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Paratesticular Liposarcoma with Atypical Image Findings: a Case Report

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Paratesticular liposarcoma is a very rare tumor that is typically reported as isolated cases of or as components of larger studies of liposarcomas. Image findings are similar to those of other anatomic sites, but in less-common sites, their appearance may be less familiar, and they may be mistaken for other pathologies. In addition, atypical image findings of liposarcoma make diagnosis more difficult. Herein, we report on the case of a 45-year-old male patient who presented with a painless, palpable mass in the right scrotum. The patient was diagnosed with paratesticular liposarcoma by excisional biopsy.

Keywords: Liposarcoma; Paratesticular tumor; Paratesticular liposarcoma; Magnetic resonance imaging

Case Report

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INTRODUCTION

Liposarcoma, representing up to 20% of all sarcomas, is a soft-tissue malignant tumor derived from mesodermal tissue. Liposarcomas usually exist in the lower extremities and retroperitoneal space. Among four histological subtypes, composed of well-differentiated, myxoid, round cell, pleomorphic, and dedifferentiated liposarcomas, a well-differentiated liposarcoma that spreads by local extension accounts for a significant percentage (1, 2).

Among liposarcomas, paratesticular liposarcomas are a very rare neoplasm that is typically reported as an isolated case or as a component of larger studies of liposarcomas (3). Little is still known about their exact pathogenetic mechanisms, but they arise in connective tissue surrounding the testis, epididymis, and spermatic cord. The spermatic cord is the most common site, accounting for 76% of liposarcomas (4). Diagnosis is occasionally difficult, and they are sometimes mistaken as an inguinal hernia, lipoma, or other atypical testicular tumor (5). Here, we describe a case of a male patient with a pathologically confirmed paratesticular liposarcoma.

CASE REPORT

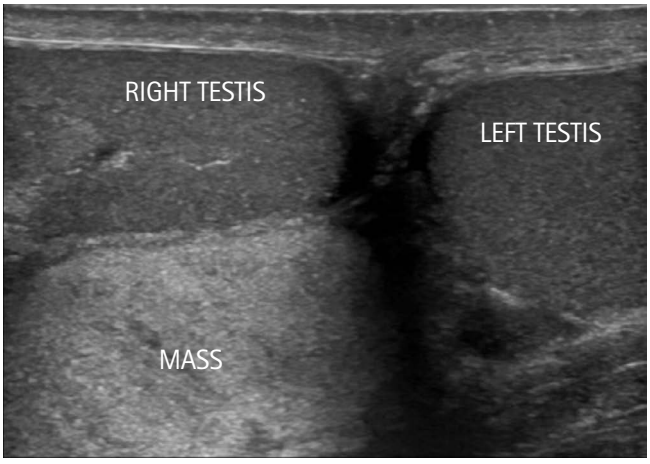
A 45-year-old male patient was referred to our hospital for a painless palpable right scrotal mass. On physical exam, a small movable oval-shaped lesion was presented, without redness or tenderness. The patient was a non-smoker, with no remarkable past medical or surgical history, except for hypertension. Laboratory findings including α

-fetoprotein (AFP) and β-human chorionic gonadotropin (β-hCG) were in the normal range, but lactic-acid dehydrogenase (LDH) was slightly increased (468 IU/L; normal range 200-450 IU/L).

The patient underwent gray and color-scale ultrasound (US) for testicular evaluation (Fig. 1). Grayscale US showed a well-circumscribed ovoid hyperechoic extratesticular mass in the right scrotum, causing downward displacement of the right testis (Fig. 1a). The mass was slightly larger and hyperechoic than are normal-appearing testes (Fig. 1b). The bilateral epididymides appeared to be normal. A color Doppler image showed hypervascularity, and vascular driving was like that of a normal testis (Fig. 1c). Our impression was polyorchidism, but a tumor arising from an appendiceal testis, such as seminoma, non-seminomatous germ-cell tumor, or sarcoma, could not be excluded.

