
CASE REPORT

Tuberculous Epididymo-orchitis Demonstrating a Sonographic Miliary Pattern

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ABSTRACT

Tuberculosis is an infectious disease that continues to be a significant public health concern in Hong Kong. Epididymal tuberculosis may lead to infertility due to obstruction of the vas deferens, thus an early diagnosis and timely management is important. We report a case of sonographic miliary pattern of tuberculous epididymo-orchitis in a patient who presented with scrotal pain.

Key Words: Epididymis; Testicular diseases; Tuberculosis, male genital

中文摘要

結核性附睪睪丸炎在超聲上呈粟粒狀

區嘉殷、李家灝、曹君彥、邱麗珊

結核作為一種傳染性疾病仍然是香港一個重要的公共衛生問題。附睪結核可以梗阻輸精管而導致不育。及早診斷和及時治理相當重要。本文報告一名結核性附睪睪丸炎患者出現陰囊疼痛，並在超聲上呈粟粒狀。

INTRODUCTION

Tuberculosis (TB) is an infectious disease that continues to be a significant public health concern in Hong Kong. According to the statistics published by the Department of Health in Hong Kong, there were 4705 notified cases in 2014.¹ As seen in the 2012 Annual Report of the Tuberculosis and Chest Service of the Department of Health, 61 cases of urogenital TB were reported.²

Genitourinary tuberculosis (GUTB) is the second most common form of extrapulmonary TB, after lymph node

involvement.^{3,4} GUTB comprises approximately 6% of extrapulmonary TB cases, which is around 30 times greater in number in some developing countries.⁵ The most commonly affected sites in men are the epididymis followed by the prostate. Testicular involvement is less common and is usually the result of direct extension from the epididymis.⁶ The higher frequency of isolated epididymal TB lesions in children favours the possibility of haematological spread of infection, whereas adults seem to develop tuberculous epididymo-orchitis by direct spread from the urinary tract.⁷ Nodular beading of

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the vas is a characteristic physical finding. The changes in orchitis and the resulting testicular swelling can make it difficult to differentiate from other mass lesions of the testes.⁵ Thus imaging plays an important role in establishing the diagnosis. We report a case of miliary pattern of tuberculous epididymo-orchitis in a patient who presented with scrotal pain.

CASE REPORT

A 48-year-old man who was a chronic smoker with a history of gastric ulcer presented with shortness of breath and unintentional weight loss for 3 months in September 2014. He had a mild cough, whitish sputum, and reduced exercise tolerance. There was no fever, haemoptysis, night sweating, or chest pain. Chest radiograph revealed right pleural effusion and several subcentimetre lung nodules in both lungs (Figure 1). Computed tomography of the thorax showed encysted right pleural effusion, multiple tiny peribronchial nodules with tree-in-bud configuration in the right middle lobe and lingular segment, and smooth interlobular septal thickening in the right lower lobe

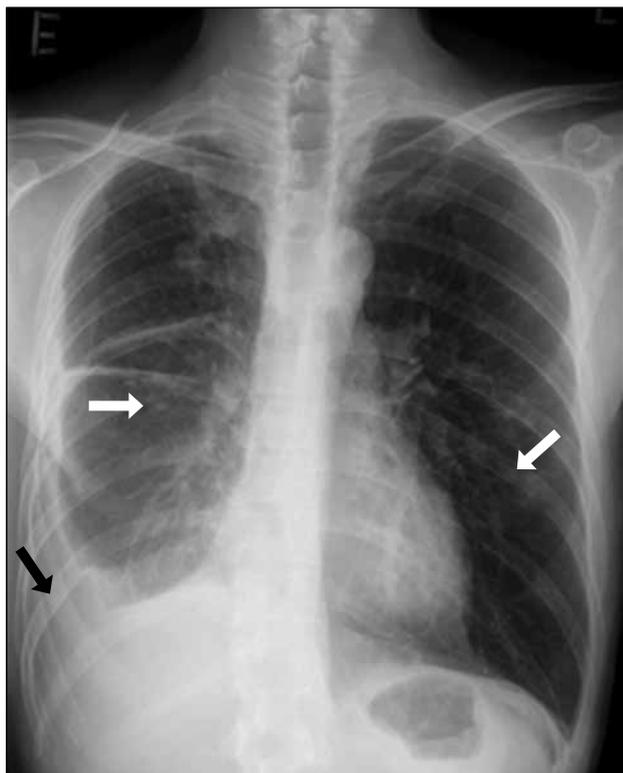


Figure 1. Chest X-ray shows right pleural effusion (black arrow) and several subcentimetre lung nodules in both lungs (white arrows).

