CASE REPORT

Prostate Synovial Sarcoma in a 29-Year-Old Male: A Case Report

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Synovial sarcoma is an extremely rare soft tissue cancer that predominantly affects young adults, typically occurring at the para-articular region of the extremities. Primary synovial sarcoma of the prostate is exceptionally uncommon in clinical practice.

Presented here is a case of a 29-year-old male with prostatic synovial sarcoma. He experienced lower urinary tract symptoms and eventually had urine retention. Also discussed here are the imaging findings, treatment plan, and differential diagnosis.

The patient experienced urinary frequency, dysuria, and acute urinary retention, which led to the insertion of a Foley catheter. Subsequent ultrasound scans revealed a large lobulated solid prostate gland. A prostate biopsy confirmed the presence of a malignant spindle cell neoplasm, indicating a prostatic stromal sarcoma. Immunohistomorphologic findings (TLE-1+, STAT6-, S100-, CD34-, ER-, PR-) were consistent with a diagnosis of Monophasic Synovial Sarcoma. The patient underwent six cycles of neoadjuvant chemotherapy before a Radical Prostatectomy was performed. The postoperative course was uneventful, and the patient was discharged in a significantly improved condition.

Given the rarity of this condition, the authors are reporting a case of prostatic synovial sarcoma and how they managed it. They performed a radical prostatectomy with neoadjuvant chemotherapy, which had a positive effect. Subsequent postoperative monitoring and imaging showed no further symptoms.

Key words: Prostate synovial sarcoma, prostate cancer, prostatectomy

Introduction

Synovial sarcoma is an extremely rare soft tissue cancer that predominantly affects young adults, typically occurring at the para-articular region of the extremities.[1] Most synovial sarcomas in the genitourinary system have been reported in the kidney.[2] Synovial sarcoma of the prostate overwhelmingly affects young to middle-aged men, presenting as increased urinary frequency, hematuria, dysuria, nocturia, and eventual urinary retention due to bladder outlet obstruction.[3,4] Primary synovial sarcoma of the prostate is exceptionally uncommon in clinical practice and given its non-specific symptoms, synovial sarcoma of the prostate is commonly detected in its late stages.[5,6]

The purpose of this case study was to document and analyze the clinical presentation, diagnostic process, treatment approach, and outcomes of an extremely rare case of prostatic synovial sarcoma in a 29-year-old male. This study aimed to contribute to the limited body of knowledge regarding this rare malignancy, provide insights into effective diagnostic and therapeutic strategies, and discuss the implications for prognosis and

patient management. This case aimed to provide a comprehensive presentation of a 29-year-old male who experienced lower urinary tract symptoms and eventually had urine retention. Presented here is a compelling case of synovial sarcoma of the prostate with the authors' treatment plan and surgical intervention.

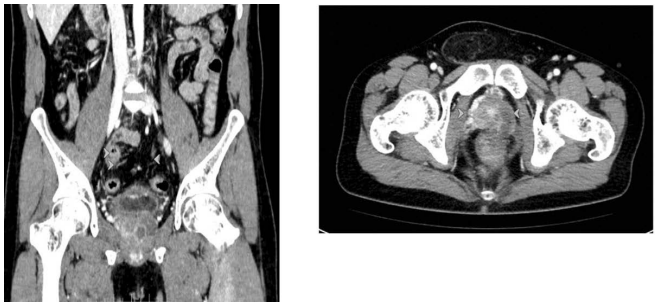
This case study is significant because prostatic synovial sarcoma is an exceedingly rare condition with only 10 previously reported cases. Due to its rarity, there is limited information available on its clinical behavior, optimal treatment strategies, and long-term outcomes. By documenting this case, the study aimed to enhance understanding of the disease, support the development of evidence-based treatment protocols, and potentially improve prognostic predictions. Additionally, this case can provide valuable data on the viability of surgical resection and contribute to ongoing discussions regarding the role of chemotherapy in managing this rare cancer.

The Case

A 29-year-old man complained of urinary obstructive symptoms that began seven months ago. This symptom progressed noting increased urinary frequency and straining, eventually leading to acute urinary retention. The patient sought consultation at a private hospital and was referred to a urologist, who inserted an indwelling catheter. Upon physical examination, an irregularly enlarged prostate was observed during the digital rectal examination. Ultrasound showed a large lobulated solid mass measuring 64mm x 67mm x 82mm. Computed Tomography scan of the whole abdomen revealed a large heterogenous mass (87mm x 73mm x 63mm) present in the prostate gland, centered in the left and posterior aspect of the prostate gland (PG: 184 grams) and the urethra was noted to be displaced to the right. The prostate capsule was intact. The mass abutted the rectum posteriorly but with intact fat plane. The absence of a specific family history of cancer or occupational hazards was noted.

