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Case Report

Scrotal leiomyoma: An uncommon cause of chronic scrotal swelling

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ABSTRACT

Leiomyoma is a benign tumor that arises from smooth muscle. It may be encountered at any part of the body especially the uterus. However, scrotal localization is very uncommon, hence it often requires radiologic and pathology correlation to establish an accurate diagnosis and make optimal decisions for subsequent treatment. We present a case of an 82-years-old male, presenting with a left scrotal mass. Ultrasound and MRI demonstrated a left paratesticular mass. Surgery was then indicated and pathology results were consistent with a scrotal leiomyoma.

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Introduction

Leiomyoma is a benign mesenchymal tumor that arises from the smooth muscle and can be encountered at any part of the body mostly in the uterus [1]. Scrotal leiomyoma is an extremely rare form of genital leiomyomas that was first described by Forsters in 1858 [2]. Imaging plays a key role in detecting and describing leiomyomas' features. However, surgical excision and pathology analysis are for definitive diagnosis.

Case report

We report the case of an 82-years-old male, who presented with left scrotal enlargement and heaviness evolving progressively for 3 years. No medical history of genital infection was found. Physical examination revealed a firm, non-tender, painless left scrotal mass, that was adherent to the underlying skin and testis. The right testis had normal size and consistency and no palpable inguinal lymph nodes were found. Routine blood and urine laboratory tests were normal. Scrotal sonography described a 7 × 4cm, intra-scrotal extra-testicular well-circumscribed mass, with mixed, heterogeneous echogenicity, adherent to the right testis and the adjacent scrotal wall, with minimal vascular signals on color Doppler mode (Fig. 1). The left testis demonstrated a striated pattern with alternating lines of hyper and hypoechogenic-

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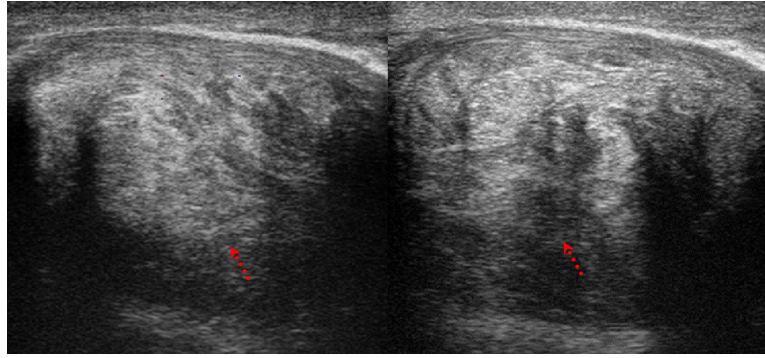


Fig. 1 – US images demonstrating heterogenous left para-testicular mass.

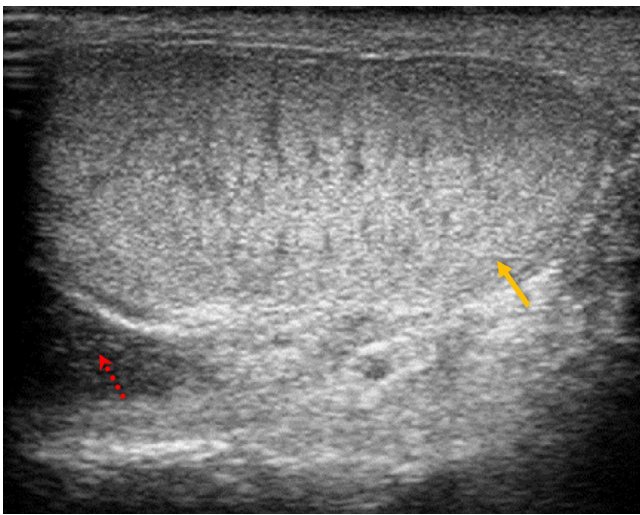


Fig. 2 – US image showing striated pattern and reduced volume of the left testis (yellow arrow). Note the paratesticular mass (red arrow) (Color version of figure is available online)

