Case 17222

Epididymo-orchitis: a rare presentation of tuberculosis
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Section: Uroradiology & genital male imaging
Area of Interest: Genital / Reproductive system male
Urinary Tract / Bladder
Imaging Technique: CT
Imaging Technique: Ultrasound
Imaging Technique: Ultrasound-Colour Doppler
Special Focus: Infection Case Type: Clinical Cases
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Patient: 42 years, male

Clinical History:

A 42-year-old immunocompetent male patient presented with a 4-day history of unilateral right testicular pain. The patient also complained of dry cough, asthenia and weight loss (9 kg) during the previous 5 months. Laboratory tests revealed an elevated serum C-reactive protein (75mg/L) without leucocytosis/neutrophilia and mild anaemia (11.6g/dL).

Imaging Findings:

A testicular ultrasound was performed with colour Doppler function. The right testicle was slightly enlarged with multiple small ill-defined hypoechoic parenchymal nodules (3 to 5mm) and the epididymis (body and tail) was diffusely enlarged and markedly hypoechoic with increased vascularization. The left testicle was unremarkable.

Chest CT was performed based on patient symptoms (long-standing dry cough and weight loss) and an abnormal chest x-ray, revealing multiple bilateral tree-in-bud parenchymal infiltrates in the upper lobes and upper segments of the lower lobes, as well as peri-bronchial consolidation areas and cylindrical bronchiectasis, suggesting an endobronchial spread of pulmonary infection. Right pleural effusion and multiple enlarged paratracheal lymph nodes were also noticed. Pulmonary tuberculosis was confirmed with positive culture for *Mycobacterium tuberculosis* in bronchoalveolar lavage sample.

Discussion:

Background

Tuberculosis (TB) is a multisystemic disease with a high morbidity/mortality rate, caused by the bacillus *Mycobacterium tuberculosis*. It typically affects the lungs (pulmonary TB), although, in about 15% of cases, it can also affect other sites (extrapulmonary TB). The latter often presents a challenging diagnosis in which the radiologist can play a decisive role [1].
Clinical Perspective

Although genitourinary TB is a common site of extrapulmonary TB (20% of cases), testicular involvement is rare and represents only up to 3% of cases [2]. Concurrent pulmonary and renal TB is seen in 50% and 80–85% of cases, respectively [3].

TB epididymo-orchitis may develop from retrograde spread of tubercle bacilli from the urinary tract via reflux to deferent duct, epididymis and testicles or by hematogenous spread [4,5].

Testicular pain and/or swelling are the most common symptoms, haematospermia and urinary tract irritation have also been reported [5,6].

Imaging Perspective

The sonographic appearances are non-specific and overlap with those from other more common pathologies such as tumour, infection, inflammation and infarction.

There are two main sonographic appearances of TB epididymitis [3,7,8]:

- Diffuse heterogeneous predominantly hypoechoic enlarged epididymis;
- Focal nodular hypoechoic lesion within the epididymis.

These findings are usually associated with increased colour flow on Doppler images, which differentiates this condition from infarction.

Tuberculosis orchitis usually occurs as a result of contiguous extension from the epididymis and is considered to reflect a later stage of the disease process [3,9]. The main sonographic patterns include [3,8]:

- Testicular enlargement (which may be diffuse or nodular);
- Multiple small hypoechoic nodules (miliary type).

Other associated sonographic findings include thickened scrotal skin, septated hydrocele, scrotal abscesses, scrotal sinus tract and intrascrotal extratesticular calcification (affecting the epididymis and the tunica vaginalis in the later stages of disease) [3,9,5].

Outcome

Isolation and culture of M. tuberculosis, fine needle aspiration cytology (FNAC) and polymerase chain reaction (PCR) may provide an accurate diagnosis, although in some cases histology may be the only confirmatory diagnostic modality [5,6,10].

Anti-TB chemotherapy is the mainstay of treatment, however, in few cases, orchidectomy is required for both diagnosis and treatment [2].

Take-Home Message / Teaching Points

In a patient presenting with scrotal swelling/pain, ultrasound signs of epididymo-orchitis should raise suspicion for tuberculosis in the presence of miliary nodularity of the testis and markedly hypoechoic epididymis enlargement, especially when there is evidence of TB infection elsewhere or failure of conventional antibiotic therapy.
Written informed patient consent for publication has been obtained.

**Differential Diagnosis List:** Tuberculous epididymo-orchitis and pulmonary tuberculosis, Bacterial epididymo-orchitis, Sarcoidosis, Lymphoma, Testicular tumour (primary and metastasis), Testicular hematoma or infarction

**Final Diagnosis:** Tuberculous epididymo-orchitis and pulmonary tuberculosis

**References:**


**Figure 1**

**a**

Description: Gray scale imaging of the right epididymis shows marked hypoechogenicity and enlargement of the body and tail (arrows). **Origin:** Department of Radiology, Centro Hospitalar e Universitário de Lisboa Central – Hospital de Santo António dos Capuchos, Lisboa 2020.

**b**

Description: Colour Doppler imaging depicts increased vascularization suggesting an inflammatory/infectious process. **Origin:** Department of Radiology, Centro Hospitalar e Universitário de Lisboa Central – Hospital de Santo António dos Capuchos, Lisboa 2020.
Description: The right testicle shows slight enlargement with multiple tiny (2 to 3mm) ill-defined hypoechoic nodules throughout the parenchyma (arrows), a finding characteristic of a milliary pattern.

Origin: Department of Radiology, Centro Hospitalar e Universitário de Lisboa Central – Hospital de Santo António dos Capuchos, Lisboa 2020.
Description: Axial and coronal CT images (lung window) show bilateral pulmonary tuberculous involvement depicted by tree-in-bud infiltrates (arrows) in the upper lobes and upper segments of the lower lobes, as well as peri-bronchial consolidation areas (arrowhead) and cylindrical bronchiectasis (open arrows). Origin: Department of Radiology, Centro Hospitalar e Universitário de Lisboa Central – Hospital de Santo António dos Capuchos, Lisboa 2020.
Description: Axial and coronal CT images (lung window) show bilateral pulmonary tuberculous involvement depicted by tree-in-bud infiltrates (arrows) in the upper lobes and upper segments of the lower lobes, as well as peri-bronchial consolidation areas (arrowhead) and cylindrical bronchiectasis (open arrows). Origin: Department of Radiology, Centro Hospitalar e Universitário de Lisboa Central – Hospital de Santo António dos Capuchos, Lisboa 2020.