Aggressive course in a patient with mucin-producing urothelial-type adenocarcinoma of the prostate: A case report and review of the literature

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ABSTRACT

Prostate cancer is one of the frequently seen types of cancers in men. The most frequent histological type of prostate cancer is the acinar adenocarcinoma. Mucin-producing urothelial-type adenocarcinoma of the prostate is a very rare subtype. The mucin-producing urothelial-type adenocarcinoma of the prostate has microscopic similarities with colon and bladder adenocarcinoma. It has a more aggressive clinical course and does not respond to androgen deprivation therapy. A 77-year -old male patient diagnosed with mucinous prostate cancer was presented in the current case report.

Keywords: Aggressive course; mucin producing; prostate adenocarcinoma.

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Introduction

The mucin-producing urothelial-type adenocarcinoma of the prostate is a very rare subtype, and is observed in 0.2-0.4% of prostate carcinomas.[1] The mucin-producing urothelial-type adenocarcinoma of the prostate has microscopic similarities with colon and bladder adenocarcinoma. In contrast with adenocarcinoma prostate specific antigen (PSA) is negative and interestingly it does not respond to androgen deprivation therapy (ADT). In this case report, a 77-year -old male patient referred with lower urinary system symptoms is diagnosed with mucin-producing urothelial-type adenocarcinoma.

Case presentation

A 77-year-old male patient referred to the urology department with severe lower urinary tract symptoms. He consulted to a urologist with a history of silodosin usage for benign prostate hypertrophy, and he was on treatment with amlodipine 5 mg for hypertension. International Prostate Symptom Score was 20. Creatinine was 0.8 mg/dL, and total PSA as 1.98 ng/mL, and the kidneys were assessed normally on urinary system ultrasonography.

In digital rectal examination, grade 2 enlarged prostate without abnormal findings (hardness, nodule, asymmetry, etc.) was detected. Transurethral resection of the prostate was performed due to inadequate response to medical treatment. Complication did not occur during peroperative or postoperative period. The patient was discharged on postoperative 2nd day. Written informed consent was obtained from patient who participated in this study.

Pathological examination

Adenocarcinoma was observed in broad areas in the pathologic examination. Prevalent mucin ponds were present in the lesion (Figure 1). The adenocarcinoma consisted of single-row glands in many areas and cribriform structures in a few areas. The classical acinar carcinoma morphology was monitored in a few areas of the lesion where neoplastic glands showed negative staining with PSA (Figure 2). However, positive

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staining was detected in the immunohistochemical staining with cytokeratin 20 (CK-20) (Figure 3), carcinoembryonic antigen (CEA), caudal type homeobox 2(CD-X2) (Figure 4), mucin-2 (MUC-2) and mucin-5 (MUC-5) (Figure 5, 6). With these findings, the tumor was evaluated as a mucin-producing urothelial-type adenocarcinoma of the prostate. The primary source was considered to be colon.

Colonoscopic evaluation and positron emission tomography (PET-CT) was performed, and no pathology was observed in the colon. Radiotherapy (7600cGy, 38 day) and hormonotherapy were started. PSA value was measured as 0.003 ng/mL at postoperative 3rd months. Due to hip pain complaints, bone scintigraphy was performed, and iliac bone metastasis was determined at postoperative 6th months. Zoledronic acid (4 mg IV) was started monthly. PET-CT was performed at postoperative 9th month. Prevalent bone metastasis, metastasis in the iliac lymph nodes, and suspicious nodules in the lungs were stated. Colonoscopic evaluation up to cecum was repeated and no pathology was observed. He received docetaxel containing prostate cancer regimen with androgen deprivation treatment. However, there was no response. The patient also deteriorated after a gemcitabine containing urinary bladder regimen. Thereafter, the patient responded to metastatic colon cancer treatment with chemotherapy plus panitumumab as both RAS& RAF were detected to be negative.

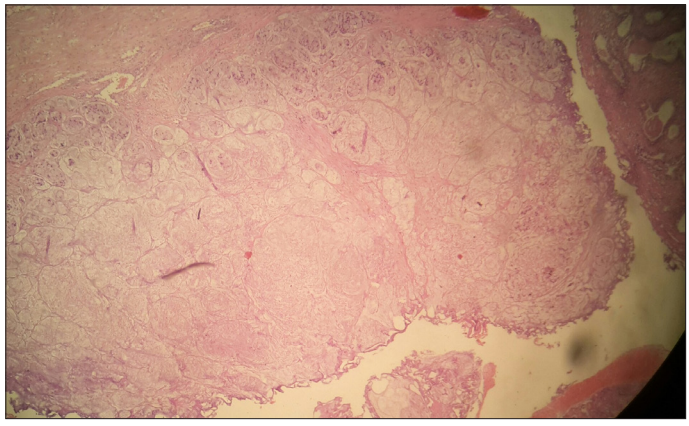

Figure 1. Atypical epithelial cells floating in extracellular mucin in prostate stroma (H&Ex100)