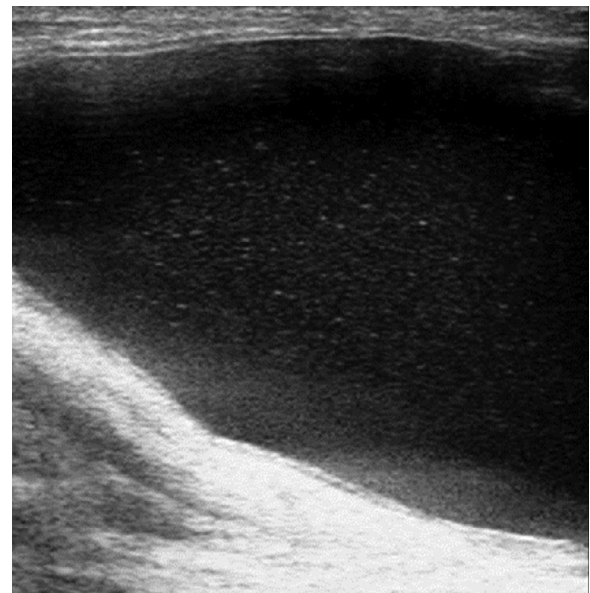


Fig. 3 – US image demonstrating hydrocele containing fine echoes.

ity as well as a reduced volume compared to the right testis (Fig. 2). An associated homolateral hydrocele with fine echoes was depicted (Fig. 3). The right scrotum showed no anomalies.

Scrotal MRI was performed for better assessment of the scrotal mass. It demonstrated a left para testicular mass, with intermediate signal intensity on T1-W sequences, low heterogeneous signal intensity on T2-W images (Fig. 4), that barely enhances on post-contrast sequences (Fig. 5). The mass was adherent to the homolateral testis and the scrotal wall. The right testis was hypoplastic with slightly irregular margins, however, it showed homogenous enhancement. The hydrocele found on sonography turned to be a fluid collection, located above the testis and the epididymis, compatible with spermatic cord hydrocele (Figs. 5 and 6).

The indolent behavior of this tumor suggested a benign origin. However, given its size, adherence to the scrotal wall, and homolateral testis, a malignant tumor could not be completely ruled out, based only on the imaging characteristics. Hence,

an excision of the tumor with radical orchidectomy was performed (Fig. 7).

The macroscopic analysis found a circumscribed grey/white firm mass measuring $10 \times 7 \times 5$ cm, adherent to the left testis which demonstrated signs of fibrosis. Microscopic study showed proliferation consisting of cells with fused nuclei without cytological atypia or necrosis, compatible with a mesenchymal lesion. Immunohistochemistry showed positivity for muscle-specific actin. These findings were consistent with a typical genital leiomyoma.

Discussion

Leiomyoma is a benign neoplasm of the smooth muscle. Three varieties of Leiomyomas can be distinguished based on their origin; pileoleiomyoma when they arise from arrector pili muscles of hair follicles, angioleiomyoma from smooth muscle of blood vessel wall, and genital leiomyoma which arises from

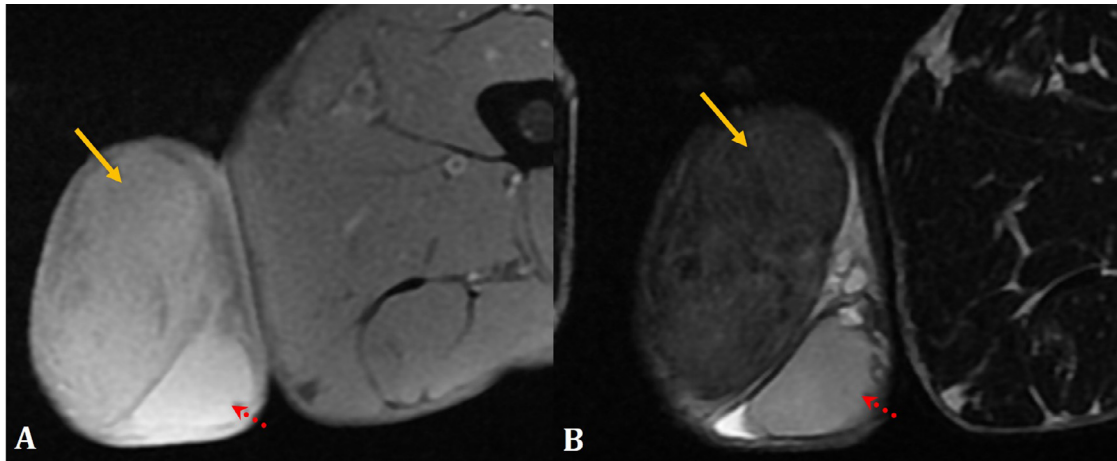


Fig. 4 – axial T1-W (A) and T2-W (B) MRI images demonstrating left paratesticular mass (yellow arrow) with intermediate T1 signal and low T2 signal comparing to adjacent testis (red arrow). (Color version of figure is available online)

