CASE REPORT

Tuberculous epididymo-orchitis: MRI findings

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ABSTRACT. A 70-year-old man presented with fever, left flank pain and scrotal enlargement. CT scan of the thorax and abdomen revealed findings compatible with pulmonary and kidney tuberculous involvement. Sonographic and MRI examination of the scrotum showed bilateral testicular enlargement and the presence of multiple nodules involving both the testis and the epididymis. Urine cultures obtained from a percutaneous left nephrostomy were positive for tuberculous bacilli, and the patient was placed on anti-tuberculous treatment.

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The incidence of tuberculosis (TB) has increased worldwide over the past decade [1], with 15–20% of cases exhibiting extrapulmonary manifestations [2]. The genitourinary tract is the most common site of extrapulmonary TB, with the kidneys most commonly affected [2, 3]. When the genital organs are involved, the epididymis is the most common site of infection [2–4], representing 7% of patients affected with TB. Testicular involvement is uncommon, but can occur if there are extensive epididymal masses or abscesses [3, 4].

Here we present a case of bilateral tuberculous epididymo-orchitis in a 70-year-old man. We report the MRI findings and discuss differential diagnoses. This is an uncommon condition, with few descriptions of the MRI findings in the English literature [5].

Case report

A 70-year-old man was referred to the urology department with chills, fever and left flank pain. Clinical examination revealed left flank tenderness and enlargement of the scrotum, accompanied by the presence of multiple hard nodules involving both the testicles and paratesticular spaces. Urinalysis revealed haematuria; cultures for routine bacterial pathogens and for tuberculous bacilli were negative. Laboratory tests, serum markers for germ cell tumours and a purified protein derivative of tuberculin test were all negative.

CT scan of the thorax showed miliary lung nodularity, whereas CT scan of the abdomen revealed a non-functioning left kidney and dilatation of the pelvicaliceal system, with signs of pyelitis and ureteritis involving the upper two-thirds of the left ureter and a possible stricture of the lower third ipsilaterally. Evaluation of the left ureteral orifice on a subsequent conventional cystoscopic examination was not possible — a finding confirming the presence of a left ureteral stricture.

Scrotal sonography revealed testicular enlargement and the presence of bilateral multiple hypoechoic nodules involving both the testis and the epididymis (Figure 1a). Doppler sonography showed rich, mostly peripheral vascularity of the nodules (Figure 1b).

Scrotal MRI examination was performed using fast spin-echo T_2 weighted images, as well as spin-echo unenhanced and contrast-enhanced T_1 weighted images. MRI examination showed bilateral testicular enlargement and the presence of a moderate hydrocele. Multiple nodular lesions were detected, involving the head and tail of the epididymis, as well as the testis bilaterally. The lesions appeared heterogeneous, with signal intensity slightly higher than (Figure 2a) and significantly lower than that of normal testicular parenchyma (Figure 2b,c) on T_1 and T_2 weighted images, respectively. After intravenous administration of gadolinium chelate, the lesions were strongly enhanced (Figure 2d). The testicular tunicae were intact. The imaging findings of infiltrative lesions involving both the testis and the epididymis were somewhat non-specific, but the coexisting lung and kidney involvement strongly suggested the diagnosis of TB. Urine cultures obtained from a percutaneous left nephrostomy were positive for tuberculous bacilli and the patient was placed on anti-tuberculous treatment. Owing to the high cost of MRI examination, sonography was performed for the follow-up of the patient, revealing significant resolution of the lesions.

Discussion

The sonographic findings of tuberculous epididymo-orchitis have been extensively described [3, 4]. Although sonography is the standard imaging technique for the