The patient was then tested by pelvic magnetic resonance imaging (MRI) using a 3-Tesla MRI scanner (Fig. 2). Coronal T2-weighted and coronal T2-weighted fat-suppressed images (Fig. 2a, b) showed a well-defined high signal-intensity (SI) mass of about 4.5 cm with a hypoechoic rim above the right testis, without fat suppression. The mass was located at the superomedial aspect of the right scrotum, causing a downward displacement of the right testis. An axial T1-weighted image (Fig. 2c) revealed a low-SI mass, with heterogeneous enhancement (Fig. 2d). The mass seemed well contrast-enhanced compared to the testis. A diffusion-weighted image showed no diffusion restriction at the right suprascrotal mass (Fig. 2e, f). The bilateral testes appeared to be normal.

We excised the mass, suspecting it to be a tumor. In the operating room, the mass was well bounded by the right testis and was located in the right scrotal sac, above the right testis. A photograph of the resected tumor (Fig. 3a) shows a well-capsulated, oval, yellow mass. Photomicrographs (Hematoxylin & Eosin stain, × 40, and ×



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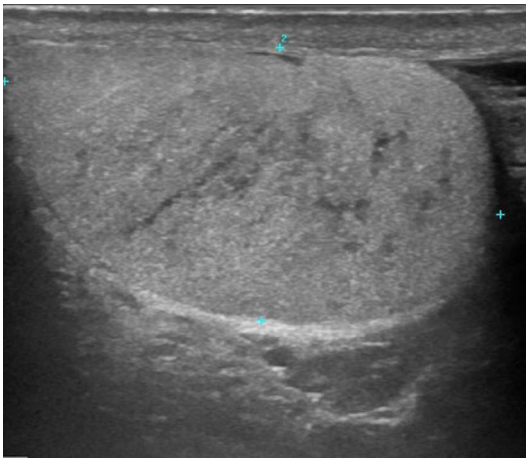

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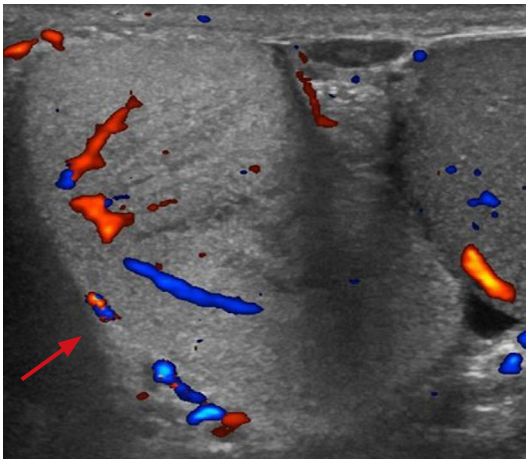

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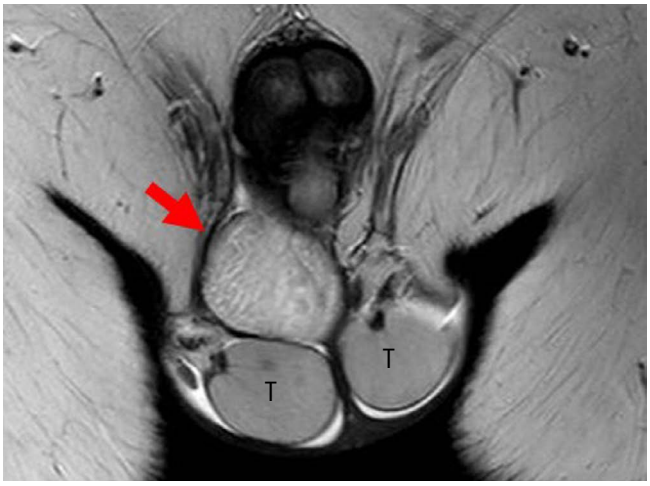
Fig. 1. A 45-year-old male patient with pathologically confirmed well-differentiated liposarcoma in the right scrotum. (a) Gray-scale US showed a well-circumscribed ovoid hyperechoic extratesticular mass in the right scrotum, causing a downward displacement of the right testis. (b) The mass was slightly larger and hyperechoic than was a normal-appearing right testis. (c) Color Doppler US showed hypervascularity (arrow), with similar vascular pattern like that of a normal testis.