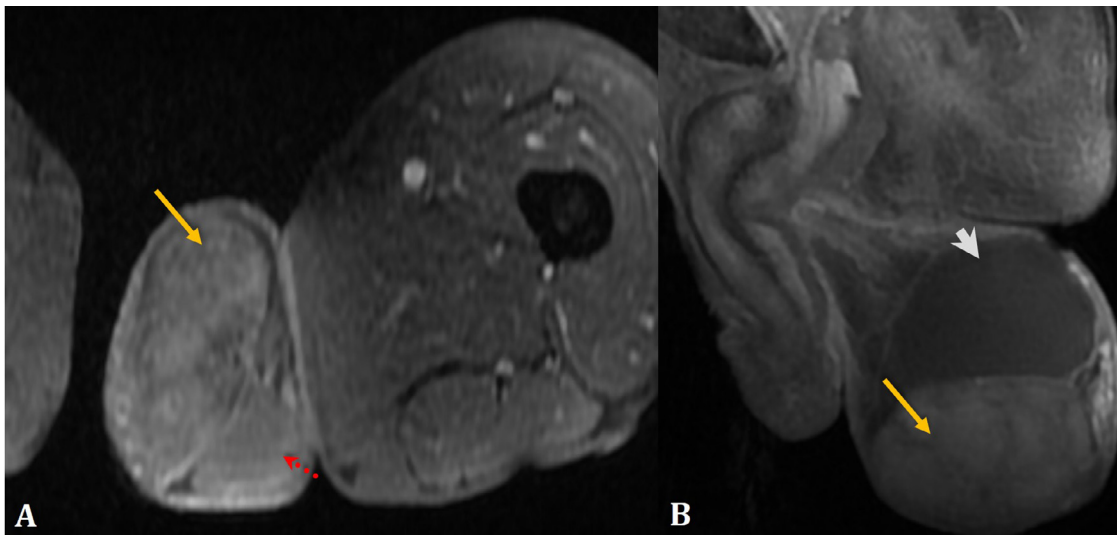


Fig. 5 – axial (A) and sagittal (B) T1-W FAT SAT post contrast images demonstrating a low enhancing-mass (yellow arrow) comparing to the adjacent testis (red arrow). Note the spermatic cord hydrocele (white arrowhead). (Color version of figure is available online)

smooth muscles of the vulva, scrotum, and the myoepithelial cells of the nipple [3]. Scrotal leiomyoma is a rare entity as its prevalence rate is reported to be 1 of 1000 of all scrotal tumors by a review of 11,000 scrotal tumor cases [4]. It may arise from the epididymis, spermatic cord, tunica albuginea, or scrotal dartos muscle [5]. These tumors are commonly seen in Caucasians between the fourth and sixth decades of life [3]. The slow-growing and painless nature of scrotal leiomyomas tend to cause diagnosis delay. The usual interval between patient recognition and surgical removal ranges from 2 to 20 years with an average of 6.7 years [3,4]. In our case, the patient presented within 3 years of noticing the scrotal mass.

Physical examination often finds an enlarged scrotal sac containing a painless mass that adheres to the underlying skin and testis.

Ultrasound is the primary imaging method to explore testicular and paratesticular lesions, as it is noninvasive and widely available. It precisely the mass localization and evaluates its form, margins, echo structure, vascular characteristics as well as the presence of calcifications and necrosis. Leiomyoma usually presents as a well-defined solid paratesticular lesion of variable echogenicity. The whirling pattern may be observed. Central necrosis, a cystic component, or punctate calcifications may be present. Doppler mode demonstrates mild vascularity [6,7].

MRI may help establish and narrow the differential diagnoses. It can detect fat, blood products, and fibrosis which allows detailed tissue characterization [8,9]. At MR imaging, leiomyoma commonly demonstrates low to intermediate T1 signal intensity and intermediate to high T2 signal intensity with lower contrast enhancement compared to adjacent testis [10].