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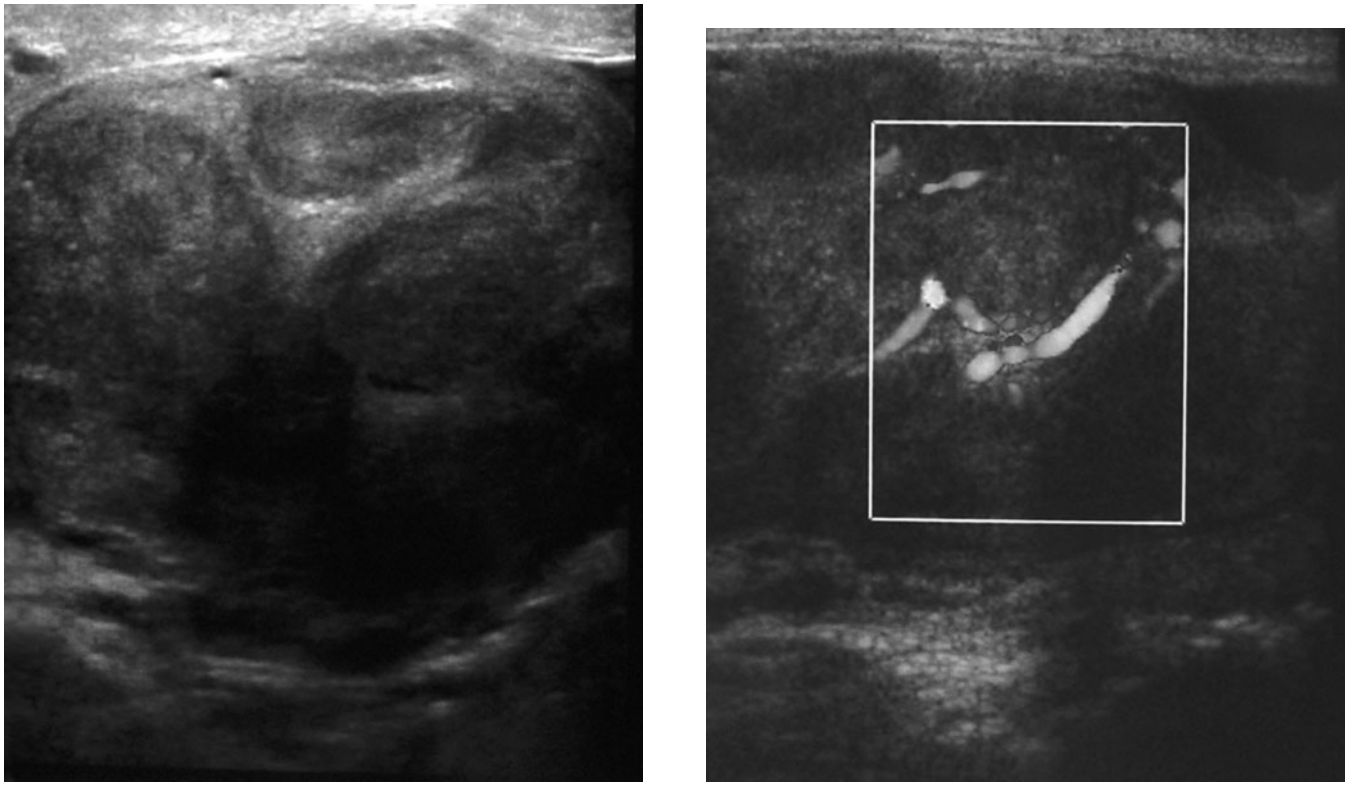

(a) (b)

Figure 1. (a) Sagittal sonogram of the right testis depicts testicular enlargement and multiple hypoechoic intratesticular nodules. (b) Doppler sonogram shows a rich, mostly peripheral vascularity of the lesions.

investigation of scrotal masses [6], MRI may represent an efficient supplemental technique owing to its wide field of view, multiplanar capabilities and intrinsic high soft-tissue contrast [7], permitting accurate localization of scrotal lesions and evaluation of the relationship between the lesions and testicular tunicae (as in this case). Okada et al [5] first reported on a case of bilateral tuberculous testicular involvement being visualized on MRI as multiple lesions of high signal intensity on T_1 weighted images and low signal intensity on T_2 weighted images. Our MRI examination included T_2 and T_1 weighted sequences, before and after intravenous administration of gadolinium chelate contrast medium. Our findings demonstrated epididymal and testicular enlargement, with the presence of multiple nodular lesions that did not invade the tunica albuginea and which were of slightly higher signal intensity than that of normal testicular parenchyma on T_1 weighted images and of lower signal intensity on T_2 weighted images, with strong enhancement after contrast medium administration.

The differential diagnosis of an infiltrative process involving both the epididymis and the testis should include bacterial epididymo-orchitis, TB, sarcoidosis, lymphoma and leukaemia. Bacterial infection is usually unilateral and it is accompanied by symptoms and clinical findings suggestive of the disease [8]. Involvement of the male reproductive system by sarcoidosis is extremely rare [8, 9]. The disease is usually unilateral and is manifested as a painful nodular mass involving the epididymis. Extension to the testis is extremely rare, being reported in $<1\%$ of cases [9]. Leukaemia, on the other hand, may manifest as an infiltrative epididymal–testicular mass, but often involves patients with a prior history of treated leukaemia [10]. Lymphoma, although representing 1–9% of all testicular tumours, it is the most common malignancy in men over the age of 60 years [8, 11]. It is also the most common bilateral testicular neoplasm, with an incidence of synchronous involvement approaching 19.5% [11]. The disease typically infiltrates the epididymis, the spermatic cord and the scrotal skin [11]. The presence of scrotal calcifications, sinus tracts, a non-satisfactory response to conventional antibiotics and findings of pulmonary or extrapulmonary tuberculous manifestations in the setting of epididymal and testicular involvement, as in our case, should strongly suggest the diagnosis of tuberculous epididymo-orchitis.

