Prostatic Ductal Adenocarcinoma

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Prostatic ductal adenocarcinoma is a rare neoplasm that develops from the prostatic urethra. We present an 85-year-old man with an exophytic lesion in the prostatic cavity, which was diagnosed after transurethral resection of the prostate. Histopathologically, the tumor was diagnosed as a ductal adenocarcinoma with endometrioid features and a Gleason score of 6. (Korean J Urol 2009;50:404-407)

Key Words: Adenocarcinoma, Prostate

Prostatic ductal adenocarcinoma was first described in 1967 by Melicow and Pachtet,1 who reported on a malignancy different from the usual prostate cancer. Prostatic ductal adenocarcinoma is one of the many exophytic lesions that may present in the prostatic urethra of elderly men, which include benign and malignant lesions of the prostate gland of urothelial or other origins.2

Here we report on a patient who presented with gross hematuria and had a prostatic ductal adenocarcinoma.

CASE REPORT

An 85-year-old male with painful gross hematuria for 1 week came to the outpatient clinic of our institution. His medical and family history revealed no remarkable findings. A physical examination including a digital rectal examination (DRE) revealed an enlarged prostate gland and not palpable as firm, indurated nodules. An International Prostate Symptom Score of 10 and a serum prostate-specific antigen (PSA) level of 2.54

![Fig. 1](image1.png)  
Fig. 1. (A) Low-power view of the exophytic mass from the prostatic urethra showing a papillary architectural pattern (H&E, x40). (B) High-power view showing papilla lined by tall columnar cells with hyperchromatic nuclei and prominent nucleoli (H&E, x400).
ng/ml were determined, and a transrectal ultrasonography (TRUS) of the prostate gland showed a volume of 35 cc with a nonspecific hypoechoic lesion in the peripheral zone. A simple chest PA showed no specific findings. Because the patient had severe gross hematuria when he visited the clinic, cystoscopy was performed, which showed a prostatic urethral polypoid mass. A computed tomography (CT) scan was subsequently performed to rule out other kidney and ureter carcinomas. The CT scan showed no definite evidence of an obstructive lesion or mass-like lesion along the urinary tract. Cystourethrosocopy revealed a wide prostatic cavity filled with an exophytic papillary tumor proximal to the verumontanum; the tumor size was about 0.8 cm in length. The cytology results including cytopsin showed only a few degenerated atypical urothelial cells. The patient underwent a transurethral resection of the tumor, which was diagnosed as a ductal adenocarcinoma with endometrioid features with a Gleason score of 6 (Fig. 1). Immunohistochemistry for PSA was focally positive (Fig. 2). Magnetic resonance imaging (MRI) of the prostate (Fig. 3) and a radionucleotide bone scan were conducted to evaluate the stage of prostate cancer. T2-weighted images of the prostate revealed a lesion with diffuse, low signal intensity at both peripheral zones and extracapsular extension at the right peripheral zone. The radionucleotide bone scan showed no definite evidence of bony metastasis. The patient was diagnosed as having a stage T3aN0M0 prostatic ductal adenocarcinoma, and combined androgen blockade (CAB) was started 5 days postoperatively with bicalutamide (antiandrogen) and goserelin acetate (LHRH analogue). At 11 months postoperatively, the patient’s serum PSA level was 0.01 ng/ml and he was voiding normally without hematuria. If the serum PSA level remains steady, we will continue CAB treatment.

**DISCUSSION**

Kim et al described the first case report in Korea of a 78-year-old man with lower urinary tract symptoms (LUTS) who was found to have prostatic ductal adenocarcinoma. Generally in the case of essential hematuria, an intravenous urogram (IVU) is performed. If the result of this test is normal, cystoscopy is performed; if the result of the IVU is abnormal, a CT scan, kidney and bladder sonogram, retrograde pyelogram, or cytology testing is performed depending on the situation. In the present case, cystourethrosocopy showed a pinkish papillary tumor in the posterior wall of the prostatic urethra above the verumontanum. The patient underwent a transurethral resection of the tumor, which was diagnosed as a ductal adenocarcinoma with endometrioid features with a Gleason score of 6 (Fig. 1). Immunohistochemistry for PSA was focally positive (Fig. 2). Magnetic resonance imaging (MRI) of the prostate (Fig. 3) and a radionucleotide bone scan were conducted to evaluate the stage of prostate cancer. T2-weighted images of the prostate revealed a lesion with diffuse, low signal intensity at both peripheral zones and extracapsular extension at the right peripheral zone. The radionucleotide bone scan showed no definite evidence of bony metastasis. The patient was diagnosed as having a stage T3aN0M0 prostatic ductal adenocarcinoma, and combined androgen blockade (CAB) was started 5 days postoperatively with bicalutamide (antiandrogen) and goserelin acetate (LHRH analogue). At 11 months postoperatively, the patient’s serum PSA level was 0.01 ng/ml and he was voiding normally without hematuria. If the serum PSA level remains steady, we will continue CAB treatment.