(Figure 2). No enlarged mediastinal or hilar lymph node was found. Features were worrisome of TB infection with lymphangitis carcinomatosa being a differential in view of the interlobular septal thickening. Sputum culture was positive for *Mycobacterium tuberculosis*. Anti-TB regimen was administered to the patient. One month after initial presentation, the patient experienced gradual onset of left scrotal pain, associated with minimal left scrotal swelling and lower urinary tract symptoms. Physical examination revealed a mildly swollen and tender left testis and left epididymis. No mass lesion was felt in the left testis. The right testis was unremarkable. Ultrasonography (US) of the scrotum showed that the left testis was enlarged and swollen (Figure 3), measuring approximately 2.7 cm x 3.3 cm x 4.5 cm (anteroposterior x transverse x caudal-cranial). There were numerous small hypoechoic nodules seen diffusely over the left testicular parenchyma. There was also increased vascular flow in the normal-appearing parenchyma while the hypoechoic nodular areas showed decreased vascular flow. The left epididymis was also enlarged with multiple hypoechoic nodules, associated with increased vascular flow. There was a small left hydrocele. In view of the history of TB, these sonographic findings were suggestive of tuberculous epididymo-orchitis of miliary pattern; the hypovascular hypoechoic areas could represent caseous necrosis. No obvious sinus tract or extratesticular calcification was noted. The right testis and epididymis were unremarkable.

Upon clinical follow-up 2 weeks later, the patient reported reduced left scrotal pain and swelling although follow-up imaging was not available at the time. No urinary microbiological evidence of GUTB could be ascertained, largely because the patient was already prescribed anti-TB treatment when he presented with scrotal symptoms.

DISCUSSION

Male genital TB is usually a manifestation of pulmonary acquisition of TB. In 70% of patients with tuberculous epididymitis, there is a previous history of TB. In patients with genital TBs, pulmonary and renal TB can be documented in 50% and 80%-85% of cases, respectively.⁸ TB of the scrotum is rare, accounting for around 7% of patients with TB.⁹ Human immunodeficiency virus infection increases the risk for active TB and has been suggested to increase the risk for reactivation of dormant foci. Now in the era of anti-TB chemotherapy, more than 70% of men with genital

