Radiology Case Reports 14 (2019) 591–594

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/radcr

Case Report

MR imaging of paratesticular bilateral leiomyoma: A case report

Serena Dell'Aversana, MD, Arnaldo Stanzione, MD, Valeria Romeo, MD, Marcello Caggiano, MD, Pietro Gisonni, MD, Luigi Insabato, MD, PhD, Simone Maurea, MD, PhD*

Department of Advanced Biomedical Sciences, University of Naples Federico II, Italy

ARTICLE INFO

Article history:
Received 12 January 2019
Revised 20 February 2019
Accepted 23 February 2019

Keywords:
Paratesticular
Leiomyoma
US
MRI
Diagnostics

ABSTRACT

Paratesticular leiomyoma is a rare benign neoplasm that may arise from smooth muscle cells contained in either the epididymis, the spermatic cord, or the tunica albuginea. Usually patients present a palpable, asymptomatic mass, with a higher prevalence among the fourth and fifth decade of life. In this case report we describe a 57-year-old man with bilateral scrotal palpable masses evaluated with ultrasound and magnetic resonance imaging that were suggestive for leiomyoma. The lesions were surgically removed and pathology revealed no signs of malignancy confirming the diagnostic hypothesis of leiomyoma. Ultrasound is considered the imaging modality of choice for the initial evaluation of testicular masses since it allows an accurate localization (ie testicular vs paratesticular) and can identify signs of malignancy. Magnetic resonance imaging is less frequently performed but can considerably improve lesion characterization.

Case report

A 57-year-old man came to our institution for the diagnostic evaluation of bilateral scrotal palpable masses. The patient was in good health, without medical records of note and completely asymptomatic. A testicular ultrasound (US) was performed, revealing the presence of 2 paratesticular lesions, corresponding to the palpable masses, measuring respectively 45 mm on the right side and 55 mm on the left side. The lesions appeared round-shaped, well defined, and with regular margins, adherent to the internal sperm fascia; the US also demonstrated a highly heterogeneous tissue with no signs of vascularity on Color-Doppler (Fig. 1). When blood tests and urine analysis were performed, results were within normal ranges. Additionally, tumoral markers were researched (ie alpha-fetoprotein, beta human chorionic gonadotropin, and antigen carcinoembrionar) with none found significantly altered.

Conflict of interest statement: The authors report no conflict of interest.
Funding: This study received no funding.
Consent: Informed consent was obtained from the patient involved in this publication.

* Corresponding author.
E-mail address: arnaldo.stanzione@unina.it (A. Stanzione).

