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Prostatic carcinosarcoma seven years after radical prostatectomy and hormonal therapy for prostatic adenocarcinoma: A case report

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Abstract

BACKGROUND

Prostatic carcinosarcoma is a very rare and highly aggressive tumor. It may occur after androgen deprivation therapy (ADT) for adenocarcinoma even after a 7-year interval.

CASE SUMMARY

A 66-year-old man presented with recurrent symptoms of gross hematuria and urinary retention. The patient had a previous history of combined radical prostatectomy and ADT for prostate cancer 7 years prior. He received total pelvic exenteration for a recurrent pelvic carcinosarcoma. Pathology and immunostaining revealed a carcinosarcoma of prostatic origin with focal spindle cells and bizarre giant cells. The patient subsequently underwent transverse colostomy for carcinosarcoma recurrence and bowel obstruction 3 mo later. Five months after the diagnosis of prostatic carcinosarcoma, the patient died of multiple organ metastases.

CONCLUSION

Prostatic carcinosarcoma after adenocarcinoma is exceedingly rare. ADT mediated transformation and dedifferentiation of the epithelial components may be the origin of this malignancy.

Key Words: Prostate cancer; Adenocarcinoma; Carcinosarcoma; Sarcomatoid carcinoma; Radical prostatectomy; Androgen deprivation therapy; Case report

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Core Tip: This is an unusual case of delayed occurrence of prostatic carcinosarcoma 7

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years after radical prostatectomy and androgen deprivation therapy (ADT) for prostatic adenocarcinoma. It is very uncommon for a patient to have both neoplasms. ADT mediated transformation and dedifferentiation of the epithelial component may be the origin of this malignancy.

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INTRODUCTION

Adenocarcinoma of the prostate is a very common cancer in men worldwide, whereas prostatic sarcoma is rare, with an overall prevalence of 0.1% and greater prevalence at younger ages. It is very rare for an elderly patient to have both neoplasms[1]. When these occur together as a carcinosarcoma, about 50% of the patients have a history of prostatic adenocarcinoma with radiation or androgen deprivation therapy (ADT)[2-4]. We encountered a patient with an unusual delay of prostatic carcinosarcoma occurrence 7 years after radical prostatectomy and ADT for prostatic adenocarcinoma.

CASE PRESENTATION

Chief complaints

A 66-year-old married Asian man, who was retired from the Livestock Bureau, presented with recurrent symptoms of gross hematuria and urinary retention.

History of present illness

The patient's medical history was significant for prostatic adenocarcinoma [stage T2a, Gleason score 3 + 4; total prostate-specific antigen (PSA): 16 ng/mL] with no familial history of prostate cancer. Bone and chest computed tomography (CT) scans were unremarkable. He had undergone an open radical prostatectomy 7 years ago. Pathological results confirmed an adenocarcinoma (Gleason score 3 + 4) involving 65% of the right side of the prostate volume. The surgical margins were negative for the tumor and there was no extracapsular extension. All lymph nodes from the bilateral obturator area were negative for metastasis. Because the patient's PSA level was 0.4 ng/mL at 2 wk after the surgery, he underwent one year of continuous ADT with goserelin and flutamide, which reduced the PSA level to 0.002 ng/mL at the end of treatment. Then the PSA level was monitored every 3 mo over 4 years, and each time the results were below 0.2 ng/mL. Unfortunately, the patient stopped returning for follow-up 2 year prior for unknown reasons.

History of past illness

Aside from the prostatic adenocarcinoma, the patient had an illness-free previous medical history.

Personal and family history

No familial history of cancer and other illness.

Physical examination

The patient had a large fixed rectal mass by digital rectal examination.

Laboratory examinations

PSA was 1.857 ng/mL.

Imaging examinations

Preoperative pelvic CT imaging demonstrated an approximately 15 cm × 9 cm × 8 cm-

large tumor mass with central necrosis distorting the bladder neck, which could only be recognized by a catheter balloon (Figure 1). Magnetic resonance imaging showed a large tumor mass occupying the majority of the pelvic cavity with no evidence of rectal metastasis (Figure 2). Both bone scans and chest X-rays were negative for metastases.