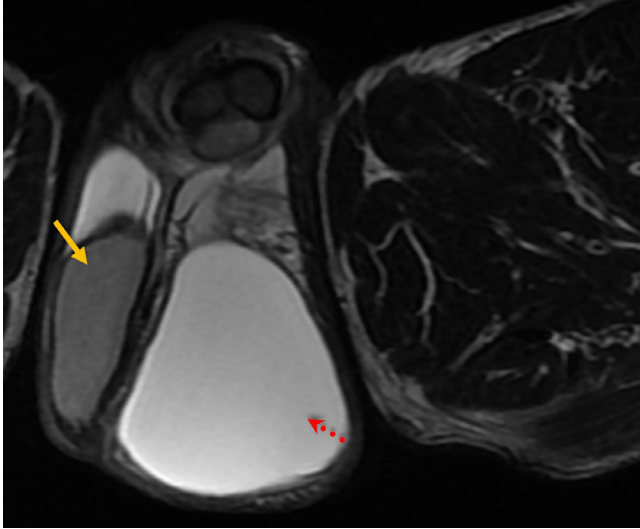


Fig. 6 – axial T2-W image showing the right testis (yellow arrow), with left spermatic cord hydrocele (red allow). (Color version of figure is available online)

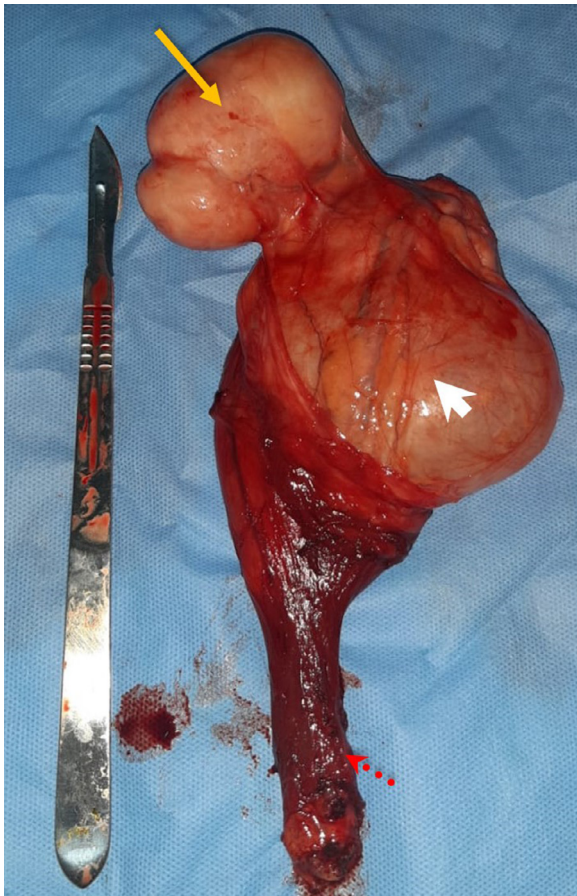


Fig. 7 – intra-operative image demonstrating the paratesticular mass (white arrowhead), the testis (yellow arrow) and the spermatic cord (red arrow). (Color version of figure is available online)

There is a broad range of differential diagnoses such as fibroma, sebaceous cyst, and squamous cell carcinoma. Moreover, typical leiomyomas are indistinguishable at imaging from atypical leiomyomas and leiomyosarcoma. Therefore, surgical excision is necessary for definitive diagnosis [1,10].

Management of scrotal leiomyoma mainly consists of simple excision [11]. However, in the presence of adhesion to the testis, as presented in our case, the possibility of atypical leiomyoma or leiomyosarcoma should be considered and radical orchidectomy is indicated [1].

Pathologic examination delivers the final diagnosis. There are three groups of scrotal smooth muscle tumors; benign, atypical and malignant based on 4 criteria; 1. Size, more than 5 cm; 2. Infiltrated margin; 3. Equal or more than 5-10 mitosis per 10 HPF (high power field) and 4. Moderate cytologic atypia. The presence of only one of these criteria defines a benign lesion. A tumor that demonstrates 2 of the above criteria is atypical, and tumors with any three criteria are considered malignant [1]. Follow-up and additional treatment may be indicated depending on histological features.

Conclusion

Scrotal leiomyoma is an uncommon but benign mesenchymal neoplasm, that should be considered as a differential diagnosis for paratesticular tumors. Imaging modalities, such as ultrasonography and MRI may play a key role in the diagnosis process. However, considering the difficulty of distinguishing leiomyoma from other scrotal tumors, surgical excision and pathologic examination represent the only way to confirm the diagnosis.

Authors' Contributions

All authors contributed equally to this work.

Patient Consent

Written informed patient consent for publication has been obtained.

Declaration of Competing Interest

The authors declare that there is no conflict of interests regarding the publication of this paper.

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