

Case Report

Carcinosarcoma of the Prostate Masquerading as Benign Prostatic Enlargement: Lesson Learned

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Abstract

Primary carcinosarcoma of the prostate is an extremely rare and aggressive malignancy. We report a patient who presented with obstructive symptoms and without a history of radiation, prior adenocarcinoma, or androgen deprivation therapy. Transurethral resection of the prostate was performed. Histopathology and immunohistochemistry revealed a confirmatory diagnosis of de novo carcinosarcoma of the prostate. The case is described for its rarity and masquerading nature.

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1. Case report

An 85-yr-old man with a history of hypertension and diabetes mellitus presented with signs and symptoms suggestive of urinary obstruction. Clinical examination and laboratory and radiological evaluations revealed firm-feeling prostatomegaly of 28 cm³ in size, normal renal parameters, and normal serum prostate-specific antigen (PSA; 3.1 ng/mL). After consulting with anesthetists, endocrinologists, and a cardiologist, transurethral resection of the prostate (TURP) was planned. During TURP, the prostate felt hard and the resection was different from a normal adenoma resection. The patient experienced relief of his symptoms. Histopathology revealed a biphasic tumor with

epithelial and sarcomatous components. The epithelial component comprised fused, poorly formed glands with cribriform and central necrosis, with cells showing prominent nucleoli. Areas of the tumor also had spindle and pleomorphic cells with enlarged hyperchromatic nuclei intermixed with the carcinomatous component (Fig. 1). Grade group 5 with a Gleason score of 5 + 4 = 9 was assigned. Immunohistochemistry revealed positivity for pan-cytokeratin and vimentin in the sarcomatous foci, and positivity for pan-cytokeratin, high-molecular-weight keratin, and NKX3.1 in the carcinomatous areas (Figs. 2 and 3). A diagnosis of carcinosarcoma of the prostate (CSP) was made. The histology findings prompted a recommendation for

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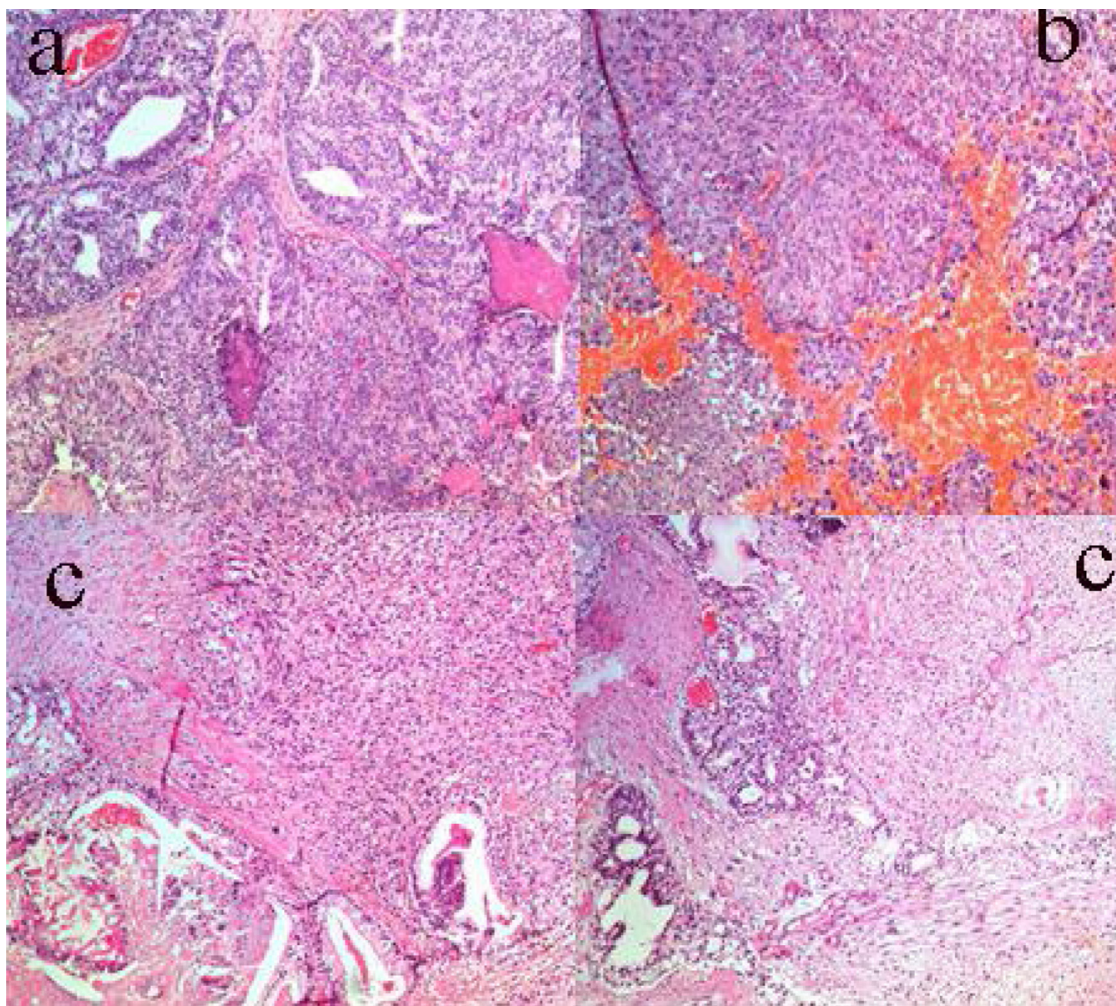


