CT Imaging Findings of Metastatic Spindle Cell Sarcoma of Prostate: A Case Report and Review of the Literature

Metastatik Spindle Hücreli Prostat Sarkomunun Bilgisayarılı Tomografi Görüntüleme Bulguları: Bir Vaka Sunumu ve Literatürün Gözden Geçirilmesi

Berhan Pirimoglu1,2, David J. Vining2
1Department of Radiology, Atatürk University Faculty of Medicine, Erzurum, Turkey
2Department of Diagnostic Radiology, Division of Diagnostic Imaging, University of Texas, MD Anderson Cancer Center, Texas, USA

Abstract

Sarcomas of the prostate are rare tumors. Imaging plays an important role in the management and diagnosis of patients with prostate sarcomas. Their clinic-pathologic features are well described, but the imaging features of these tumors have rarely been documented in the literature and have appeared mainly as case reports. Herein, we present a rare case of metastatic spindle cell sarcoma of prostate with computed tomography imaging findings.

Keywords: Prostate sarcoma, metastasis, CT imaging

Introduction

Prostate sarcomas are generally rapidly growing and aggressive tumors. They present with local symptoms of their effect on adjacent structures, urinary dysfunction being the commonest symptom at presentation. Other symptoms include tenesmus, pain and hematuria from invasion of the bladder floor and urethra. Sarcomas of the prostate include for 0.1-0.2% of all primary prostatic neoplasms [1-3]. Rhabdomyosarcomas account for 42% of prostate sarcomas and leiomyosarcomas represent 25% of all prostate sarcomas [4, 5]. Other subtypes including stromal sarcoma, malignant peripheral nerve sheath tumor, spindle cell sarcoma and post-radiation induced sarcoma are very rarer [2].

Pulmonary metastasis from prostate cancer often shows a diffuse interstitial or multi-nodular pattern. These metastases are usually seen only after bone metastases, and generally present in one of two basic radiological patterns. Solitary pulmonary nodules have been reported but are extremely rare [6-8]. In this case report, we present a rare type of prostate sarcoma that is spindle cell sarcoma, with solitary pulmonary metastases via computed tomography (CT) imaging findings.

Case Report

A 67-year-old man was admitted to urology department with approximately three months ago developed gross hematuria. Written informed consent was obtained from the patient before his enrollment into the study. He was evaluated by his primary care physician and was initially treated with a course of antibiotics which cleared up. The hematuria recurred and he was referred to our radiology department. He underwent a CT scan. CT scan revealed an enlarged, heterogeneous prostate measuring approximately 4.7 x 7.8 x 9 centimeters (cm) (Figures 1-3). The serum prostate specific antigen (PSA) level was 0.39 ng/mL (normal range, 0.0-4.0 ng/mL). The patient developed clot urinary retention requiring a visit to the emergency unit for catheterization and urine bladder irrigation. And then, he elected to undergo a suprapubic prostatectomy for presumed benign prostate hyperplasia (BPH) causing severe hematuria and urinary retention. The patient has recovered from surgery without complication. The pathological findings revealed a high grade spindle cell sarcoma of prostate with extension into the periprostatic fat and positive margins with vascular invasion present. Thus,
Figure 1. The axial pelvic CT image shows the heterogeneous, including necrotic changes and minimally peripheral contrast enhanced pelvic mass (dot arrows).

Figure 2. The coronal pelvic CT image shows the heterogeneous, including necrotic changes and minimally peripheral contrast enhanced pelvic mass (dot arrows).
The patient underwent a chest, abdomen, and pelvis CT scan one month after the surgical operation. On chest CT images, a solitary pulmonary metastasis that measured 22 x 25 millimeters (mm) was detected in the inferior lingular segment of the left lung. Another solitary pulmonary metastasis that measured 13 x 22 mm was also determined in the left upper lung (Figures 4, 5). On abdomen and pelvis CT images, thickened urinary bladder wall was contiguous with an ill-defined soft tissue mass extending from the bladder towards the left obturator space (Figure 6). This ill-defined soft tissue mass represented residual disease in this area. Additionally, there was a 17 x 22 mm nodular opacity anterior to the distal left ureter (Figure 7). We thought that it represented metastatic lymph node. Thus, the patient was referred to oncology department for evaluation with regards to application of the chemotherapy.

**Discussion**

Prostatic tumors arising from the prostatic stroma or from ectopically located cells within the prostate account for fewer than 5% of prostate neoplasms. These stromal tumors can be classified into prostatic stromal sarcoma and stromal tumors of uncertain malignant potential according to the degree of cellularity, presence of mitotic figures, necrosis, and stromal overgrowth on pathological examination [4, 5, 9].

Rhabdomyosarcoma and leiomyosarcoma constitute a large part of the prostate sarcoma. Spindle cell sarcomas are a rare type of the prostate sarcomas. These sarcomas are usually large at presentation. In a study, the mean size was detected as 7.9 cm [2]. Our patient’s tumor mean size was 7.1 cm. Because of their large size at the time of diagnosis, distinguishing on imaging between sarcomas arising from the prostate and those arising from the bladder base may be difficult. The tumor shape varies from round/lobulated and welldefined masses to irregular and ill-defined lesions. Due to its high soft tissue contrast resolution, magnetic resonance imaging (MRI) helps to determine the site of origin of the tumor, its local extent, tissue characteristics, presence of local adenopathy and aids in planning surgical resection [1, 2, 10]. Since our patient underwent the surgical resection shortly after CT examination, we could not perform the MRI.

The CT characteristics of prostate sarcomas are non-specific, with most lesions appearing as large pelvic masses of heterogeneous attenuation with areas of necrotic - cystic...
change and heterogeneous enhancement [2, 9]. We also detected necrotic and heterogeneous pelvic mass in our patient. It is difficult to differentiate between tumors arising from the prostate and those arising from the bladder base. However, CT is useful for assessing the extent of local adenopathy and is the imaging modality of choice for of distant metastases [9, 10]. In our case, we easily determined metastatic lymph node on CT images.

In conclusion, we wanted to present a rare type of prostate sarcoma with CT imaging findings. CT imaging with contrast is helpful for detecting mass content, lymph node metastases and extension of the tumor.

Figure 4. Axial chest CT image shows bilateral pleural effusion and solitary metastasis in the inferior lingular segment.

Figure 5. Axial chest CT image shows bilateral pleural effusion and solitary metastasis in the left upper lung.
Informed Consent: Written informed consent was obtained from the patient who participated in this case.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept - B.P., D.V.; Design - B.P., D.V.; Supervision - B.P., D.V.; Funding - B.P., D.V.; Materials - B.P.; Data Collection and/or Processing - B.P., D.V.; Analysis and/or Interpretation - B.P., D.V.; Literature Review - B.P.; Writing - B.P.; Critical Review - B.P., D.V.; Other - B.P., D.V.

Acknowledgements: Authors would like to thank Cihan Duran MD, the Department of Cardiac MRI section, St Luke's Episcopal Hospital, Texas Medical Center for her valuable suggestions and comments.

Figure 6. Axial pelvic CT image shows residual heterogeneous sarcoma tumor and tissue edema (C, dot arrow: Foley catheter, dash arrows: Residual mass).

Figure 7. The axial abdominal CT image shows hypodense metastatic lymph node and tissue edema (D, dot arrow).
Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this case has received no financial support.

References