An unusually large leiomyoma of the prostate

Brian Kapp, MD, Fernando Abarzua-Cabezas, MD, Antonio Cusano, BS, Anoop Meraney, MD
Division of Urology, Hartford Healthcare Medical Group, Hartford, Connecticut, USA

KAPP B, ABARZUA-CABEZAS F, CUSANO A, MERANEY A. An unusually large leiomyoma of the prostate. *Can J Urol* 2014;21(1):7157-7159.

Prostate leiomyomas are benign mesenchymal smooth muscle tumors devoid of glandular elements within the prostate or juxta-prostatic position.
Leiomyomas develop in organs containing smooth muscle, including the kidney, bladder and seminal vesicle. Prostate leiomyomas are either a pure form or associated with benign prostate hyperplasia, and diagnosis is challenging, with definitive identification relying on pathology. However, imaging techniques, such as MRI, have proven to be useful diagnostic tools.
We report on a 57-year-old male with lower urinary tract symptomatology who was diagnosed with a large prostate leiomyoma and underwent an open radical cystoprostatectomy and ileal conduit urinary diversion.

Key Words: outcome, leiomyoma, prostate, diagnosis

Introduction

Benign leiomyomas of the prostate occur infrequently, and typically arise from the smooth muscle components of periglandular prostate tissue, the prostatic capsule or Müllerian duct remnant. Leiomyoma identification and diagnosis is guided by their appearance as circumscribed or encapsulated smooth muscle masses (> 1 cm or more in diameter) composed of fibrous tissue (devoid of glandular elements), which is prostatic or juxtaprostatic in origin and position.

Accepted for publication December 2013

Address correspondence to Dr. Fernando Abarzua-Cabezas, Urology Division, Hartford Healthcare Medical Group, 85 Seymour Street, Suite 416, Hartford, CT 06106 USA

Leiomyoma symptomatology may emulate that associated with benign hyperplasia with urinary tract infections.

In this case report, we highlight the symptomatology, imaging, diagnosis and treatment of a 57-year-old male with an unusually large prostatic leiomyoma.

Case report

A 57-year-old patient progressively developed lower urinary tract symptomatology, and a physical examination subsequently revealed a large pelvic mass that was above, and contiguous with, the left lobe of the prostate.

A CT scan of the abdomen and pelvis revealed a large mass (9 cm x 12.6 cm x 10.8 cm) that involved the left hemi pelvis contiguous with the prostate, and

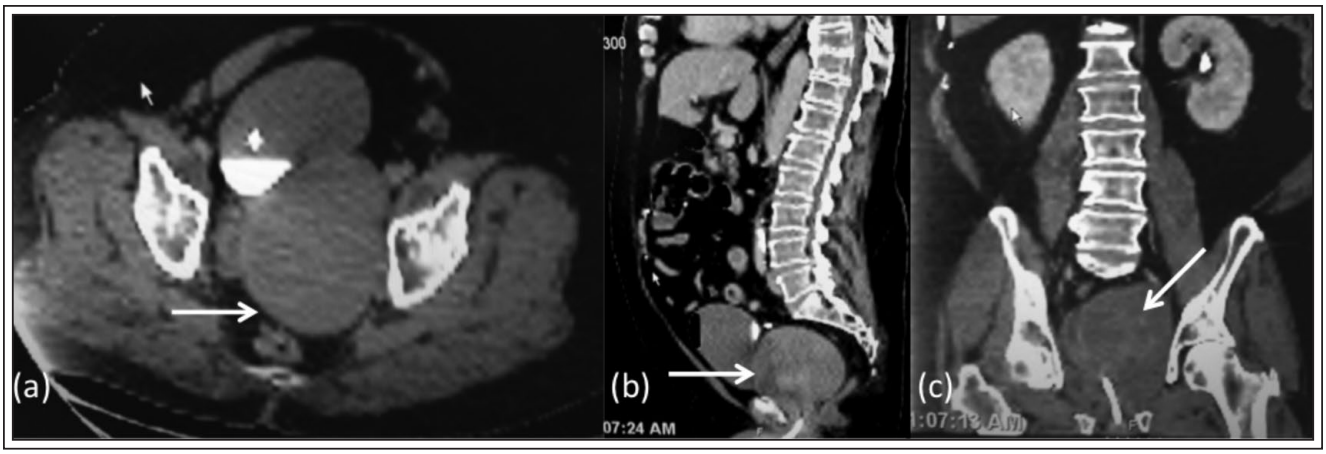

Figure 1a-c. CT images of the abdomen and pelvis. Arrows indicate the location of the leiomyoma. In images **a** and **b** the bladder is seen partially filled with contrast and displaced anteriorly.

elevated and distorted the bladder neck, bladder and prostatic urethra, see Figure 1a-c. No hydronephrosis or pelvic or abdominal lymphadenopathy was observed. An incidental right enhancing renal mass measuring 2.2 cm was also noted.

