



Case Report

Presence of Mucinous Metaplasia in a Primary Transitional Cell Carcinoma Prostate Study

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ABSTRACT

Metaplasia is a reversible change in which one adult cell type (epithelial or mesenchymal) is replaced by another adult cell type. Mucous gland metaplasia, which is found in approximately 1% of prostates, consists of tall mucin-filled goblet cells with tiny, dark, basal nuclei. The prostate gland normally secretes neutral mucosubstances that can be detected within the lumina of acini and ducts.

In the current study, we found mucous gland metaplasia in a case of primary transitional cell carcinoma of prostate which is a rare occurrence in combination.

Key Words: Mucous gland metaplasia, neutral mucosubstances, transitional cell carcinoma of prostate.

INTRODUCTION

Prostatic adenocarcinoma is the most common malignancy and the second leading cause of cancer-related deaths in men in the United States.^[1] Several factors, including age, race, family history, hormone levels, and environmental influences are suspected to play a role in pathogenesis.

Because of location of prostate gland at bladder neck, enlargement of the gland leads to problems related to urinary obstruction.^[2] Incidence of prostatic diseases, benign prostatic hyperplasia, and carcinoma increases with age.

Microscopically, most prostatic carcinomas are adenocarcinomas. Primary urothelial (transitional cell) carcinoma of the

prostate comprises less than 2% of all prostatic carcinomas. The existence of this tumor type is explained by the fact that the outer portion of the prostatic (periurethral) ducts emptying into the urethra is lined by urothelium.^[2]

Different types of metaplasia found in prostate are squamous cell, transitional cell and less frequently mucinous metaplasia. Mucous gland metaplasia is found in approximately 1% of prostates.^[3]

CASE REPORT

A 62-year-old man presented with frequency, dysuria, difficulty in voiding and microscopic hematuria in January 2011. Digital rectal examination revealed a hard

nodule in the right lobe of the prostate that, clinically, appeared to be prostate cancer with extracapsular spread. His serum PSA was 28.1ng/ml.

A transrectal ultrasound-guided biopsy of the prostate was performed which after microscopic examination revealed transitional cell carcinoma. Cystoscopy revealed normal bladder and urethral mucosa. Microscopy also revealed foci of mucous gland metaplasia.

MATERIAL AND METHODS

Brief clinical data were noted from the case records, which included age, chief complaints, duration of complaints, digital rectal examination finding, serum PSA level, type of surgical procedure and clinical diagnosis.

After receiving the specimen, detailed macroscopic examination was done. The received specimens were fixed in 10% formalin. Approximately 5-6 grams of tissue was processed in one cassette and embedded. The sections were cut at 3-5 micron thickness and subsequently stained

by haematoxylin and eosin stain. Special stains like Periodic acid Schiff (PAS) was performed.

Serum PSA of the patient was measured by chemiluminescence immunoassay (CLIA) method using Lumax - CLIA strip reader (by Monobid Inc.).

Kit used was Acculite CLIA VAST enabled kit containing individual tracer component and calibrator sets.

RESULTS

The transurethral resection of prostate from the case consisted of 20 g of tissue fragments. Microscopic examination revealed transitional cell carcinoma, with an infiltrating tumor composed of papillary and solid pattern of anaplastic transitional cells. The cells were polygonal and had minimal amount of vacuolated cytoplasm. Nuclei were large, hyperchromatic with clumped chromatin pattern. Mitotic activity was minimal. Areas of necrosis were not seen. Papillary structures showed significant multilayering of cells (Figure 1 and 2).

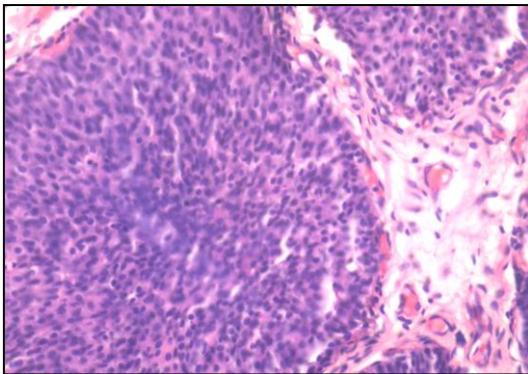


Figure 1. Primary transitional cell carcinoma of prostate. (H & E, 100 X).