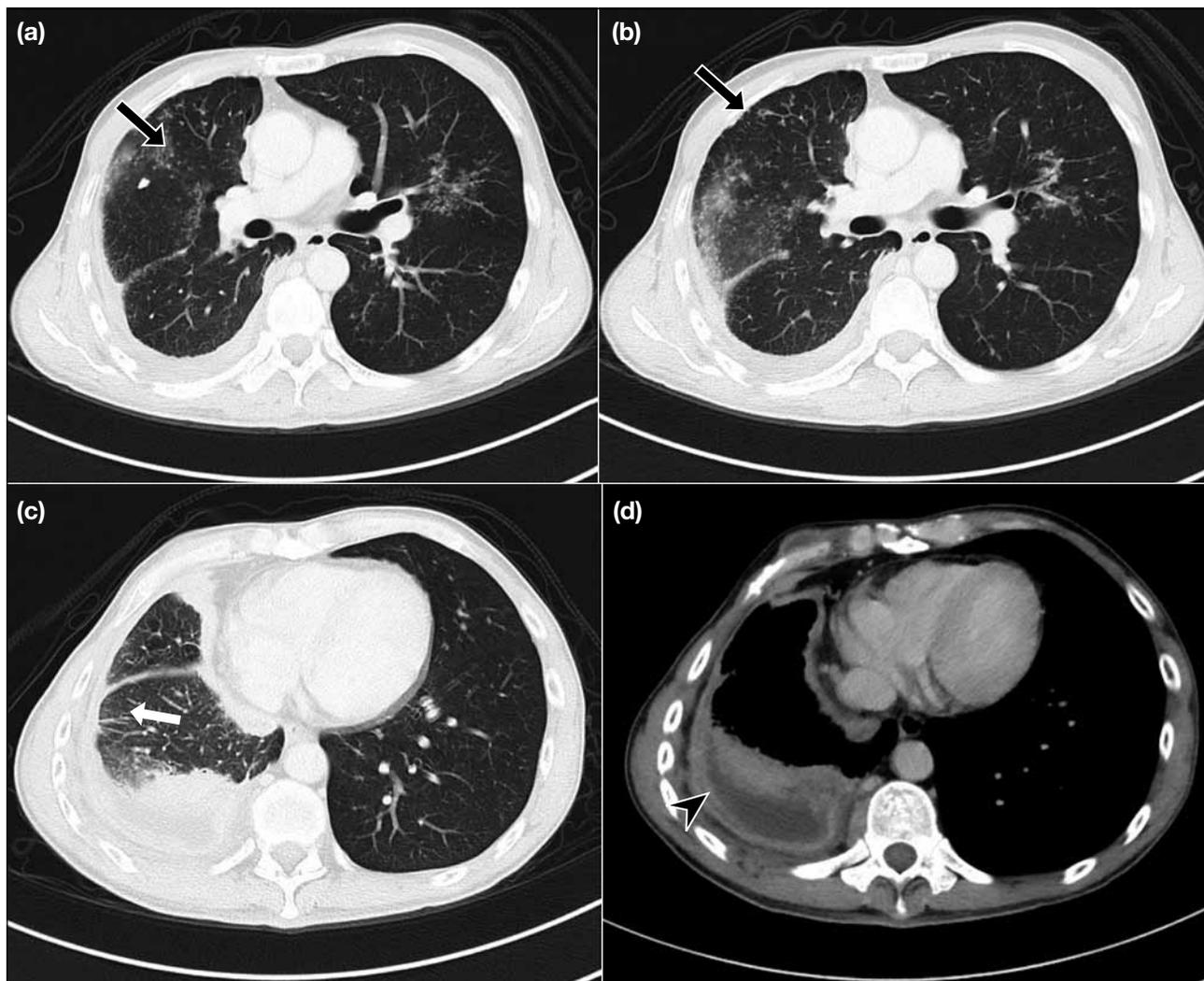


Figure 2. Contrast computed tomographic thorax: (a and b) multiple tree-in-bud nodules in right middle lobe and lingular segment (black arrows); (c) smooth interlobular septal thickening in the right lower lobe (white arrow); (d) encysted right pleural effusion (black arrowhead).

TB are older than 35 years, and 15%-20% are older than 65 years.⁵

Literature shows that the scrotal contents are usually infected by retrograde extension from the prostate and the seminal vesicles and less often from haematogenous spread. The disease usually initiates from the tail of the epididymis, and may then propagate to the entire gland.¹⁰ Pathologically, the earliest lesions can be seen as discrete or conglomerate yellowish necrotic areas in the tail of the epididymis. This inflammatory change can then spread to the rest of the epididymis or heal with calcifications. TB orchitis is usually considered to be a later stage of the disease process that extends from the epididymis.⁹

Patients usually present with a painless or slightly painful scrotal mass. US is the imaging modality of choice for imaging the scrotum and its contents as it can be used to reliably differentiate between extra- and intra-testicular lesions; the addition of colour Doppler US also enhances its diagnostic accuracy.¹¹

Several sonographic appearances of tuberculous orchitis have been described in the literature, including (1) diffusely enlarged heterogeneously or homogeneously hypoechoic testis, (2) nodular enlarged heterogeneously hypoechoic testis, and (3) the presence of multiple small hypoechoic nodules in an enlarged testis that is also regarded as the miliary pattern as presented in our case.¹² The miliary US appearance has been described