https://doi.org/10.1016/j.radcr.2019.02.019

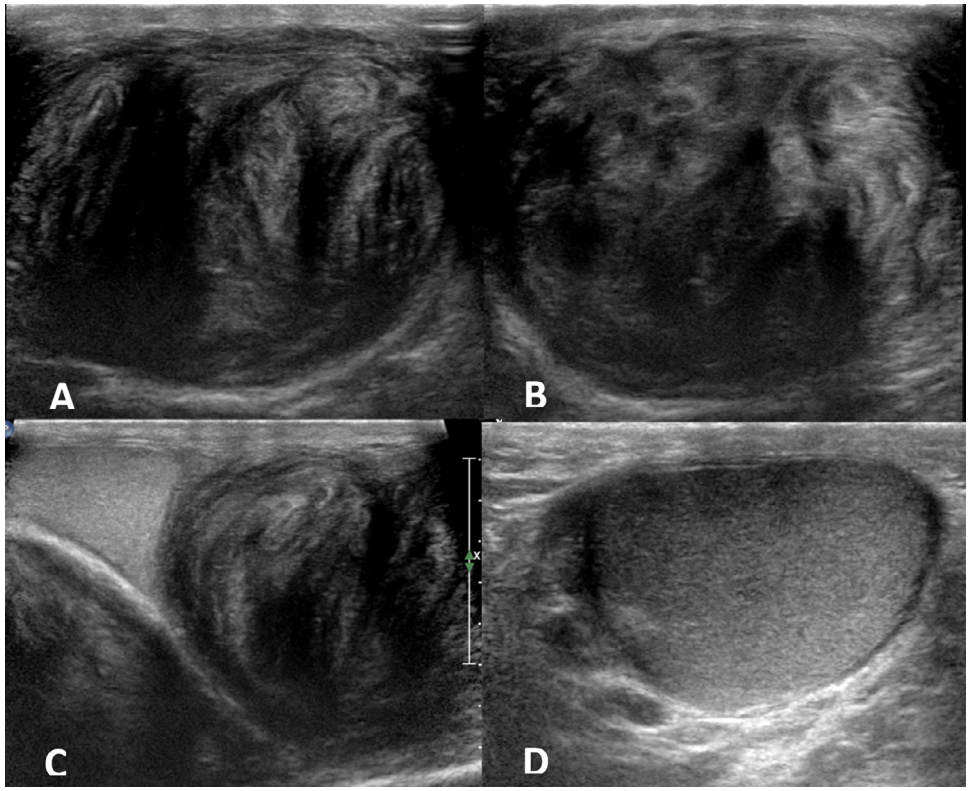

Fig. 1 – US demonstrates 2 highly heterogeneous paratesticular masses, measuring 45 mm on the right side (A) and 55 mm on the left side (B). These masses appeared round-shaped and with regular margins (C). The testicular US pattern did not show significant anomalies (D).

In order to further characterize the testicular masses, an MRI scan was performed. MR images confirmed the presence in the scrotal sac of the 2 heterogeneous paratesticular masses, 1 for each side, noncapsulated with regular margins. The masses were hypointense on T2-weighted images and isointense on T1-weighted images, with heterogeneous contrast enhancement in the postcontrastographic phase; moreover, they were tightly adherent to the spermatic cord and displaced the testicles, which presented regular signal intensity (Fig. 2).

The lesions were surgically removed and pathology revealed no signs of malignancy. In particular, gross specimen presented macroscopically whitish appearance (Fig. 3). On microscopic analysis, a mesenchymal lesion was found, without cytological atypia, consisting of bundles of cells with fused nuclei and abundant eosinophilic cytoplasm; immunohistochemistry showed a strong positivity for muscle specific actin and for desmin. Based on these findings, the final diagnosis was of leiomyoma. To date, the patient is in good health and has not suffered from complications after surgery.

Discussion

Paratesticular tumors are rare but clinically significant lesions that affect patients of all ages; they are most likely benign, with the prevalence of malignancies being approximately 3% [1–3]. The majority of scrotal benign paratesticular lesions include lipoma, adenomatoid tumors, leiomyoma, fibroma, hemangioma, neurofibroma, and papillary cystadenoma [2]. On the other hand, malignant tumors include liposarcoma, rhabdomyosarcoma, lymphoma, fibrosarcoma, and rarer tumors such as malignant schwannoma and malignant fibrous histiocytoma [2]. Most patients are asymptomatic, presenting with an indolent slow-growing mass. Unfortunately, the US features of many solid extra-testicular masses are often unspecific, precluding a specific diagnosis in most cases [2].

As stated above, leiomyoma originates from smooth muscle and can therefore be found in various organs. With specific reference to the male genitourinary system, 3 different types of leiomyoma can be identified on the basis of origin site; (1) derivation of erector pili muscle (piloleiomyoma), (2) derivation of smooth muscles of blood vessels (angioleiomyoma), and (3) genital leiomyoma (eg from the smooth muscles of the scrotum) [4,5]. The majority of male genitourinary tract leiomyoma is found in the renal capsule, but this tumor has also been reported in the epididymis, spermatic cord, and tunica albuginea [2,6].

Leiomyoma is a slow-growing tumor, frequently indolent with a higher incidence of the fourth and fifth decade, but they can affect all ages. Usually the patient performs an ultrasound approximately 7-8 years after mass presentation [7]. At US