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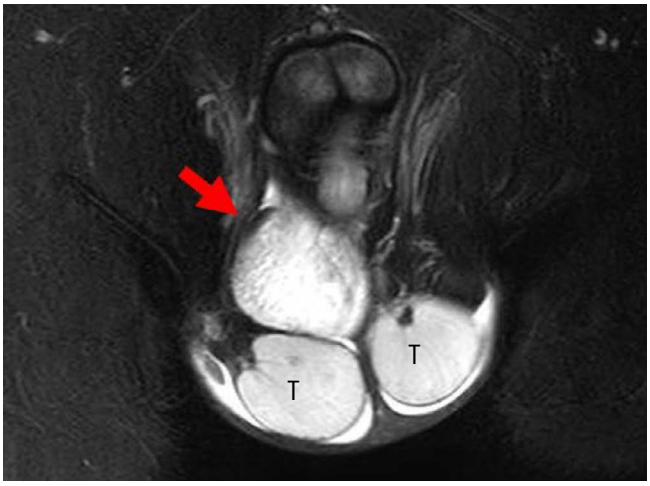

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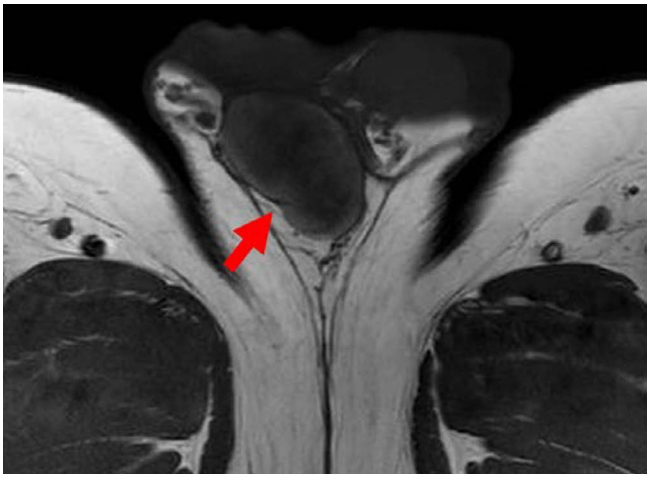

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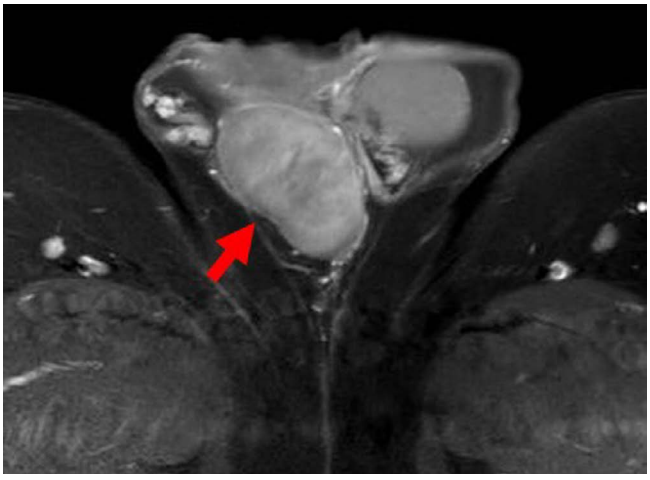

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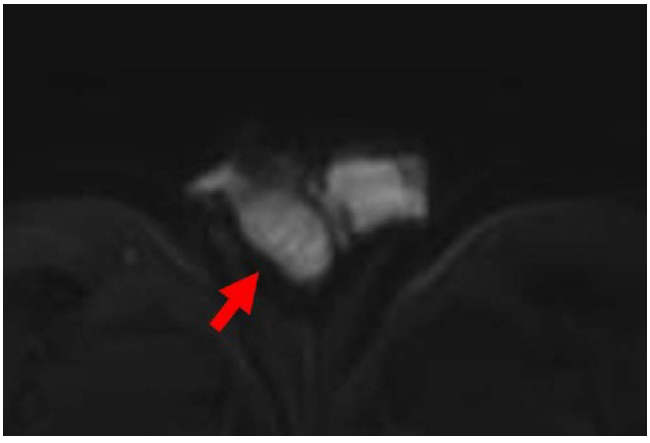