FINAL DIAGNOSIS

Transrectal biopsy showed a poorly differentiated carcinosarcoma. Surgical pathology demonstrated that the tumor tissue had extensive hemorrhage and central necrosis. The whole bladder wall was invaded at one site. Increased nucleoli and mitotic figures and adenoid structures were seen. Immunostaining confirmed the final pathology as prostatic carcinosarcoma with focal spindled cells and bizarre cells (Figure 3): Cytokeratin (partially positive), epithelial membrane antigen (-), vimentin (+), PSA (less than 30% positive), desmin (-), CD117 (-), S-100 (-), CD34 (-), and BCL-2 (-).

TREATMENT

The patient received total pelvic exenteration with ureterostomy for urinary diversion. Nevertheless, the patient subsequently underwent transverse colostomy for carcinosarcoma recurrence and bowel obstruction 3 mo later.

OUTCOME AND FOLLOW-UP

Five months after the diagnosis of prostatic sarcoma, the patient died of multiple organ metastases.

DISCUSSION

Prostatic carcinosarcoma is an exceedingly rare and aggressive malignant tumor that may develop many years after original presentation with prostatic adenocarcinoma. The average diagnosis age is about 66 years or more in all published cases[3,5,6]. McGee *et al*[3] found that in fewer than 100 patients, 58% had a previous history of prostatic adenocarcinoma. Most patients (61%) had a previous treatment history of radiation, ADT, or combination thereof. Only 3% of patients had a history of radical prostatectomy. Many theories or hypotheses have been developed regarding the origin of prostate carcinosarcoma, especially transformation of adenocarcinoma into sarcoma [4,7]. Although a variety of hypotheses have been presented regarding the biphasic nature of these tumors, carcinosarcomas seem to represent the best example of the epithelial-mesenchymal transition and dedifferentiation in human cancers, in which the two parts of the tumor are genomically related to one another[8]. As more than half of carcinosarcoma cases have been diagnosed after the diagnosis of adenocarcinoma, it is logical to think that sarcomatous components arise secondarily through metaplastic phenomena or transformation within the adenocarcinoma itself[7]. Prior reports in the literature have raised the possibility that treatments especially radiation or hormonal therapy may influence the subsequent development of sarcomatoid carcinomas[4,6]. Our patient had no history of radiation. However, ADT therapy alone may also lead to the development of a sarcomatous component. However, some investigators discount the role of ADT because of the majority of patients treated with ADT without developing these uncommon carcinosarcomas[2,5]. Thus, the reason for this exceedingly rare ADT mediated adenocarcinoma to carcinosarcoma transformation may lie in individual differences.

Patients with carcinosarcoma often have a normal or lower serum PSA level than that of those with adenocarcinoma. This malignant neoplasm may also contain multiple sarcomatoidentities[3,9]. The most commonly found was osteosarcoma (50%), followed by chondrosarcoma (33%) and leiomyosarcoma (17%). Cases of rhabdomyosarcoma, malignant fibrous histiocytoma, fibrosarcoma, spindle cell sarcoma, angiosarcoma, and undifferentiated sarcoma have also been reported[5,6,10]. As previously reported, the prognosis of prostatic carcinosarcoma is extremely poor, with a 20% risk of death 1 year after diagnosis. Radical surgery or pelvic exenteration seems



Figure 1 Preoperative pelvic computed tomography image demonstrating a 15 cm × 9 cm × 8 cm-large tumor mass with central necrosis distorting the bladder neck, which could only be recognized by a catheter balloon.

