

Testicular Tuberculosis: Case Report and Diagnostic Challenge

Gabriella Beltrame Pintos¹✍️, Adriano Silvério da Paixão Filho²✍️,
Vinicius Costa Lopes³, Thiago da Silveira Antoniassi⁴,
Henrique Rabelo Cortines⁵, Guilherme Cerqueira Gonzales⁶,
Rafael de Souza Aguiar⁷, Daniel Salerno Muzilli⁸,
Eduardo Bueno Silveira⁹, Caio Trajano Siqueira Salgado¹⁰

¹Faculdade de Medicina de São José do Rio Preto (FAMERP), São Paulo, Brasil

^{2, 8, 9, 10}Department of General Surgery, Faculdade de Medicina de São José do Rio Preto (FAMERP), São Paulo, Brasil

^{3, 5, 6, 7}Urology Department, ¹Faculdade de Medicina de São José do Rio Preto (FAMERP), São Paulo, Brasil

⁴Urology Service, Hospital de Base de São José do Rio Preto, São Paulo, Brasil

Abstract: Tuberculosis is a chronic infectious disease caused by the bacterium *Mycobacterium tuberculosis*, often associated with pulmonary infection. It is essential to recognize that this pathology can manifest in various parts of the body. The most common extrapulmonary manifestation is in the genitourinary system. The diagnosis of testicular tuberculosis is often complicated, as the symptoms can be nonspecific and overlap with other testicular conditions. A case was reported of a male patient, incarcerated, with a painless, indurated lesion in the left scrotum, evolving over approximately 5 months, who was later diagnosed with testicular tuberculosis. Emphasizing the importance of considering this differential diagnosis in patients with epididymitis that is difficult to resolve and who belong to risk populations, for appropriate treatment.

Keywords: Genitourinary Tuberculosis, *Mycobacterium tuberculosis*, Urogenital Tuberculosis, Testicular Tuberculosis

Introduction:

Tuberculosis is a chronic infectious disease caused by the bacterium *Mycobacterium tuberculosis*, affecting millions of people worldwide. Although tuberculosis is often associated with pulmonary infection, it is essential to recognize that this condition can manifest in various parts of the body. A rare and intriguing manifestation of this disease is urogenital tuberculosis, which includes testicular tuberculosis, an uncommon and challenging form of extrapulmonary tuberculosis [1]. The pathogenesis of urogenital tuberculosis, specifically testicular tuberculosis, involves the spread of *Mycobacterium tuberculosis* to the urinary system through the bloodstream or lymphatic circulation. When the bacteria reach the testicles, they trigger a chronic inflammatory response, leading to the formation of granulomas and fibrosis in the testicular tissue [2]. This can result in a variety of symptoms, such as scrotal pain, increased testicular volume, and in more severe cases, reproductive dysfunction [3].

Diagnosing testicular tuberculosis is often complicated, as the symptoms can be nonspecific and overlap with other testicular conditions. Confirmation typically requires microbiological tests, such as culturing *Mycobacterium tuberculosis* from testicular samples, as well as histopathological assessments that reveal caseous granulomas [4]. Additionally, imaging studies, like testicular ultrasound, can play a significant role in the initial evaluation [5]. Managing

testicular tuberculosis involves treatment with specific antibiotics against *Mycobacterium tuberculosis*, such as rifampicin, isoniazid, and pyrazinamide, typically administered for an extended period. The therapy should be tailored to the severity of the infection and the patient's response to treatment. In advanced cases, surgical intervention may be necessary to alleviate symptoms and remove affected tissue [4,5].

This case report aims to explore a specific case of testicular tuberculosis, analyzing its pathogenesis, diagnostic challenges, and management. A deep understanding of this topic is crucial to guide healthcare professionals in the early diagnosis and effective treatment of testicular tuberculosis.

Case Report:

Male patient, 30 years old, deprived of liberty, without pre-existing disease, was referred to the urology outpatient clinic due to a painless hard lesion in the left scrotum, which had appeared 5 months ago, with purulent secretion leaking into the ipsilateral scrotum. On physical examination, presence of a mass in the scrotum on the left, painless on palpation, scrotal skin with a fistulization point, without secretion exiting. Right testicle topical, painless and without presence of nodulation. Ultrasonography (USG) showed diffusely thickened and markedly heterogeneous left epididymis, presenting a nodular-like area, poorly delimited in its tail, hypoechoic, with an area of



posterior acoustic shadow formation and with the lesion extending to the adjacent soft tissues, including the scrotal wall, without a cleavage plane with it in its anterior aspect and with consequent thickening of it. Measuring approximately 2.4x2x2.3cm with flow on Doppler study.