Fig. 1 – Hematoxylin and eosin staining showing (A) carcinomatous focus composed of fused irregular glands with cribriform and central necrosis; (B) sarcomatous areas with spindle and pleomorphic cells and atypical mitosis; and (C) carcinoma with an adjacent sarcomatous area with patchy necrosis.

whole-body ^{18}F -fluorodeoxyglucose (^{18}F -FDG) positron emission tomography (PET). However, because of the ongoing COVID-19 pandemic, the patient postponed the investigation and ^{18}F -FDG PET was not performed until almost 6 mo after his CSP diagnosis. Meanwhile, hormone therapy was initiated because that was the only option available for the patient. This was commenced after a clear explanation that this therapy might or might not be effective for him as the diagnosis was primary CSP. The multidisciplinary team felt that it was appropriate to perform ^{18}F -FDG PET rather than magnetic resonance imaging (MRI) for CSP. We have no particular experience that allows us to comment on whether MRI would be useful in this setting. Since ^{18}F -FDG PET was carried out almost 6 mo after CSP diagnosis and revealed metastatic disease, it was difficult to ascertain whether the metastasis was present before the surgery. However, as the disease state was metastatic in nature, local radiotherapy was not offered. Taking into account the patient's medical profile and the limited role of adjuvant treatment, and with the

consensus of the tumor board, the patient opted for regular follow-up. At the time of submission of this report, we have approximately 8 mo of follow-up for the patient and he is well and alive.

2. Discussion

Primary CSP accounts for <0.1% of all prostate malignancies [1]. It contains both epithelial and sarcomatoid components that can be homologous or heterologous, comprising osteosarcoma and chondrosarcoma, among others [2]. The majority of cases documented in the literature occurred in the seventh or eighth decade of life and patients had a history of radiotherapy, androgen deprivation therapy, or prostatic adenocarcinoma.

CSP is a rare malignant neoplasm that is characterized by an admixture of mesenchymal and epithelial components. In 1967, Hamlin and Lund [3] reported the first case of CSP, which has an aggressive clinical course and is associated with poor prognosis.

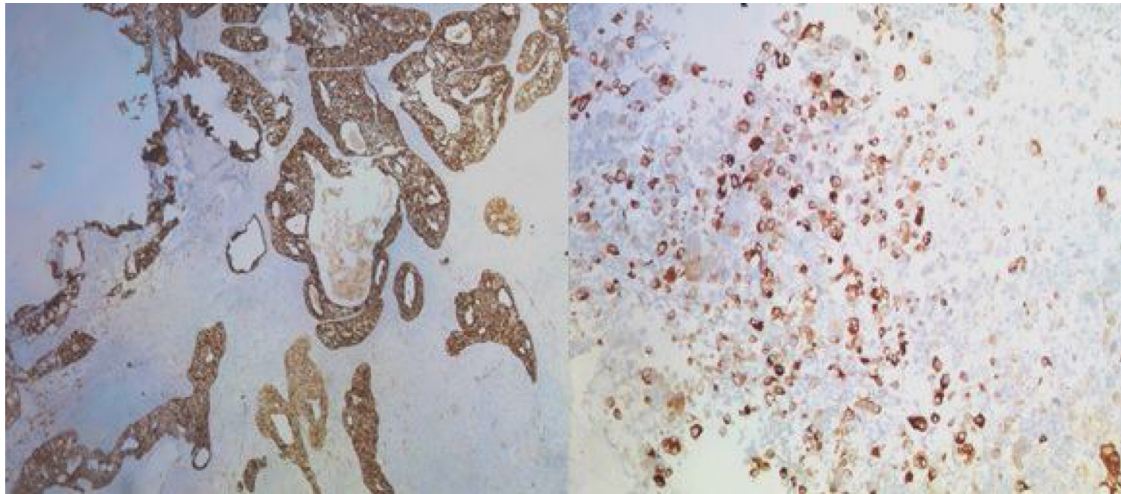


Fig. 2 – Immunohistochemical staining showing pan-cytokeratin positivity in carcinomatous and sarcomatous cells.