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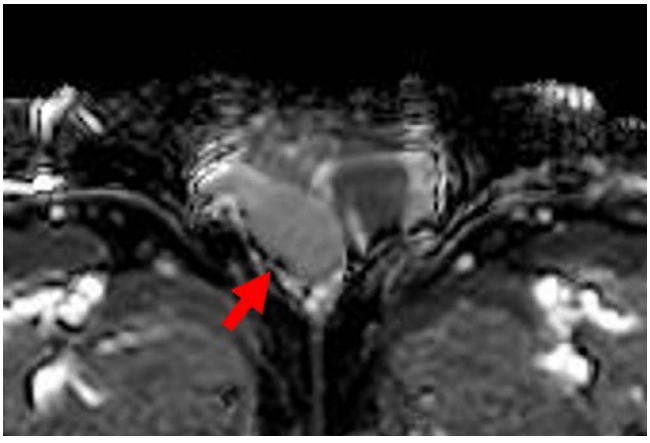

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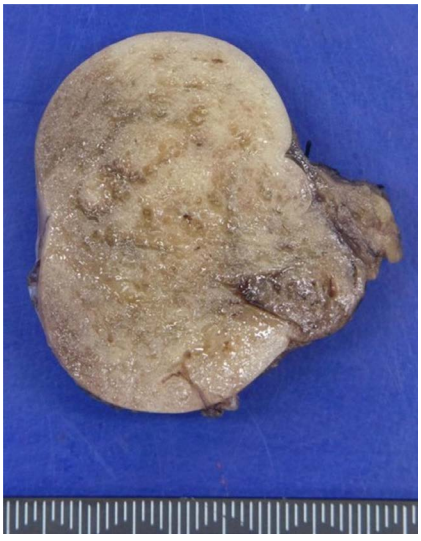
Fig. 2. (a, b) Coronal T2-weighted and coronal T2-weighted fat-suppressed images showed a well-defined high-SI mass of about 4.5 cm, without fat suppression (arrows) (T: testis). (c, d) An axial T1-weighted image revealed a low-SI mass, with heterogeneous enhancement (arrows). (e, f) DWI showed no diffusion restriction at the right suprascrotal mass (arrows).

400) show many adipocytes and entrapped lipoblasts (Fig. 3b, c), compatible with a well-differentiated liposarcoma.

DISCUSSION

Paratesticular tumors arise from the scrotum and are not of testicular origin. They may originate from the tunica vaginalis, epididymis, spermatic cord, vas deferens, vessels, lymphatic channel, or other supporting structures (6). US is the primary imaging modality for the evaluation of paratesticular and testicular tissue, with high-resolution linear array transducers. Color Doppler US is used as a routine study for scrotal evaluation. MRI is an additional diagnostic method and allows differential diagnosis by high-contrast resolution for fat, blood components, granulomatous tissue, or fibrosis (6). The malignancy potential of a paratesticular tumor is reported to be up to 30%, and 90% of paratesticular tumors are diagnosed as sarcoma (6, 7).

Among sarcomas, the liposarcoma is the most common paratesticular tumor in the elderly. According to previous literature, about 200 cases of paratesticular liposarcoma have been reported, and because of its scarcity, risk and prognostic factors or management have not been established (1, 5). According to the accumulated data, paratesticular tumors attack adults in their 50s or 60s. The common presentation is a slowly growing non-tender mass between 1.5 and 20 cm (6). But at the early stage of the tumor, the mass may be mistaken as a cyst, hydrocele, or epididymitis; in contrast, if the tumor is too large, it mimics an inguinal hernia (8). In these cases, gray/color-scale US and MRI can help to distinguish it from other diagnostic entities.



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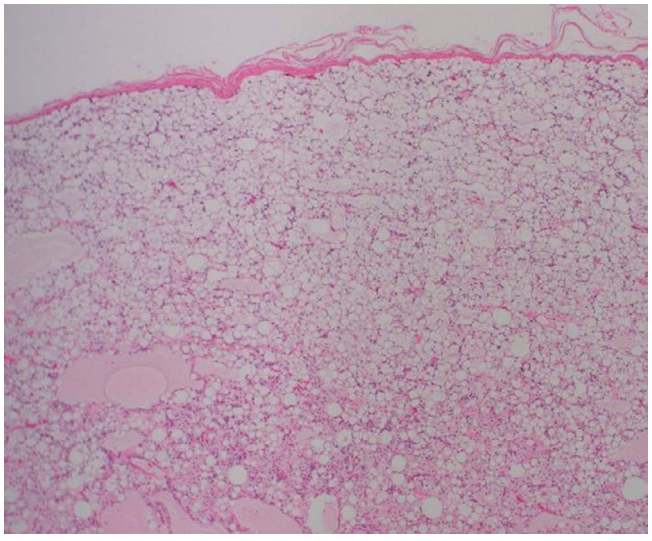