TRUS of the prostate revealed a spindle like type tumor compatible with a fibroid. Subsequent molecular analyses determined elevated STAT6 expression consistent with a fibroid tumor.

The patient underwent radical cystoprostatectomy and creation of an ileal conduit urinary diversion.

Pathology determined the presence of an exophytic spindle cell neoplasm (14 cm in size) arising from the prostate. In addition, an invasive prostatic adenocarcinoma was identified. Six percent of the entire sample contained a Gleason 7 (3 + 4) adenocarcinoma of the prostate. The spindle cell tumor component was hypercellular with moderate atypia. Focal necrosis and increased focal mitosis (9/10 HPF) were also observed.

Discussion

While leiomyomas have been previously described in the entire urinary tract,[1-5] mesenchymal prostate tumors are relatively rare. Kaufman and Berneike[3] originally described prostatic leiomyomas as smooth muscle tumors within the prostate or juxta-prostatic position that are devoid of glandular elements. While the exact pathogenesis is unknown, leiomyomas have been suggested to originate from embryonic Müllerian remnants, or are the result of chronic infectious and inflammations conditions that result in glandular tissue being replaced by smooth muscle.

While the average age of presentation is related to the location of the tumor, the majority of leiomyomas affecting the prostate have been described in relatively elderly cohorts of patients, with symptomatology related to the location and dimension of the leiomyoma.[4] While the majority of reported leiomyomas range from 1.4 cm-4 cm in size, the leiomyoma reported in this case (at a size of 14 cm x 8 cm x 7 cm) is likely one of the largest urinary tract leiomyomas that has been described.

The ability of MRI to differentiate between muscle tissue and normal prostate provides a useful tool to aid leiomyoma diagnosis. TRUS reveals leiomyomas as circumscribed low echoic masses, while contrast-enhanced CT identifies them as round heterogeneous attenuated masses with central necrosis.[5] An isointense prostate on T1 weighted sequences and weakly hypeintense on T2 weighted sequences is common, with Gadolinium administration eliciting a homogeneous and strong enhancement on MRI.[6]

While imaging is useful, tumor pathology is the definitive diagnostic tool for prostate leiomyomas. However, differential diagnosis between leiomyoma and a stromal nodule in BPH can be challenging. A key differentiator is the presence of well organized smooth muscle in leiomyoma lesions, characteristics that are usually absent in BPH.[7] Also, leiomyomas should be differentiated from leimyosarcoma, its malignant counterpart, which is usually not problematic but requires a totally different therapeutic approach.

For prostate leiomyoma, the most commonly utilized surgical treatment is an open retropubic approach with enucleating of the lesion.[8-10] However, endoscopic treatment including TURP has also been shown to be useful. In the case described here, the large size of the tumor, which occupied the entire pelvis, made the surgical procedure extremely challenging. Although a

retropubic prostatectomy was attempted, the decision was made to undertake a radical cystoprostatectomy with ileal conduit urinary diversion, a combination that is not frequently utilized in this clinical scenario. □

References

1. Wu S. Imaging findings of atypical leiomyoma of the urinary bladder simulating bladder cancer: a case report and literature review. *Med Ultrason* 2013;15(2):161-163.
2. Lopes RI, Lopes RN, Srougi M. Intramural leiomyomas of the bladder in asymptomatic men. *Int Braz J Urol* 2003;29(3):245-247.
3. Kaufman JJ, Berneike RR. Leiomyoma of the prostate. *J Urol* 1951; 65(2):297-310.
4. Oderda M, Mondaini N, Bartoletti R et al. Leiomyomata of the genitourinary tract: a case series from the rare urological neoplasm registry. *Scand J Urol* 2013; 47(2):158-162.
5. Chang JM, Lee HJ, Byun SS et al. Unusual tumors involving the prostate: radiological-pathological findings. *Br J Radiol* 2008; 81 (971):907-915.
6. Kitajima K , Kaji Y, Imanaka K, Hayashi M, Kuwata Y, Sugimura K. MR imaging findings of pure prostatic Leiomyoma: A report of two cases. *J Comput Assist Tomogr* 2006;30(6):910-912.
7. Hansel DE, Herawi M Montgomery E, Epstein JI. Spindle cell lesions of the adult prostate. *Mod Pathol* 2007;20(1):148-158.
8. Barba J, Tolosa E, Panizo AF, Berian JM. Prostatic leiomyoma. Case report. *Ach Esp Urol* 2011;6(7):631-635.
9. Mellas S, Bouchikhi AA, Tazi MF et al. Prostatic leiomyoma: A case report. *Case Rep Urol* 2012;2012:702762.
10. van Ulden Bleumink WM, Dom PGB, Ramakers BPM, van Adrichem NP. A rare prostatic diagnosis of an old man: a pure prostatic leiomyoma. *Case Rep Urol* 2013;2013:741235.