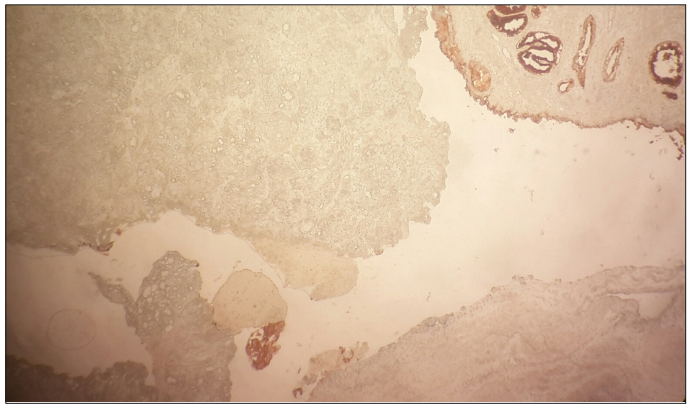

Figure 2. Negative immunohistochemical staining with PSA

Discussion

The present case is an extraordinary case in terms of both pathological, biochemical, and clinical findings. The mucin-producing urothelial-type adenocarcinoma of the prostate was first described by Tran and Epstein in 1996.[2] Acinar adenocarcinoma is the most frequently observed histological type of prostate