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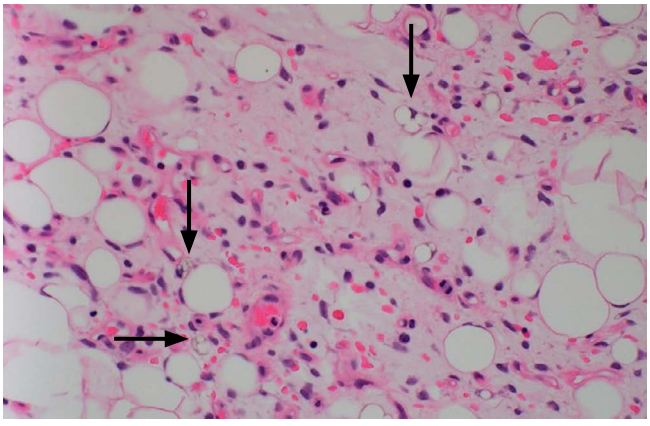

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Fig. 3. (a) Photograph of the resected tumor shows a well-capsulated yellow mass. (b, c) Photomicrographs (H&E, × 40, and × 400) show many adipocytes and entrapped lipoblasts (arrows), suggestive of a well-differentiated liposarcoma.

There are no definite pathognomonic features representing liposarcomas in imaging, but several findings provide information on tissue characteristics. At US, various echogenicities, from a solid hypoechoic mass to a lesion containing hyperechoic areas of fat, are shown, but are predominantly hyperechoic because of the fat component (6, 9). Sometimes, vary amounts of internal septation or calcification may be accompanied. Color Doppler US shows hypervascularity inside the mass. In our patient's case, the mass revealed more heterogeneous hyperechogenicity than did a normal testis, but the echogenicity was not enough to recognize as fat. The mass also revealed hypervascularity, but the vascular driving was similar to that of a normal testis, so it mimicked polyorchidism at US.

The imaging features of liposarcomas differ for the histologic subtypes (10); a well-differentiated liposarcoma is composed mostly of fatty tissue, revealing high SI on T1/T2-weighted images, with a signal drop on fat-suppressed images. Sometimes thick septation, nodular soft-tissue elements, or soft-tissue nodules of less than 1 cm may also be seen. A myxoid liposarcoma reveals considerably different image finding; it contains only small amounts of microscopic fat, usually less than 10% of the mass volume, and appears as a multilobulated mass with high water content. Round cell and pleomorphic liposarcomas show nonspecific and heterogeneous images like sarcomas on MRI. In the paratesticular area, images of liposarcomas are similar to those of other anatomic sites, but in a less-common site, their appearance may be less familiar and they may be mistaken for other pathologic entities (11). Like the usual liposarcoma in other anatomic sites, in a well-differentiated liposarcoma, the fat component of the mass may sometimes be demonstrated by MRI; macroscopic fat may be identified as high SI on T1 and T2-weighted images, with a signal drop on a fat-suppressed image (9). The solid part of the mass commonly reveals intense enhancement, and sometimes may have calcifications. In our patient's case, the mass revealed low SI on a T1-weighted image and high SI on a T2-weighted image, without a definite signal drop on fat suppression. Despite a heterogeneous enhancement pattern without diffusion restriction, the image findings did not clearly match the liposarcoma.

One of the most important points in evaluating preoperative CT and MRI is to assess the size and boundaries of the mass. Radiologists should detect direct extension of the mass beyond the scrotal area and any distal metastases (11).

The patient discussed here revealed atypical image features of a paratesticular liposarcoma. Since image findings may depend on the ratio of the fat component, the patient's clinical features, lab findings, underlying diseases, and incidence of the tumor should be considered in diagnosis. In addition, as an image finding, the positional relationship between the tumor and testis and accompanying secondary image findings should be considered.

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