mean interval from the emergence of symptoms to making a clinical diagnosis was 142 days, reflecting the long delay in making a diagnosis of TB. TB epididymo-orchitis is caused by direct spread from the lower urinary tract or retrograde spread of MTB bacilli via the prostate and into the seminal vesicles, vas deferens, and epididymis. The epididymis is a common site of involvement and can be the first or the only presenting feature of UGTB in men. Up to 50% of men with epididymo-orchitis initially have involvement of the epididymis alone, with testicular involvement developing later as the disease progresses. The vascularity of the epididymis allows the hematogenous spread of MTB to the scrotal contents [8, 9].

UGTB can present with a range of clinical manifestations, from asymptomatic, through subclinical, non-specific symptoms and signs, to obstructive uropathy and renal failure. Up to 50% of cases are diagnosed incidentally when patients are investigated for a range of urinary and genital disorders. Nonspecific constitutional symptoms of TB such as fever, weight loss, and night sweats are uncommon. If these symptoms are present, they are indicative of concomitant TB outside the urogenital tract, such as pulmonary TB. Some patients can initially present with pulmonary TB or TB of other regions outside the urogenital tract and, therefore, have mixed symptoms. Suspicion of UGTB should arise when conventional antibiotic therapy for suspected UTI is not effective or sterile pyuria is present on examination of urine. Chronic epididymitis or chronic prostatitis that does not resolve with standard antibiotics should also raise suspicion of UGTB. Epididymo-orchitis can present with unilateral (66% cases) or bilateral (34% cases) involvement, acute or chronic, painful or painless scrotal swellings with scrotal skin inflammation, and edema. The presence of palpable unilateral firm swelling and tenderness of the epididymis usually starting with the tail at the lower pole of the testis and spreading towards the whole epididymis and testis should prompt treatment. There may also be urethral discharge, hydrocele, erythema with/without edema of the scrotum, and pyrexia [10, 11].

Patients with UGTB may present with the following symptoms: (1) recurrent or resistant urinary tract infection (UTI), (2) irritative urinary symptoms like increased frequency, dysuria, and urgency, (3) flank pain, the renal mass may be present in the case of renal TB, (4) testicular mass, perineal pain, and urethral discharge may be seen in genital TB, (5) abdominal pain, infertility or pelvic inflammatory disease (PID) in case of female genital involvement, (6) unexplained infertility in both sexes, (7) nonspecific symptoms like fever, weight loss, and backache. In physical findings, testicular nodular appearance is characteristic of TB and helps

differentiate it from other mass lesions of the testis. Urinalysis may show sterile pyuria (presence of white cells in the urine, but negative bacterial culture) and hematuria. Mycobacterial culture is the gold standard test, while urine PCR is the ideal diagnostic test because it gives a result within 24-48 hours. Patients with scrotal TB are sometimes diagnosed incidentally during investigation for male infertility [5].

All patients with UGTB should be evaluated for concomitant involvement of the lungs and other organs. The analysis of symptoms such as cough expectoration, hemoptysis, and dyspnea followed by a chest X-ray and examination of at least three sputum smears for acid-fast bacilli are the least evaluation for pulmonary association necessary in all patients with UGTB [9].

The histopathological finding may depend on the organs involved. The most common findings are multiple epithelioid granulomas with neutrophils and central caseating necrosis along with lymphocytes, mononuclear cells, and plasma cells found in an early stage. Necrosis results due to the release of cytokines, such as tumor necrosis factor and IL-1, in the chronic stage, extensive fibrosis and calcifications are seen [5].

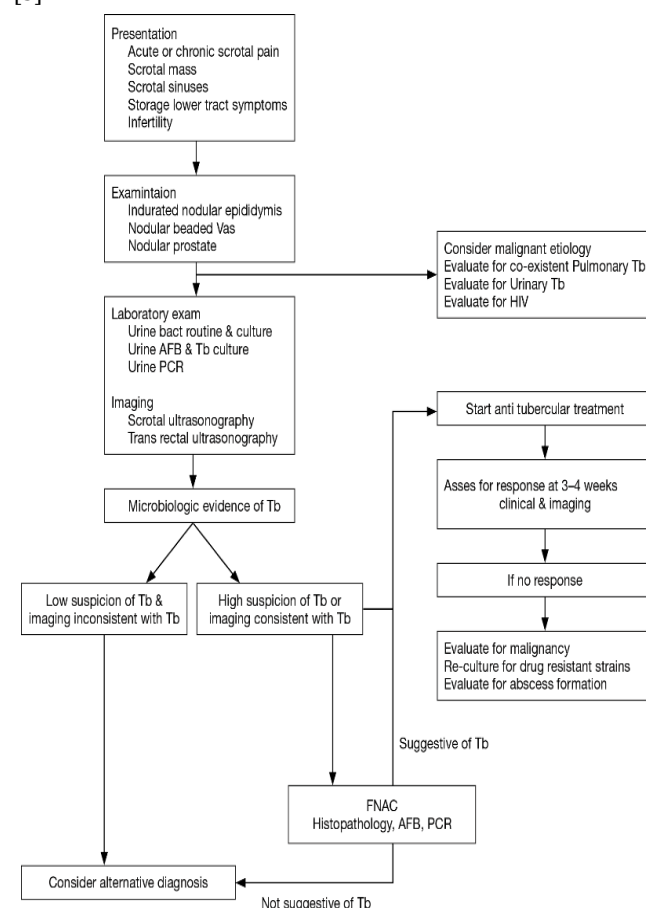


Figure 4. Algorithm for the management of genital tuberculosis [1]

Most of the symptoms experienced by the patient strongly supported the diagnosis of pulmonary TB such as dry cough, recurrent fever, and weight loss. This was reinforced by the result of the chest X-ray performed by the patient, and then this was confirmed by the Gene-Xpert test result that revealed positive. On the other hand, it was difficult to determine

whether the patient was preceded by primary pulmonary TB infection, reactivation of secondary infection of *MTB*, or simultaneous infections of pulmonary and extrapulmonary (UGTB) since the patient said that he never consumed anti-tuberculosis drug therapy before.

From the anamnesis data, the author didn't find the risk factor of this patient that related to his scrotal TB. It could be seen from the normal chemical laboratory result. However, the authors' suspicion of scrotal TB arose because the patient came several times before and did several urinalysis so it was treated as a urinary tract infection. It's followed by the presence of a mass in the right scrotum, supported by the ultrasound test that revealed a firm border with increasing vascularisation and bilateral chronic hydrocele, as additional signs to diagnose scrotal TB.

As the diagnosis was definite by the histopathology examination, the patient underwent the extra-pulmonary tuberculosis regimen therapy and will be followed up continuously at the hospital till it is determined cure.

While the patient is consuming the anti-tuberculosis therapy, the patient's family, especially those in the same house with the patient and in close contact with the patient is carried out to do the sputum examination in public health centers or hospitals.

Limitation

The Mycobacterial Culture is the gold standard test, due to the lack of facilities in our hospital, this test can't be assessed to isolate the *Mycobacterium tuberculosis* from the specimen.

Conclusion

The presentation of UGTB, especially scrotal TB, is often vague and physicians must have a high degree of awareness to make the diagnosis. With holistic examinations and cross-specialist collaboration, patients with epididymo-orchitis will be well diagnosed so it will be treated properly. The most important thing to remember is that TB is a preventable disease.

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