CASE REPORTS

METASTATIC DUCTAL ADENOCARCINOMA OF THE PROSTATE: REPORT of a CASE WITH FINE NEEDLE ASPIRATION BIOPSY FINDINGS and HISTOLOGIC CORRELATION

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ABSTRACT
Prostatic ductal adenocarcinoma is a rare neoplasm that arises from the prostatic urethra and large periurethral prostatic ducts 1. It accounts for 0.2%-0.8% of prostatic adenocarcinomas and less than 100 cases were reported 1,2. Even though the existence of this lesion as a separate entity from typical prostatic acinar adenocarcinoma has been debated 3, its histopathologic features are unique. Only three cases exist in the literature with cytopathologic features 4,6. In this case report, we aim to present the cytologic and histologic features of a metastatic prostatic ductal adenocarcinoma with a special emphasis on its cytopathologic features.

Keywords: Prostate, Fine needle aspiration, Pulmonary metastasis, Ductal adenocarcinoma

INTRODUCTION
Prostatic ductal adenocarcinoma is a rare neoplasm that arises from the prostatic urethra and large periurethral prostatic ducts 1. It accounts for 0.2%-0.8% of prostatic adenocarcinomas and less than 100 cases were reported 1,2. Even though the existence of this lesion as a separate entity from typical prostatic acinar adenocarcinoma has been debated 3, its histopathologic features are unique. Only three cases exist in the literature with cytopathologic features 4,6. In this case report, we aim to present the cytologic and histologic features of a metastatic prostatic ductal adenocarcinoma with a special emphasis on its cytopathologic features.
CASE REPORT

A seventy four-year-old man was admitted to the hospital with obstructive symptoms of the lower urinary tract. The serum prostate specific antigen (PSA) level was 5.2 ng/mL (normal level: 0-4 ng/mL). It was detected that there was a neoplastic lesion within the prostate gland and it filled the urethra. A transurethral resection (TUR) was done and a neoplastic lesion in the periurethral region of the prostate gland was resected. In the microscopic examination of the TUR material of the tumor, among the areas of classical prostatic acinar adenocarcinoma, we observed an adenocarcinoma composed of tumor cell groups displaying solid and cribriform growth pattern with necrosis of comedo type (Figs. 1a,b,c). Peripheral palisading were noted in some groups (Figs. 1b,c).

The cells generally were small and uniform with hyperchromatic round to oval nuclei and scant cytoplasm. Pleomorphic cells and a few mitotic figures (3/10 HPF) were also observed. In the immunohistochemical examination, these cells showed focal PSA and PAP immunoreactivity (Fig. 1d) whereas the areas of classical acinar adenocarcinoma were diffusely immunopositive. Cytokeratin 7, cytokeratin 20 and neuroendocrine markers (neuron specific enolase, chromogranin, synaptophysin) were found to be negative in these cells. Accordingly, the lesion was diagnosed as prostatic ductal adenocarcinoma coexistent with classical acinar carcinoma (Gleason pattern 3, pattern score 3+3=6).

Four months later, a penile periurethral mass was resected and a neoplastic lesion of the same histologic appearence with the prostatic ductal adenocarcinoma areas in the TUR material were detected in the microscopic examination.

Six months after the TUR was performed, the patient was admitted to the hospital with multiple masses in the lungs and a transthoracic fine needle aspiration (FNA) biopsy was performed.
In the cytopathological examination of the aspirate it was detected that these pulmonary lesions were neoplastic. In the alcohol-fixed, Papanicolaou stained slides prepared from the aspirate, groups of small cells having hyperchromatic round to oval nuclei with clumped chromatin, small inconspicuous nucleoli and scant cytoplasm were observed on a necrotic background (Figs. 2a-d). These cells formed three dimensional groups displaying peripheral palisading cells (Fig. 2c). A few spindle cells (Fig. 2d), pleomorphic cells and mitotic figures were also observed. Positive immunocytochemical staining with PSA confirmed the prostatic origin.

After primary pulmonary adenocarcinoma, small cell carcinoma and metastatic prostatic acinar adenocarcinoma were considered in the differential diagnosis, the pulmonary lesions were diagnosed as metastatic prostatic ductal adenocarcinoma.