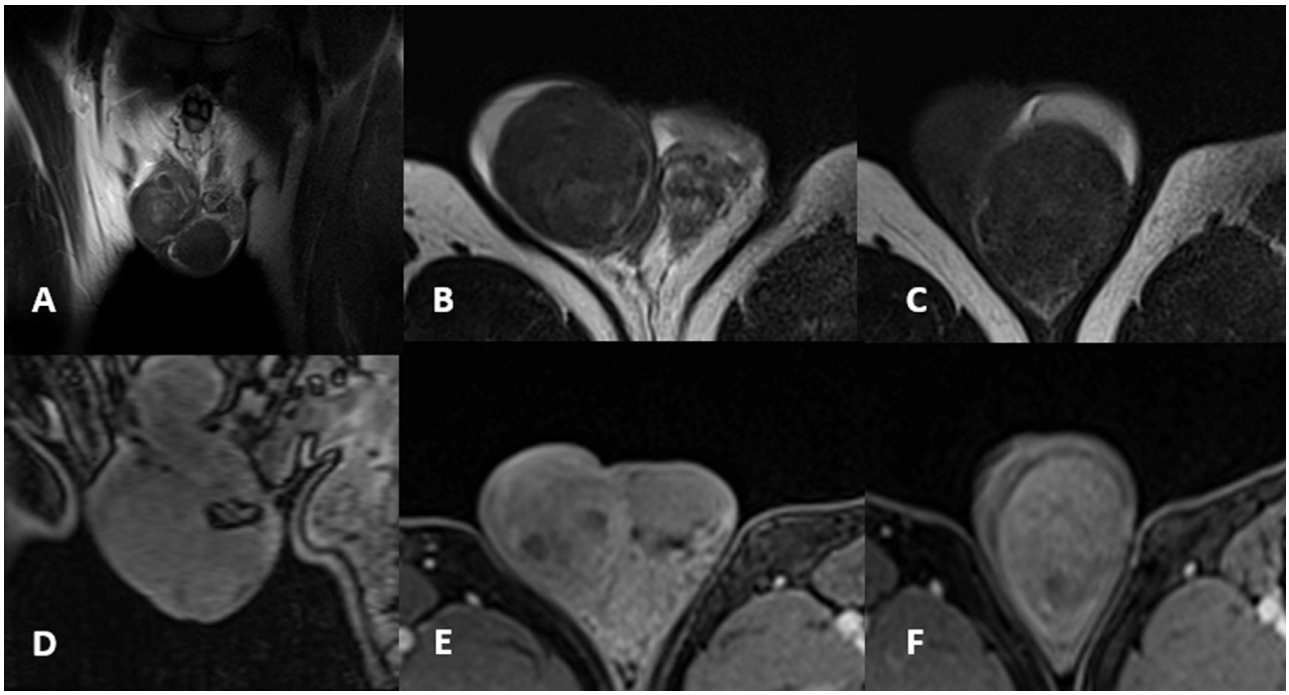

Fig. 2 – Coronal (A) and axial (B-C) Turbo Spin Echo T2-weighted images; coronal (D) T1-weighted unenhanced and axial (E-F) T1-weighted postcontrast images. MR images show the presence in the scrotal sac of the 2 heterogeneous paratesticular masses, 1 for each side, noncapsulated with regular margins. The masses were hypontense on T2-weighted images, isointense on T1-weighted unenhanced images, and showed heterogeneous enhancement after contrast agent injection.

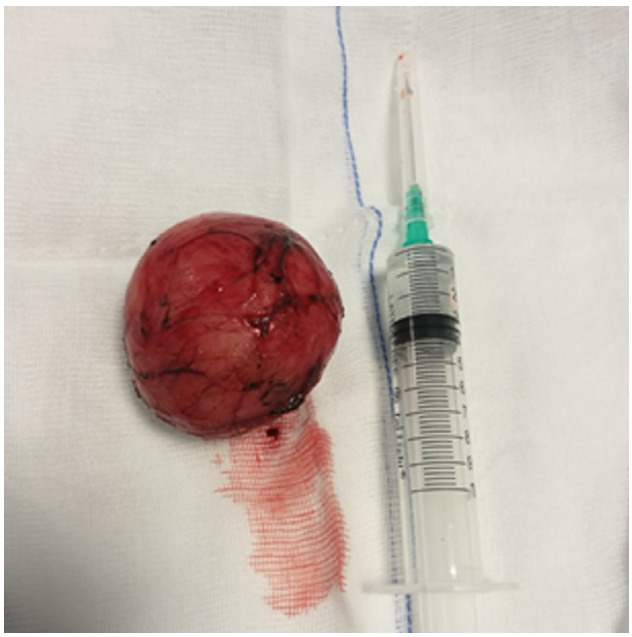

Fig. 3 – Gross specimen of the lesion removed from left scrotum.

examination, they appear as solid hypoechoic or heterogeneous masses that may or may not contain shadowing calcification; thus, in the absence of calcification, this tumor may be indistinguishable from adenomatoid tumor and fibroma [8]. MRI, however, according to a study by Cassidy et al, is the more sensitive and accurate imaging modality in detection and localization of leiomyoma [9]. Indeed, MRI allows tissue characterization, with its signal intensity properties allowing detection of fat, blood products, granulomatous tissue, and fibrosis. The typical MRI features of leiomyoma are the following: (1) isointense signal on T1-weighted imaging, (2) low signal on T2-weighted imaging, and (3) lower contrast enhancement compared to adjacent organs, in this case the testes [9].