**Fig. 2.** In the immunohistochemical examination, these cells showed focal prostate-specific antigen (PSA) positive immunoreactivity with anti-PSA antibody (x200).

**Fig. 3.** (A) T2-weighted axial magnetic resonance imaging (MRI) of the prostate using an endorectal coil showing the extracapsular extension at the right peripheral zone (arrow). (B) T2-weighted coronal MRI of the prostate showing diffuse, low signal intensity at both peripheral zones (arrows).
of the tumor and prostatic ductal adenocarcinoma was diagnosed by pathology. Ductal adenocarcinomas of the prostate are often clinically underestimated because the results of rectal examinations and serum PSA levels are normal. We treated the patient consistent with benign prostate enlargement found during the DRE and no serum PSA elevation.

Ductal adenocarcinomas are generally diagnosed in elderly men who present with hematuria or obstructive symptoms. Cystourethroscopically, ductal adenocarcinomas have a characteristic villous or papillary appearance when they occur in the region of the verumontanum. Bock and Bostwick reported that the only specific feature of a ductal adenocarcinoma is its distinctive site of growth. Our cystourethscopic findings showed an exophytic papillary tumor proximal to the verumontanum. Dube et al described the locations of primary and secondary prostate duct carcinomas. Neoplasms of the primary ducts are situated predominantly in a periurethral location, and those of the secondary ducts are situated more centrally than the common prostate carcinomas.

Prostate carcinomas may develop from the columnar epithelial cells lining the prostatic acini (accounting for about 95% of all cancers of the prostate) or from the epithelial cells lining the primary and secondary ducts of the prostate (between 1% and 5% of all cases). The histopathological findings of prostatic ducts in patients with adenocarcinoma include the following. The primary prostatic ducts in patients with adenocarcinoma are noted within the large central periurethral prostatic duct spaces and are lined by a distinct basement membrane. In some specimens, invasion of the periductal stroma, prostatic tissue, and secondary prostatic ducts have been noted. The secondary prostatic ducts in patients with adenocarcinoma have been reported to have multicentric involvement and are characterized by areas where the growth is confined within the intermediate and small ducts. Small papillary projections are common and many of the lumina are filled with eosinophilic debris that appears comedo-like. Invasion of prostatic tissue is noted in every specimen. Immuno-histochemistry of PSA and prostatic acid phosphatase can be very helpful in differentiating the prostatic origin of tumors in the prostatic and penile urethra. In the present case, we found that the immunohistochemistry for PSA was focally positive.

The differential diagnosis, by endoscopic examination of this exophytic lesion with a proximal position in the prostatic urethra, included the following: transitional cell carcinoma, adenomatous polyps, adenomatoid tumors, prostatic endometriosis, post-surgical pseudosarcomatous nodules, and urethral mucosal folds. A detailed endoscopic description of the site, shape, and associated lesions in the bladder or urethra as well as careful microscopic examination to identify the type of epithelium (whether glandular prostatic or transitional epithelium of benign or malignant nature) and the use of immunohistochemical staining with prostatic markers can aid in diagnosis.

Prostatic ductal adenocarcinomas respond to hormonal treatment. Responsiveness to hormonal treatment is generally better if the tumor develops from the primary ducts compared with the secondary ducts. Therefore, the behavior and the management of ductal and acinar adenocarcinomas are similar. The treatment of choice for patients with any type of carcinoma of the prostatic ducts, with an early diagnosis, is radical prostatectomy followed by radiation. Orihuela and Green suggest that contemporary management of localized ductal prostate cancer with radiotherapy and CAB yields adequate disease-free survival, and patients with metastatic ductal prostate cancer appear to respond well to CAB. In the present case, CAB was started 5 days postoperatively and the serum PSA level was stabilized to 0.01 ng/ml 11 months post-operatively. The basic rule of localized prostatic ductal carcinoma is combination therapy, but because of the patient’s immobility and the cost of this therapy, CAB treatment was solely performed.

Patient prognosis depends on the following. First, in the clinical stage, it is as defined by the DRE, PSA level, TRUS of the prostate, general condition of the patient, and presence or absence of metastasis at the time of the initial diagnosis. Second, in location, carcinomas originating in the peripheral secondary ducts behave in a more malignant fashion than do carcinomas in the central primary ducts. Third, in associated prostatic lesions, a pure ductal carcinoma eventually developing into a villous polyp associated with prostatic hyperplasia appears to have a better prognosis than when associated with acinar adenocarcinoma.

REFERENCES