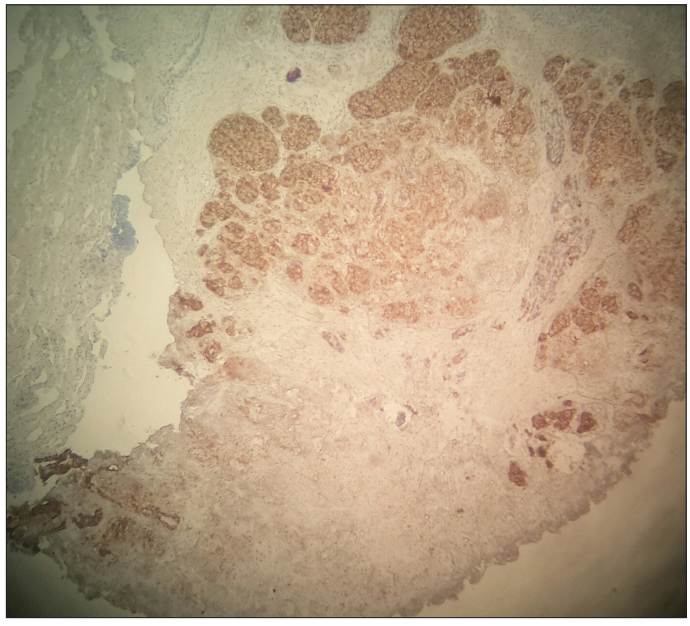

Figure 3. Positive immunohistochemical staining with CK20

Figure 4. Focal positive immunohistochemical staining with CDX2

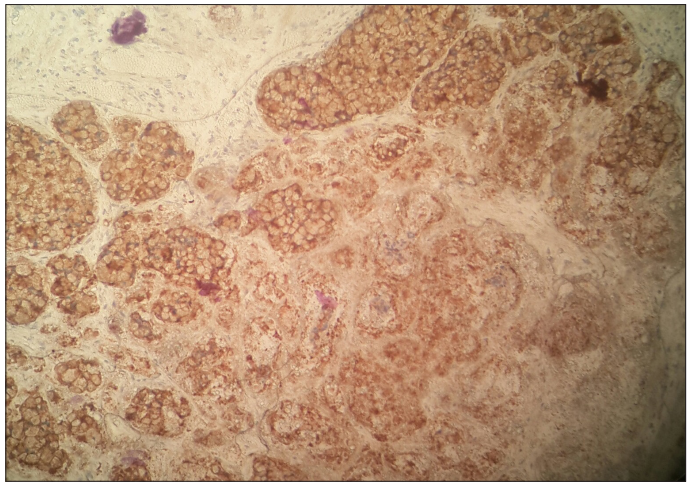

Figure 5. Diffuse positive immunohistochemical staining with MUC-2

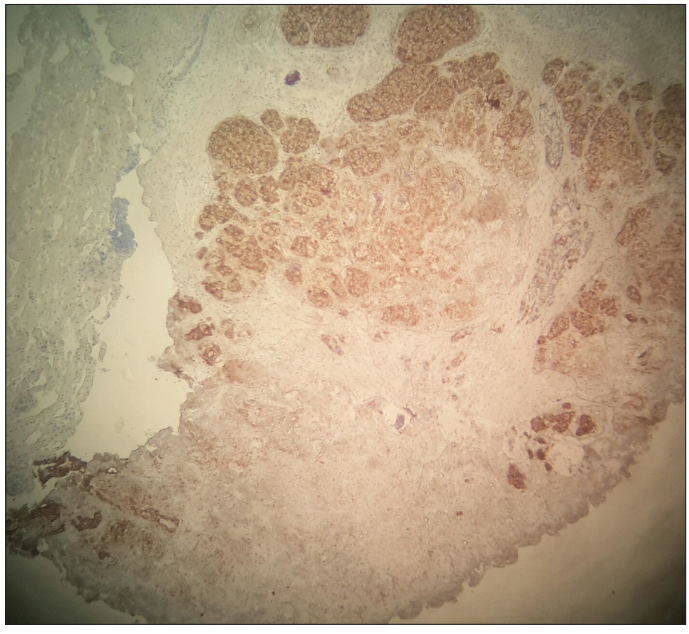

Figure 6. Focal positive immunohistochemical staining MUC-5

cancer, and the mucin-producing urothelial-type adenocarcinoma of the prostate is much rarer. Although in a few studies the patients have stated that mucin-producing urothelial-type adenocarcinoma of the prostate had worse prognosis than classical acinar prostatic adenocarcinoma, and had aggressive behavior; Tran and Epstein[2] showed in their studies, that it had similar prognosis with clinically high degree prostatic adenocarcinoma.

In the immunohistochemical examination of our case, the specimen was stained with carcinoembryonic antigen (CEA), but not with PSA. The specimen was stained with CDX2 for the separation from colon mucinous adenocarcinoma, and pathology was not detected in the colon. Signet-ring cell formation characterized with intracellular mucin formation was not observed in the tumor. Epstein reported that, prostatic acid phosphatase level could be high only in the serum, in advanced disease stages.[2] Normal PSA value (1.98 ng/mL) and prostatism findings were observed in the present case. Our case diagnosed with TUR was considered as a limited tumor in the prostate. Hormonotherapy and radiotherapy treatment were initiated due to advanced stage of the disease and cardiological problems.

The mucin-producing urothelial-type adenocarcinoma of the prostate is a rare type, and only 25 cases were reported in the literature.[2-10] The largest series were published by Osunkoya and Epstein with 15 patients in 2007.[3] The most specific finding was mucusuria in patients referred with urinary obstruction (in 20% of the patients). PSA levels were calculated as normal in this study (0.2-1.3 ng/mL). Ortiz-Rey et al.[4] and Adley et al.[5] have stated that the PSA values were high in their cases (11.8 ng/mL and 10.0 ng/mL). Histologically, this tumor was separated from non-urachal adenocarcinoma originating from the bladder and from acinar adenocarcinoma originating from the prostate, with broad mucin ponds and high amount of mucin production from the atypical columnar epithelium. In contrast, Adley et al.[5] showed that there was no extracellular or intracellular mucin production in their cases. As the urothelial-type adenocarcinoma of prostate was different from widely observed acinar adenocarcinoma, normal Gleason scoring was not performed on those cases. Immunohistochemically it gives positive reaction with CK7, CK20, HMWK, CEA and a slight staining with of human chorionic gonadotrophin and negative reaction with PSA, prostatic acid phosphatase (PSAP), AMACR, thrombomodulin, α fetoprotein, CDX-2 and β-catenin.[3-7] However, CDX-2 was detected as positive by Adley et al.[5], Chen et al.[8] and in the present case. The mucin-producing urothelial-type adenocarcinoma of the prostate originated from prostatic urethra.

Different courses can be observed regarding the behavior and progression of this tumor in various studies. Radical prostatectomy was performed on the first of the cases, initially reported by Tran and Epstein[2], and relapse was observed. Basic prostatectomy was performed on the second case and local recurrence developed at the postoperative 4th year. Many metastases were occurred in the liver, bone and lungs 4 months after prostatectomy in the cases of Adley et al.[5] Radical prostatectomy operation was performed in 8 patients of the 15-case series of Osunkoya and Epstein.[3] Seminal vesicle invasion was noted as positive in 4 of these and surgical margin was detected as positive in 4 patients. Distant metastasis developed in the follow-ups of 4 of these patients. Only TUR-P operation was performed on 7 patients. Four of these were lost due to the disease, despite no metastasis. A total of 8 patients died due to the disease and the average life expectancy was determined as 49.2 months.[3]

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As a result, the mucin-producing urothelial-type adenocarcinoma of the prostate is a rare tumor. We consider that pathologists have varying opinions in the pathogenesis of this tumor, which is not encountered frequently, as they are usually unfamiliar with it. The most important point is to make the differential diagnosis of this tumor from the mucinous acinar adenocarcinoma and the metastatic adenocarcinoma of the bladder and colon. Because different clinical situations are observed, it has aggressive course and does not respond to hormonotherapy, the clinician should be aware of the fact. Metastatic colon cancer chemotherapy is the mainstay of treatment.

Informed Consent: Written informed consent was obtained from patient who participated in this study.

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