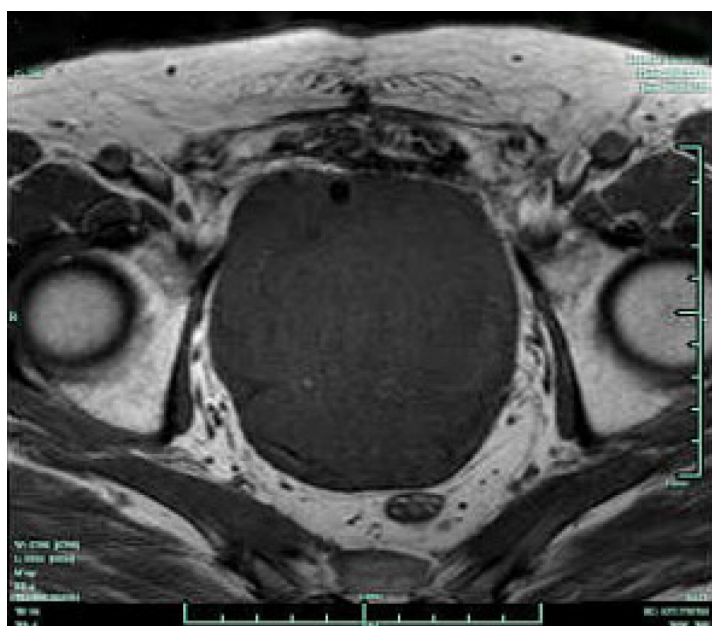


Figure 2 Preoperative pelvic magnetic resonance image showing a large tumor mass occupying the majority of the pelvic cavity with no evidence of rectal metastasis.

to be the best treatment for patients with prostatic carcinosarcoma. Many patients develop subsequent metastatic disease and a local bulky tumor burden[2,6,10].

CONCLUSION

Carcinosarcoma of the prostate is a very rare and highly aggressive tumor. ADT mediated transformation and dedifferentiation of the epithelial component may be the origin of this malignancy. Radical surgery is the most viable option for treatment. If the disease has spread beyond the prostatic tissue, the patient typically will not survive for more than 6 mo. The prognosis is dismal regardless of histological or clinical findings.

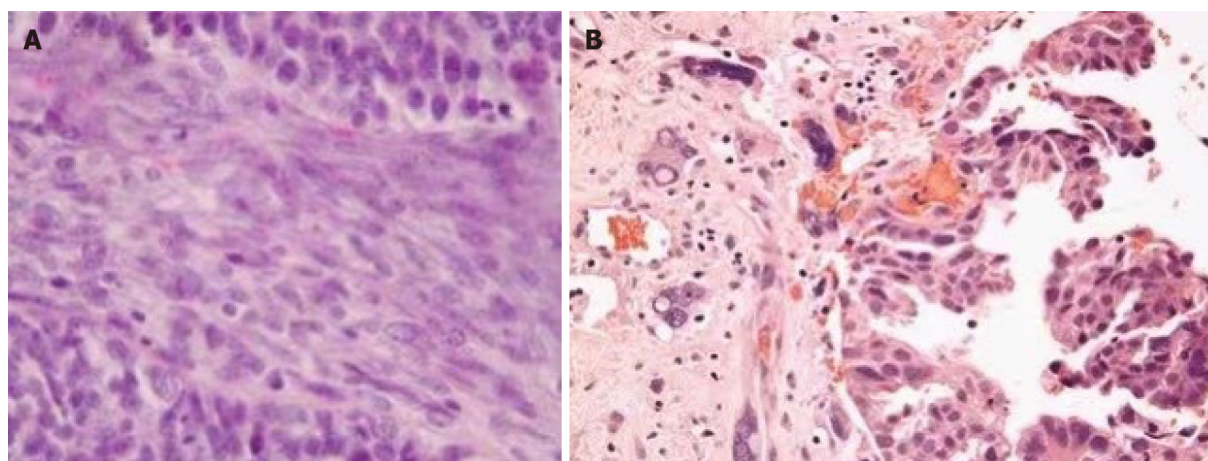


Figure 3 Hematoxylin–eosin staining. A: Image showing the pelvic tumor with sarcomatous-component spindled cells (original magnification, × 400); B: Image showing the pelvic tumor with sarcomatous-bizarre cells (original magnification, × 400).

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