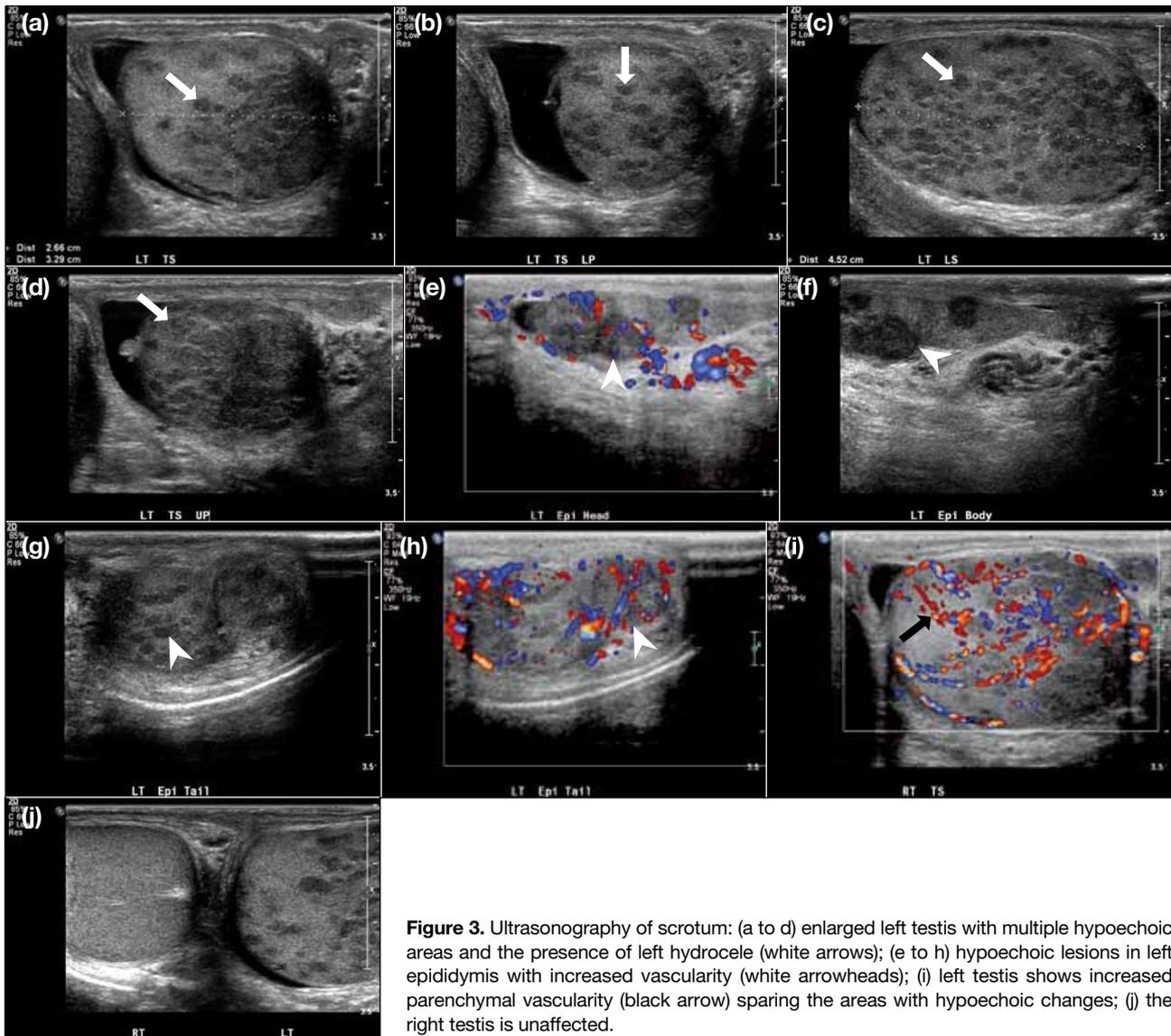


Figure 3. Ultrasonography of scrotum: (a to d) enlarged left testis with multiple hypoechoic areas and the presence of left hydrocele (white arrows); (e to h) hypoechoic lesions in left epididymis with increased vascularity (white arrowheads); (i) left testis shows increased parenchymal vascularity (black arrow) sparing the areas with hypoechoic changes; (j) the right testis is unaffected.

and suggested to be characteristic of tuberculous orchitis.¹³ Features such as scrotal swelling, scrotal abscesses, and scrotal sinus tract in scrotal TB have also been described.¹²

A diagnostic challenge is to differentiate tuberculous epididymo-orchitis from testicular tumour, bacterial epididymo-orchitis, testicular torsion, or even sarcoidosis in Caucasians. Sonographically, testicular tumours usually appear as discrete masses, or the entire testis might be involved and diffusely or heterogeneously hypoechoic. Seminomas and lymphomas tend to be homogeneous; non-seminomatous tumours appear to be more heterogeneous.¹⁴

Muttarak and Peh⁹ found that the presence of epididymal enlargement in conjunction with a testicular lesion was suggestive of an infection rather than neoplastic pathology. Colour Doppler US was useful in differentiating tuberculous epididymo-orchitis from testicular torsion as blood flow in cases of testicular torsion is reduced or absent, but increased in subjects with an inflamed testis.¹¹ The differentiation of bacterial epididymo-orchitis from tuberculous epididymo-orchitis might pose a diagnostic challenge radiologically if there are inadequate clinical data to substantiate the diagnosis. Yang et al¹⁵ discovered that colour Doppler US might be helpful in differentiating tuberculous and bacterial epididymo-orchitis in that a diffusely increased blood

flow pattern was usually seen in subjects with bacterial epididymitis, whereas focal linear or spotty blood flow signals were seen in the peripheral zone of the affected epididymis in patients with TB.

There are few reports of the magnetic resonance imaging (MRI) features of tuberculous epididymo-orchitis.¹⁰ As noted in these studies, MRI scans of tuberculous epididymo-orchitis usually demonstrated low signal intensity in T2-weighted (T2W) sequence. The signal intensity on T1W sequence was variable, although most cases showed high signal intensity. There was also a variable pattern of contrast enhancement, ranging from absence of discernible enhancement to strongly enhancing lesions. It was postulated that the low signal intensity of the lesions on T2W sequence was due to chronic inflammation, fibrosis, and calcifications.¹⁰

Patients with tuberculous epididymitis or epididymo-orchitis usually respond to anti-tuberculous therapy. In severe cases, surgery may be warranted.

In conclusion, the suspicion of tuberculous epididymo-orchitis should be raised in patients who present with scrotal swelling with US images showing both epididymal and testicular lesions. Additional imaging findings may include intra-scrotal calcifications and sinus tract. Interpretation along with clinical information such as TB infection in other parts of the body, immunocompromised status, or non-response to conventional antibiotics will further enhance establishment of the correct diagnosis.

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