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LETTER TO THE EDITOR

Prostate Disease

Solitary fibrous tumor of the prostate: a case report and 5-year follow-up

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Dear Editor,

Solitary fibrous tumors (SFTs) originating from the prostate are extremely rare. The prognosis of patients with SFTs who undergo surgical treatment is good, but aggressive SFTs can recur, so patients should be closely followed up.[1] Here, we report a 46-year-old male patient with prostatic SFT who was followed up for 5 years after surgical treatment. This study was approved by the Ethics Committee of Lanzhou University Second Hospital (Lanzhou, China). The patient provided written informed consent.

In August 2012, a suspicious echoic pelvic mass arising from the prostate was detected by transabdominal ultrasound on a routine examination of a patient with no urinary symptoms or other personal or familial medical history. The patient's renal function and serum prostate-specific antigen were normal. Computed tomography (CT) of the abdomen and pelvis revealed a 7-cm solid, circumscribed mass located closely above and possibly arising from the prostate (data not shown); the thoracic and cranial CT and bone scan were normal. Pelvic magnetic resonance imaging (MRI) showed a 6.6 cm × 6.0 cm × 6.3 cm round, circumscribed, heterogeneous mass arising from the posterosuperior of the prostate, with a distinct margin between the posterior wall of the bladder and the anterior wall of the rectum, without a distinct border from the prostate base. The bladder was repressed forward. Fat tissue between the mass and adjacent organs showed no sign of involvement, and the seminal vesicles and pelvic lymph nodes were not invaded. The mass was isointense on T1-weighted images (**Figure 1a**), inhomogeneous hyperintense on T2-weighted images as Prostate Imaging Reporting and Data System (PI-RADS) 3 (**Figure 1b** and **1c**), and slightly hyperintense on fat-suppression images. Core needle biopsies guided by transrectal ultrasonography confirmed that the tumor is derived from mesenchymal tissue, resulting in a diagnosis of a prostatic solitary fibrous tumor.

The patient underwent complete surgical resection of tumor and prostatectomy in September 2012. The macroscopic specimen showed a yellow-white, circumscribed, homogeneous rubbery mass (6 cm × 7 cm × 6 cm), with a normal compressed prostate (4 cm × 3 cm × 2 cm), without hemorrhage or necrosis on the cut section. Frozen section examination showed negative resection margins and no invasion of the seminal vesicle or regional lymph nodes. Microscopic analysis revealed proliferative spindle-shaped neoplastic cells arranged in a storiform pattern with a heterogeneous cellular density intermixed with a sclerotic collagenous matrix. The tumor cells exhibited nuclear atypia in the form of mild mitotic activity (2–5 mitoses per 10 high-power fields [HPFs]). Variation in the nuclear size and shape was not associated with normal prostatic tissue. No vascular embolus, necrosis, lymphovascular invasion, or capsula effraction were observed (**Figure 1d**). Immunohistochemistry showed that the neoplastic cells strongly expressed CD34 (**Figure 1e**), and stained positive for CD99, B cell lymphoma-2, and Ki-67 expression, but negative for progesterone receptor (PR), smooth muscle actin (SMA), tyrosine-protein kinase kit (CD117), cytokeratin-8/18 (CK8/18), and discovered on gist 1(DOG-1).

After surgery, no adjuvant treatment was given. Local recurrence and progression were not found within 4 years of active clinical and radiological surveillance. However, in October 2017, CT and MRI of the abdomen and pelvis found an approximately 7.0 cm × 6.0 cm × 4.0 cm mixed signal mass in the pelvic cavity located anterior to the first sacral vertebrae level. The mass was hyperintense on T1- (**Figure 1f**) and T2-weighted images (**Figure 1g**) and distinctly heterogeneous hyperintense on diffusion-weighted images with an irregular lobule margin (**Figure 1h**). Neoplastic invasion was not found in adjacent organs or abdominal or pelvic lymph nodes. The mass was considered a recurrence of the primary prostatic SFT without presentation of any urinary or abdominal symptoms. The patient again underwent complete surgical resection of the tumor. Histopathological analysis revealed the spindle tumor cells with more distinctly atypical hyperplasia and mitotic activity compared with the previous pathological presentation (**Figure 1i**). Immunohistochemistry findings were almost identical to those obtained for the primary tumor. The patient rejected further chemoradiation therapy and chose to continue active surveillance.