DISCUSSION

The first description of prostatic ductal adenocarcinoma as a distinct pathologic entity dates back to 1967 and Melicow and Pachter who called it “endometrioid carcinoma” 7. Morphologically, it is characterized by tall columnar pseudostratified cells forming complex papillary and cribriform structures. Two architectural patterns designated as type A and type B have been described 2: type A, the papillary pattern in which tumor shows papillary and tubulopapillary growth, and type B in which tumor appears solid and cribriform with or without comedonecrosis 1,2,8. The tumor in the present case is a good example of type B pattern with its cribriform structures and comedo necrosis in the large tumor cell groups. Typical prostatic acinar adenocarcinoma usually coexists with this lesion 1,8 as in the present case. Copland et al. reported that prostatic ductal adenocarcinoma was the second most common type of prostatic adenocarcinoma in their series of
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prostatic adenocarcinoma with lung metastasis, although this tumor accounts for less than 1% among all prostatic adenocarcinomas. The observation that this tumor overrepresented metastatically indicates its more aggressive nature than that of classical prostatic adenocarcinoma. Urothelial cell carcinoma is one of the lesions which should be considered in the differential diagnosis of such tumors. Urothelial cell carcinoma involving prostatic ducts and acini can mimic prostatic ductal adenocarcinoma because it can present as a neoplasm with a large ductal pattern. In the present case, the cribriform structures, necrosis, negative cytokeratin 7 and cytokeratin 20 immunohistochemistry results and positive immunoreactivity for PSA in the neoplastic cell groups were not consistent with urothelial cell carcinoma. Colonic adenocarcinoma was also considered in the differential diagnosis because of the presence of cribriform structures and peripheral palisading within the tumor. Cytokeratin 20 immunonegativity was not consistent with colonic adenocarcinoma and positive immunohistochemical staining with PSA confirmed the prostatic origin.

Prostatic adenocarcinoma of the classical type was also taken into consideration in the differential diagnosis because of the results of immunohistochemical studies, but the histomorphological features of the tumor were not consistent with classical prostatic adenocarcinoma. In the differential diagnosis of the pulmonary lesions, pulmonary adenocarcinoma, small cell carcinoma and metastasis of classical prostatic adenocarcinoma have been taken into consideration. As we confirmed the prostatic origin of these cells by positive PSA immunocytochemistry, the differential diagnosis of only acinar type prostatic adenocarcinoma will be discussed here with cytomorphological features.

The patient had a coexistent typical prostatic acinar adenocarcinoma (Gleason pattern 3, pattern score 3+3=6) apart from the ductal adenocarcinoma. In the cytologic examination of the transthoracic FNA material, three dimensional cell groups with peripheral palisading and cribriform structures were observed, instead of acinar and/or rosette-like structures which are typical cytologic features of classical acinar prostatic adenocarcinoma. Necrosis which was a major finding in the cytologic examination of the aspirate is generally a feature of high grade prostatic tumors. However, the presence of large nucleoli and pleomorphism which we did not observe in the present case was the two striking features of poorly differentiated acinar type prostatic adenocarcinoma. Apart from that, necrosis was not a feature of acinar adenocarcinoma which had the pattern score of 3+3=6, but it was of ductal adenocarcinoma. As a result, the cytologic features were not consistent with classical acinar adenocarcinoma of the prostate.

The cytologic features of prostatic ductal adenocarcinoma have been described in only three cases previously. They were ductal adenocarcinoma cases of type A tumors with papillary growth pattern. The authors described papillary groups composed of cells with hyperchromatic nuclei and prominent nucleoli. Masood et al also described cells with grooved nuclei which constituted the 10% of the tumor cells in the aspirate. We did not observe any tumor cells having this feature. Our case is the first type B, cribriform type prostatic ductal adenocarcinoma described with its cytological features in FNA.

Even though it has been debated whether this lesion is a separate entity from classical prostatic adenocarcinoma, like its histopathological features, its cytopathological features are distinct and should be described because of this neoplasm’s more aggressive behavior than the classical prostatic adenocarcinoma.

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