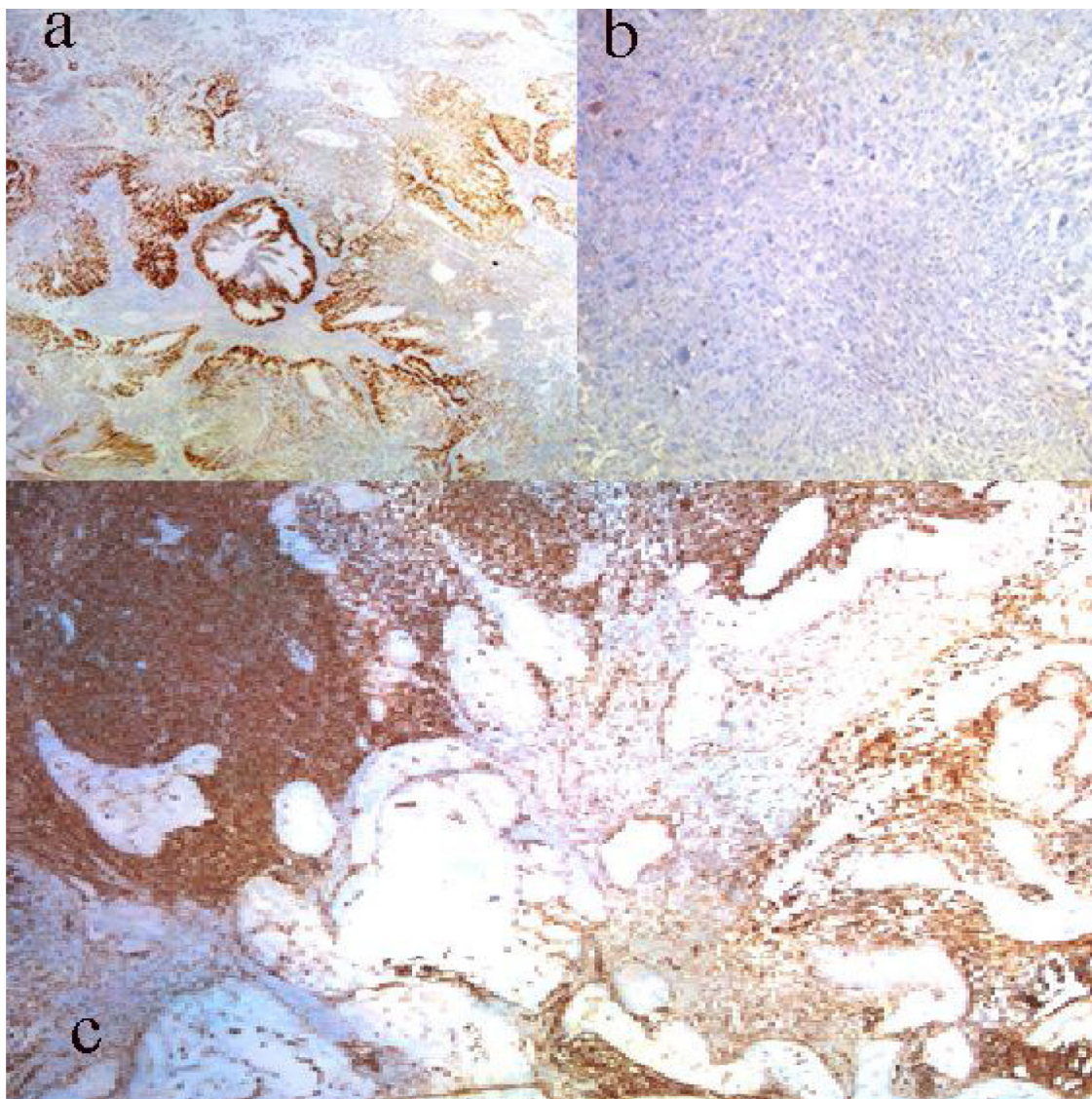


Fig. 3 – Immunohistochemical staining showing (A) NKX3.1 positivity in epithelial elements; (B) prostate-specific antigen negativity in carcinomatous areas; and (C) vimentin positivity in sarcomatous areas and negativity in the glandular component.

The following theories have been formulated regarding CSP histogenesis. These include the theory of incidental sarcomatous and carcinomatous foci arising from different prostatic areas, differentiation of immature stem cells, conversion to sarcoma formation from adenocarcinoma, and tumor differentiation secondary to hormonal and radiotherapy [4]. According to the literature, previously reported cases were commonly associated with a history of radiotherapy or hormonal ablation therapy [5]. The case discussed here had no such history.

CSP is predominantly seen in men aged >60yr and the commonest symptom is urinary obstruction with normal PSA levels. CSP frequently metastasizes to the lungs (43%) and the overall survival rate is approximately 7 mo. Thus, as CSP is an aggressive disease, a multimodal approach is strongly recommended.

Markowski et al [6] carried out a retrospective survival analysis of 45 patients with sarcomatoid prostate carcinoma with 10-yr follow-up. The data revealed better survival outcomes for localized disease than for systemic disease. However, the lack of PSA expression makes early detection of the disease difficult. Thus, digital rectal examination plays a vital role in diagnosing this rare entity. The management options documented include chemotherapy, radiotherapy, hormone ablative therapy, and prostatectomy [7,8]. Nevertheless, no standardized management options have been described in the literature.

CSP is a rare prostatic neoplasm associated with a rapidly deteriorating clinical course. Each documented case helps

in understanding the etiology, management options, and prognostic outcomes, and in predicting the factors influencing survival rates. Since serum PSA levels are mostly within the normal range, digital rectal examination may be the only option for early detection.

Conflicts of interest: The authors have nothing to disclose.

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