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# Analysis of Urinary Cytology Findings in Patients with Prostatic Adenocarcinoma

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Prostatic adenocarcinoma can be detected rarely in urinary cytology specimens. In many of these instances, the patients have a known history of prostatic adenocarcinoma, usually of a high grade, which extends to the bladder mucosa and sheds tumor cells in the urine. A computer search of the archives of our hospital identified all urine cytology obtained from a total forty patients diagnosed as adenocarcinoma of prostate during the period of January 2001 through February 2007. Number of urine cytology from each patient was one to nine samples before or at the time of biopsy diagnosis. The surgical diagnoses confirmed on a transrectal needle biopsy of prostate, cystectomy, and transurethral resection. Most of the urine cytology results was normal (21 cases) or reactive change (12 cases). Only seven cases were diagnosed as more than 'atypical cells, suspicious for carcinoma'. Among them, three cases of prostatic adenocarcinoma radiologically showing direct invasion to the urinary bladder and 1 case of prostate adenocarcinoma with inconspicuous invasion to the urinary bladder were identified. Two cases were prostatic adenocarcinoma coexisting with transitional cell carcinoma and revealed transitional cell carcinoma (TCC) but not definite features of adenocarcinoma on urinary cytology. One case was adenocarcinoma arising in rectal adenocarcinoma extending to the bladder. The cytological features of prostatic adenocarcinoma were compared with those of two cases of adnocarcinoma coexisting with TCC and one case of advanced rectal adenocarcinoma in voided urine. The urine cytology of prostatic adenocarcinoma revealed a few small cell clusters or single dispersed atypical cells. The atypical cells were round or oval with finely granular or vacuolated cytoplasm and well defined cell border. The nuclei were round, usually eccentric, with finely distributed chromatin pattern and a small nucleolus. Cellular pleomorphism was minimal. One case from prostatic adenocarcinoma was a few atypical cells in inflammatory background. Definite prostatic adenocarcinoma component was not noted due to dry artifact of tumor cells and reactive inflammatory cells. Immunohistochemical staining for prostate-specific antigen (PSA) was available in one case which demonstrated positivity especially in the cytoplasmic membrane. The cytological findings of the two cases with TCC coexisting with prostatic adenocarcinoma showed more tight clusters and pleomorphic nuclei than that of prostatic adenocarcinoma. The tumor cells showed scanty dense cytoplasm with irregular, delicate cell borders. The nuclei were oval or irregular hyperchromatic with coarse condensed chromatin, suggesting of transitional cell carcinoma, but a few suspicious clusters of adenocarcinomatous cells were

admixed. The cytologic findings of one adenocarcinoma arising in rectum showed vacuolated cytoplasm of tumor cells with irregular hyperchromatic nuclei and some necrotic cells in necrotic background. The tumor cells occasionally revealed conspicuous nucleoli.

Urinary cytology appears to have no significant role in the diagnosis of prostate adenocarcinoma than transitional cell carcinoma. Although prostatic adenocarcinoma rarely involves the urinary bladder or prostatic urethra, advanced adenocarcinoma may involve the bladder neck, prostatic urethra, or both and shed neoplastic cells in the urine.

In summary, definite criteria of prostatic adenocarcinoma is limited for the present time. But, in review of our cases, the most useful cytological features indicating prostatic adenocarcinoma were oval or round relatively uniform neoplastic cell with smooth borders; finely and evenly distributed chromatin; and a lack of significant pleomorphism. Differential cytomorphologic characteristics of urine are useful, but not definitive for the diagnosis of prostatic adenocarcinoma, if ancillary immunohistochemical staining for PSA is not available. Although the diagnostic incidence of prostatic adenocarcinoma in voided urine is low, correlation with clinical and radiologic findings, a high index of suspicion, and immunohistochemical studies are important for making an accurate diagnosis.