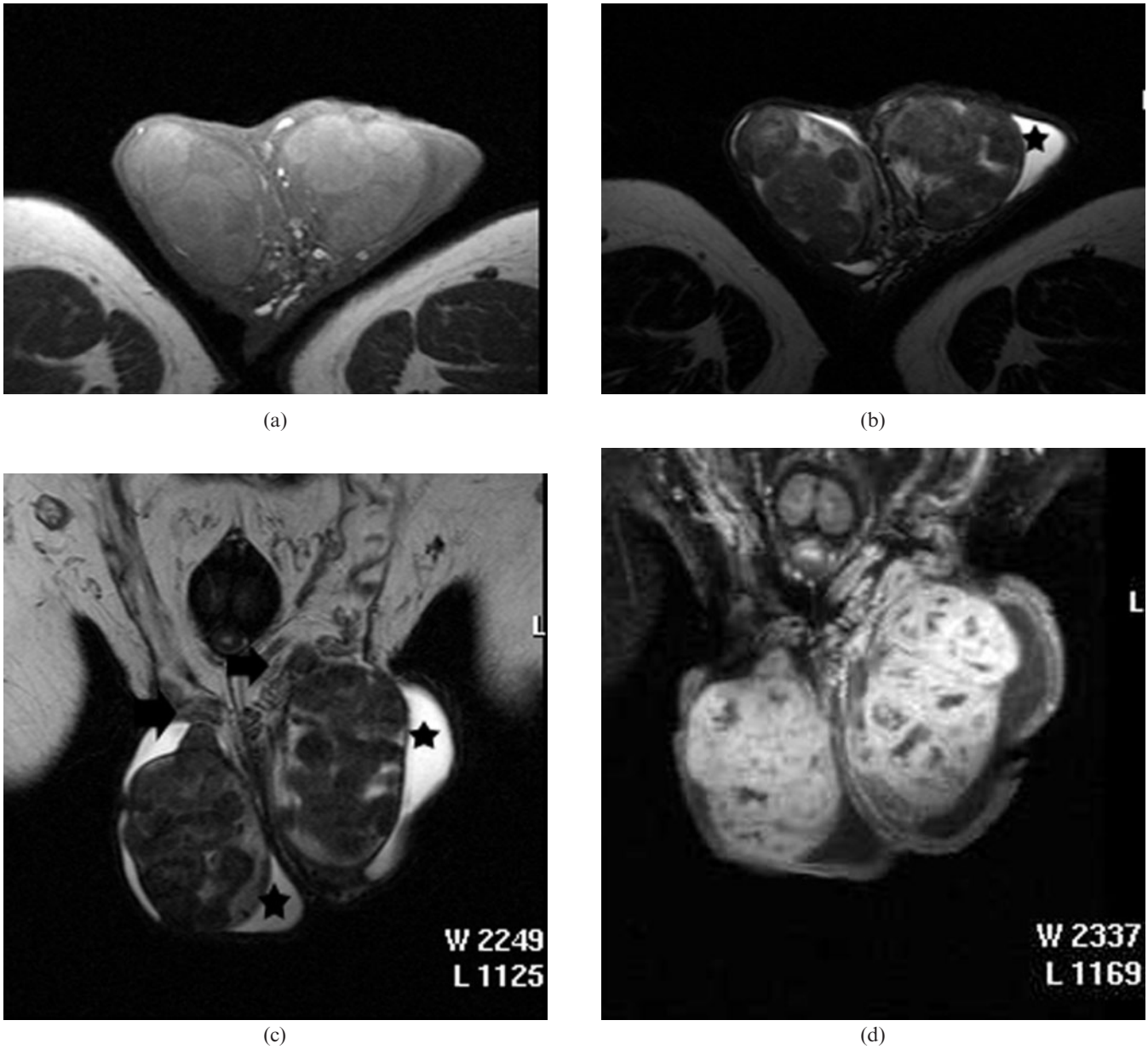

Figure 2. (a) Transverse T_1 weighted image (repetition time/echo time (TR/TE), 650/15) depicts bilateral testicular enlargement and multiple nodular intratesticular lesions of signal intensity slightly higher than that of normal testicular parenchyma. (b,c) Transverse and coronal fast spin-echo T_2 weighted images (TR/TE, 4000/100) reveal the presence of nodular lesions involving both the testis and the head of the epididymis bilaterally (arrows). The lesions are of low signal intensity and there is also moderate hydrocele (asterisks). (d) Coronal post-contrast T_1 weighted image shows strong enhancement of the lesions.

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