The patient underwent Cystoscopy and Transurethral Resection of the Prostate. Pathologic examination revealed a malignant spindle cell neoplasm, indicating a potential prostatic stromal sarcoma. The immunohistomorphologic findings suggested a diagnosis of Monophasic Synovial Sarcoma, as it tested positive for TLE-1. However, STAT6, S100, CD34, ER, and PR tested negative on immunohistochemical examination.

The patient was discharged uneventful and was advised to consult with a Medical Oncologist. The patient received six cycles of (AIM: Adriamycin, Ifosfamide, Mesna) Chemotherapy, and a follow-up CT scan showed a decrease in the size of the previously enlarged prostate gland, which now measures 4.3cm x 4.6cm x 3.3cm with a computed volume of 33 ml (Figures 1 & 2).



Figures 1 and 2 show the coronal cut and axial cut of the CT scan showing the prostatic mass.

The patient was referred to the Urology service. A digital rectal examination revealed an approximately 30-40 gram prostate gland with a palpable firm nodule noted at the left prostatic lobe. Subsequently, the patient underwent Radical Prostatectomy (Figure 3). Postoperatively, the patient's recovery was uneventful. The patient was discharged in improved condition, with the surgical incision dry, intact, and healing well.

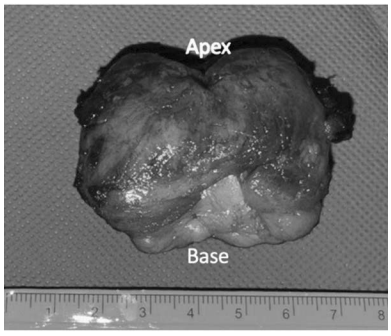


Figure 3. Prostatic mass

Discussion

Synovial sarcomas represent 8% of all soft tissue sarcomas and predominantly affect young adults between the ages of 15 and 40, although they can occur in individuals across a wide age range.[7] It is a type of malignant and aggressive tumor that originates from the soft tissues, such as the muscles, tendons, or the lining of joints. It typically carries a poor prognosis and may not respond well to treatment.[4,8] This type of tumor can spread through the bloodstream to other parts of the body (systemic spread) or by directly infiltrating surrounding tissues and structures (local invasion).[8,9] Early detection and prompt treatment are crucial for managing synovial sarcoma.[10] Primary prostatic sarcomas are exceptionally rare, comprising less than 0.1% of cases.[11]

A case report by Hou et al. described 10 cases of prostatic synovial sarcoma, including their own report. Patients ranging in age from 22 to 63 years and an average age of 42 years.[1] The primary clinical symptoms in 9 out of 10 patients were related to the urinary tract, such as dysuria, acute urinary retention, and hematuria.[1] In this case, the patient also exhibited symptoms of dysuria, urinary frequency, and eventually urinary retention.

In imaging studies, synovial sarcoma of the prostate is typically a large and heterogeneous lesion, easily distinguishable from the surrounding tissues[12,13], as in the present case before chemotherapy with Doxorubicin, Ifosfamide, and Mesna (AIM).[14,15] Since prostate sarcomas are rare, treatment protocols have not been clearly defined.[7,13] Sarcomas usually do not respond well to radiotherapy, and they too have a poor response to chemotherapy.[14,15] Aggressive surgical resection should be considered, taking into account the patient's age and the absence of distant metastases and lymphadenopathy.[16,17] In the present case, after six cycles of chemotherapy, the authors observed a positive response in the patient's sarcomatous mass, and they were able to successfully perform a prostate resection.[18]

In most reported cases, the preferred treatment method entails radical surgical resection, combined with radiotherapy and chemotherapy tailored to the tumor's specific characteristics.[1,3,5,6] In the present case, the patient successfully underwent surgical resection of the prostate with notable tolerance. Subsequent follow-up examinations revealed an absence of any patient-reported complaints, indicating a favorable postoperative course.

Conclusion

Diagnosing and treating synovial sarcoma of the prostate is challenging due to nonspecific clinical and radiological data, low incidence, and rarity. Treatment decisions are based on tumor extent, staging, and risk-benefit analysis. Prognosis is generally unfavorable with a relatively short survival time. Surgical resection is a viable option, while the benefits of chemotherapy are still undetermined. More cases are needed to establish a better diagnosis and treatment plan.

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