Initially, he opted for antibiotic therapy, MRI of the pelvis and request for urine culture, analysis of Mycobacterium Tuberculosis in urine and tumor markers. The patient returned 15 days after the first consultation, with negative tumor markers, awaiting culture for Mycobacterium Tuberculosis in urine, with a pelvic MRI report showing a solid lesion with arterial enhancement measuring 26mm x 24mm in topography of the left epididymis with slight restriction to intimate diffusion. contact with the scrotum.

Hospital admission indicated for surgical exploration of the left scrotum. During surgery, the left testicle was identified with the epididymis attached to the scrotum in the topography of its tail, with intense fibrosis, 3 fistulous tracts that began in the skin of the scrotum and were inserted into fibrotic tissue in the tail of the epididymis. We chose to isolate the epididymis of the testicle with ligation of the vas deferens and isolate the testis with spermatic cord. Excision of the epididymis was carried out together with fibrotic tissue and skin surrounding the fistula ostia - a segment of the epididymis was sent for frozen section analysis, confirming an inflammatory process, without evidence of neoplasia, as shown in figure 1. The procedure was completed with orchidopexy in 3 points with 4-0 mononylon, an uneventful surgical procedure.

The surgically resected material was sent for anatomopathological analysis, the report of which found granulomatous epididymitis, with areas of necrosis and suppuration, fistulization of the granulomas with a necrotic center for the epidermis and extensive areas of fibrosis. The urine test for Mycobacterium Tuberculosis - PCR was positive.

During hospitalization, pulmonary tuberculosis was investigated with negative bronchoalveolar lavage for mycobacteria, and treatment was initiated with a ripe regimen for tuberculosis in the epididymis. Receiving hospital discharge 19 days after surgery, with good evolution and outpatient follow-up with healed surgical wound and good adherence to treatment for mycobacterium tuberculosis.



Figure 1: Surgical resection of the epididymis.

Discussion:

Urogenital tuberculosis predominantly affects men in a ratio of 2 to 1 in comparison to women, with an average age of onset around 40,7 years, although it can occur in patients of various ages, as exemplified by the case presented in this report [2]. Epididymides are affected in a significant proportion, ranging from 10% to 55%, of men with urogenital tuberculosis, with scrotal alterations being the primary clinical sign detected during physical examination. Furthermore, these scrotal alterations can be bilateral in approximately 34% of cases. Clinically, the disease presents as scrotal nodules or indurations and, in some instances, can lead to the development of scrotal fistulas in around 50% of patients, while hydrocele occurs in only 5% of cases [2].

Therefore, tuberculous epididymo-orchitis should be considered in the differential diagnosis of scrotal edema, which may be mistaken for testicular tumors, acute infections, or inflammatory orchitis. Late diagnosis is often attributed to the insidious progression of the disease, the lack of specific symptoms or their scarcity, as well as medical knowledge gaps, and, in some cases, patient behavior when seeking medical care.

The presence of tuberculosis outside the genitourinary tract, the failure of conventional antibiotic therapy, the detection of calcifications in the scrotum, the formation of abscesses, tortuous tracts in the testicle, and patient immunosuppression can contribute to the

diagnosis of testicular tuberculosis. However, it is important to emphasize that the absence of known tuberculosis history or the presence of previously treated history does not guarantee the absence of urogenital lesions.

Regarding findings in imaging studies, ultrasound can provide indications of the disease when there is an increase in the epididymis concomitant with testicular lesions, which suggests infection rather than a neoplastic cause [4, 6]. Ultrasonographic patterns associated with tuberculous orchitis can vary, including diffuse, heterogeneous, and hypoechoic testicular enlargement; diffuse and homogeneous testicular enlargement; nodular and heterogeneous enlargement; and the presence of multiple small hypoechoic nodules in an enlarged testicle. The addition of color Doppler imaging to assess blood flow can assist in differentiating between infarction, tumor, or testicular inflammation [6].

Therefore, based on this reported case, it is crucial to emphasize the significance of the differential diagnosis of urogenital tuberculosis in relation to other clinical conditions, especially when clinical findings may mimic those of a testicular tumor.

Conclusion:

Urogenital tuberculosis represents a diagnostic challenge due to the late onset of more exuberant symptoms. In cases of patients with epididymitis, without improvement with antibiotic therapy and who fall into risk populations, this differential diagnosis must be remembered so that the correct treatment is indicated.

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