To the best of our knowledge, this is the first case report presenting imaging features of both US and MRI of bilateral paratesticular leiomyoma. Some previous cases of paratesticular leiomyoma have been reported in the literature and their characteristics are resumed in Table 1 [10–13]. As emerges from the reported cases, the previously described leiomyoma had dimensions ranging from 1.1 cm to 5 cm with age at the time of the finding between the IV and the VI decade of life, generally slow glowing and asymptomatic. On US examination they appeared as masses from predominantly heterogeneous or hypoechoic echostructure, in 1 case they presented contextual cystic areas, thus in accordance with our findings, the mass showed an highly heterogeneous tissue, the characteristics of US imaging are often unspecific and do not allow a diagnosis of certainty. At present, surgical local resection is still the main method for the treatment of leiomyoma; radical orchiectomy is necessary only when the tumor is not dissociable from the testicle or in presence of signs suggesting malignant behavior. In conclusion, paratesticular leiomyoma is an extremely uncommon tumor, in most cases indolent, showing a slow growth and noninvasive pattern. Timely diagnosis

Table 1 – Case reports of 4 patients with bilateral paratesticular leiomyoma. Age at diagnosis, size of tumors, and US appearance are reported; in the case described by Bremmer et al, 1 of the lesion was not removed due to the small dimensions.

Reference	Age at diagnosis	Size of tumors (cm)	US
Fernandez et al (2017) [10]	56	3 × 33 × 3	Heterogeneous
Wang et al (2015) [11]	47	2.6 × 2.21.4 × 1.1	Hypoechoic heterogeneous tumor
Bremmer et al (2012) [12]	59	5 × 3.5	Echogenic and cystic areas
Lia-Beng et al (1996) [13]	62	3 × 31.5 × 1.3	Low echogenicity

and appropriate treatment would largely preclude the need for orchiectomy in most of the patients. US is definitely the modality of choice for initial evaluation of scrotal pathologic conditions because of its wide availability, low cost, and high sensitivity for detection of paratesticular masses, but MRI can help improve tissue characterization.

REFERENCES

[1] Siristatidis C, Vaidakis D, Rigos I, Chrelias G, Papantoniou N. Leiomyoma and infertility. Minerva Ginecol 2016;68(3):283–96.

[2] Akbar SA, Sayyed TA, Jafri SZ, Hasteh F, Neill JS. Multimodality imaging of paratesticular neoplasms and their rare mimics. Radiographics 2003;23(6):1461–76.

[3] Woodward PJ, Schwab CM, Sesterhenn IA. From the archives of the AFIP: extratesticular scrotal masses: radiologic-pathologic correlation. Radiographics 2003;23(1):215–40.

[4] Newman PL, Fletcher CD. Smooth muscle tumours of the external genitalia: clinicopathological analysis of a series. Histopathology 1991;18(6):523–9.

[5] Aganovic L, Cassidy F. Imaging of the scrotum. Radiol Clin North Am 2012;50(6):1145–65.

[6] Mak CW, Tzeng WS, Chou CK, Chen CY, Chang JM, Tzeng CC. Leiomyoma arising from the tunica albuginea of the testis: sonographic findings. J Clin Ultrasound 2004;32:309–11.

[7] Aluko T, Masi Z, Tomaszewski J, Germaine P. Scrotal sac leiomyoma: case report of a rare benign scrotal mass. Radiol Case Rep 2018;13(2):411–14.

[8] Hricak H, Filly RA. Sonography of the scrotum. Invest Radiol 1983;18:112.

[9] Cassidy FH, Ishioka KM, McMahon CJ, Chu P, Sakamoto K, Lee KS, Aganovic L. MR imaging of scrotal tumors and pseudotumors. Radiographics 2010;30(3):665–83.

[10] Fernandez A, Krishnamoorthy S, Muralitharan S, Johnson T, Ramanan V. Bilateral Synchronous paratesticular leiomyoma—a rare entity. J Clin Diagn Res. 2017;11(4):PD05–6.

[11] Wang AX, Feng SL, Chang JW. Leiomyoma of the bilateral tunica albuginea of testes: a case report. Int J Clin Exp Pathol 2015;8(8):9703–5.

[12] Bremmer F, Kessel FJ, Behnes CL, Trojan L, Heinrich E. Leiomyoma of the tunica albuginea, a case report of a rare tumour of the testis and review of the literature. Diagn Pathol 2012;7:140.

[13] Lia-Beng T, Wei-Wuang H, Biing-Rorn C, Chia-Chun T. Bilateral synchronous leiomyoma of the testicular tunica albuginea. A case report and review of the literature. Int Urol Nephrol. 1996;28(4):549–52.