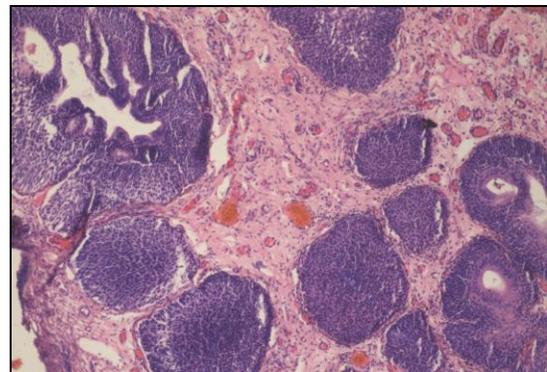


Figure 2. Primary transitional cell carcinoma of prostate. (H&E,400X).

Sections also showed mucous gland metaplasia, which consisted of tall mucin-filled goblet cells with tiny, dark, basal nuclei (Figure 3).

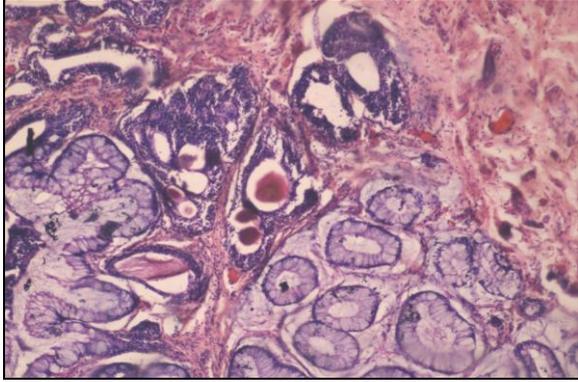


Figure 3. Intestinal metaplasia in a case of primary transitional cell carcinoma of prostate. (H & E, 100X).

DISCUSSION

Metaplasia is a reversible change in which one adult cell type (epithelial or mesenchymal) is replaced by another adult cell type. This type of cellular adaptation, cells sensitive to a particular stress is replaced by other cell types better able to withstand the adverse environment. Metaplasia is thought to arise by genetic "reprogramming" of stem cells rather than transdifferentiation of already differentiated cells.^[1]

The prostate gland normally secretes neutral mucosubstances that can be detected within the lumina of acini and ducts; adenocarcinomas often produce both acidic and neutral mucins, a feature that has been suggested to be of some diagnostic use. The presence of mucin-filled cells is not, however, a feature of the normal prostate.^[4]

Since metaplastic change is a microscopic finding associated with BPH, the gross feature will be that of BPH. On microscopic appearance, the normal ductal and glandular epithelial cells of the prostate are transformed to mucin secreting cells.^[5] The cells were characterized by plump cytoplasmic mucin and tiny nuclei that were basally oriented. The lesion was located randomly within the glands and was very small. The cytoplasmic mucin was periodic-acid Schiff positive and

immunohistochemically negative for prostate-specific antigen.

Prostate cancer is the most common form of cancer among men in the United States and is second only to lung cancer as a leading cause of cancer-related deaths in men.^[6] Microscopically, most prostatic carcinomas are adenocarcinomas, primary transitional cell variant comprises less than 2% of all prostatic carcinomas. The microscopic appearance of this neoplasm is identical to that of the homonymous bladder tumor.^[2] The existence of primary urothelial (transitional cell) carcinoma is explained by the fact that the outer portion of the prostatic (periurethral) ducts emptying into the urethra is lined by urothelium.^[7]

Ende and associates described 7 cases of primary transitional cell carcinoma, hypothesizing that the site of origin was the distal periurethral ducts within the prostate.^[8]

CONCLUSION

Metaplasia of the prostate are often associated with BPH. Clinical findings on DRE and TRUS resemble those found in benign lesions of the prostate, such as BPH.^[5] The importance of recognizing mucous metaplasia lies in its differentiation from other lesions, especially from low-grade carcinoma.^[9]

So the occurrence of mucous gland metaplasia in a case of primary transitional cell carcinoma of prostate is a rare combination.

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