SFTs account for <2% in the soft-tissue neoplasms of the body, commonly to see in the pleural cavity. SFTs have no gender predominance, occurring with equal frequency in men and women, with a median age at diagnosis of 60 (range 21–87) years. Prostatic SFT is not concomitant with urinary symptoms and can be difficult to differentiate from benign prostatic hyperplasia or prostate cancer.[1–3] Similar to prostate cancer, MRIs can aid localization of the site of SFT

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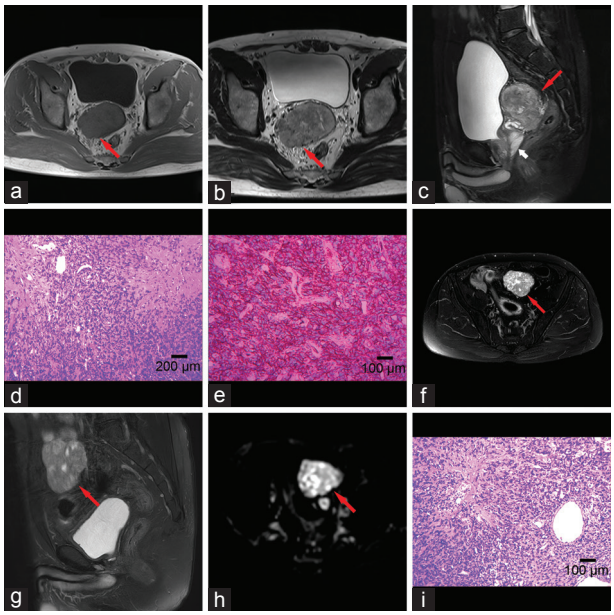

Figure 1: Images of a 43-year-old male with SFT of the prostate. Axial (**a**) T1-weighted and (**b**) T2-weighted MRI showing the tumor (red arrows) in the region of the prostatic gland anterior to the rectum and posterior to the bladder without necrosis. Fat tissue between the tumor and neighboring organs was not invaded. The tumor was isointense on T1 sequence and heterogeneous hyperintense on T2 sequence; (**c**) sagittal T2-weighted MRI indicating the tumor (red arrow) arising from the posterosuperior of the prostate basis (white arrow), with a distinct margin between the posterior wall of the bladder and the anterior wall of the rectum. The seminal vesicle and pelvic lymph nodes were not invaded; (**d**) hematoxylin–eosin staining showing proliferative oval/spindle-shaped neoplastic cells arranged in a storiform pattern with alternating hyper- and hypocellular areas intermixed with sclerotic collagenous matrix (×10, scale bar = 200 μm); (**e**) immunodetection showing strong diffuse tumor cell staining for CD34 (×20, scale bar = 100 μm). (**f**) Axial and (**g**) sagittal T2-weighted MRI showing the recurrent SFT (red arrows) in the pelvic cavity anterior to the first sacral vertebrae level. The tumor was heterogeneously hyperintense on T2 sequence; (**h**) diffusion-weighted MRI showing the distinctly heterogeneous hyperintense tumor with an irregular lobule margin (red arrow); (**i**) hematoxylin–eosin staining showing higher density of oval/spindle tumor cells with more distinctly atypical hyperplasia and mitotic activity (×20, scale bar = 100 μm). SFT: solitary fibrous tumor; MRI: magnetic resonance imaging.

origination and can evaluate tumor extension and stage. Most prostatic SFTs show inhomogeneous contrast enhancement. Tumors are usually hypointense to muscle on both T1- and T2-weighted images, but larger prostatic SFTs can be heterogeneous hyperintense on T2-weighted images. These features differ from those for prostate cancer which shows mostly hypointense areas on T2-weighted images.[4,5]

The differential and definitive diagnosis of SFT is primarily based on histopathologic and immunohistochemical findings. Previous studies indicated that typical SFT characteristics include strong diffuse CD34 staining, while admixed prostatic tissue was not commonly associated with tumors. In addition, prostatic SFT can be differentiated from benign and malignant spindle cell tumors involving the prostate, particularly stromal tumors of uncertain malignant potential and stromal sarcoma of the prostate and gastrointestinal stromal tumor, which are positive for immunohistochemical markers such as PR, SMA, and CD34.[5–9]

Around 10%–20% of SFTs will progress with either local recurrence or distant metastases. Criteria for malignancy/aggressiveness in histological analysis include one or more of the following features: large size (>10 cm), mitotic activity (>4 mitoses per 10 HPFs), nuclear pleomorphism, infiltrative growth pattern and boundaries, high cellularity with crowding and overlapping of nuclei, necrosis, and hemorrhage. However, these features do not always predict an unfavorable clinical outcome. Therefore, it is generally agreed that complete tumor resection, especially the evaluation of resection margins, is the most important predictive factor of clinical outcome. Nevertheless, the malignant potential of SFTs should be assessed according to histological aggressiveness criteria and tumor resectability, with the knowledge that histologically benign and complete resected tumors still have long-term malignant potential.[1,4,6,7]

Radical prostatectomy or tumor resectability are generally used as major treatments for prostatic SFT to obliterate recurrent localized foci.[10] Because SFT chemo- or radiotherapy is not always efficacious, active postoperative surveillance is imperative.

AUTHOR CONTRIBUTIONS

YTL carried out collecting and summarizing the clinical materials of the patient and drafted the manuscript. FXS carried out the CT and MRI analysis. LX carried out the pathological and immunohistochemistry analysis. HC participated in patient's operation and follow-up and helped draft the manuscript. All authors read and approved the final manuscript.

COMPETING INTERESTS

All authors declared no competing interests.

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