Co-existence of mucin-producing urothelial-type adenocarcinoma of the prostate and inverted papilloma of the bladder

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Introduction

Adenocarcinoma of prostate with mucinous differentiation arising in the male urethra is extremely rare. To our knowledge, only 21 cases were reported in the previous literature [1–5]. Here we report a case of unsuspected urothelial-type adenocarcinoma of the prostate in a patient with inverted papilloma of the bladder. The initial cystoscopy in another hospital showed bladder tumour and benign prostate hyperplasia (BPH). After TUR-Bt and TURP, the histological result showed mucinous prostate carcinoma and bladder inverted papilloma. We report the clinical features and immunohistochemistry of this case.

Case report

A 57-year-old man presented with mucusuria and dysuresia relieved by ejaculation was hospitalized in May 2011. Ultrasonography and cystoscopy in another hospital showed co-existence of a bladder tumour about 0.7 cm in the bladder neck without biopsy and BPH. Digital rectal examination showed no nodule in the prostate. His serum PSA was 0.7 ng/ml. He received TUR-Bt and TURP. The histological result showed that inverted papilloma of bladder and mucinous adenocarcinoma of the prostate. In order to exclude the secondary mucinous adenocarcinoma of the prostate, a complete endoscopic examination was performed, and bone scan showed no metastatic tumour. Immunohistology was negative for PSA, PSAP and P63, but positive for CK7, CK20, α-methylacyl-coenzyme A racemase (AMACR, PS04S) and high-molecular-weight-cytokeratin (HMWCK, clone 34βE12). This patient received radical prostatectomy and has survived until now. We found that the prostatic urethra was full of white flocc material and a bladder tumour of 0.7 cm positioned at 5 o’clock of the bladder neck through the resectoscope, and a significant amount of tremelloid material coming from the prostate into the prostatic urethra during the procedure of TURP. A hematoxylin and eosin (H&E) stained section showed that the bladder neoplasia was inverted papilloma (Fig. 1) and mucinous adenocarcinoma in the prostate specimen. In the prostate specimen, the tumor cell were tall and columnar and with heteromorphism nucleoli. The specimens showed the adenocarcinoma with cribriform, nidulant architecture in the lakes of extracellular mucin (Fig. 2–7). The study was approved by the Medical Ethics Committee for human studies of Shandong University of Medical Sciences.
Discussion

The incidence of unsuspected prostate cancer in bladder neoplasia patients in Asia was reported to be 4% [6] [6], and the incidence in western countries was from 27% to 46% [7–12]. The primary adenocarcinoma arising in the male urethra involving the prostate is extremely rare, with only 21 cases reported in the previous literature, and there is no paper report about unsuspected urothelial-type adenocarcinoma of the prostate in a patient with inverted papilloma of the bladder.
P504S; plays a role in the β-oxidation of branched-chain α-methylacyl-coenzyme A racemase (AMACR), known as was expressed in 92% of urothelial carcinoma cases [19].

...cell marker in the diagnosis of prostate cancer [22, 23], and papillary-type carcinoma [18]. P63, which was studied as a basal marker of prostate cancer only based on H&E cytology, especially using prostate needle biopsies and/or TURP specimens [2]. Immunohistochemistry is crucial to establish a precise diagnosis [3, 15]. CK7, CK20, and HMWCK (clone βE12) have been utilized as potential urothelial markers [16–18]. CK7 is typically positive in carcinoma [15, 19, 20] and negative in colonic carcinoma [21], but CK20 and HMWCK (clone 34βE12) are less specific and sensitive than CK7 in urothelial-type adenocarcinoma of the prostate. The primary prostatic adenocarcinoma could not be distinguished from secondary colonic adenocarcinoma because of its striking morphological resemblance and overlapping immunohistochemical phenotype. More cases of urothelial-type adenocarcinoma of the prostate are needed to determine whether mucusuria and dysuresia relieved by ejaculation could be a characteristic complaint of patients with urothelial-type adenocarcinoma of the prostate. The primary prostatic adenocarcinoma could not be distinguished from secondary colonic adenocarcinoma because of its striking morphological resemblance and overlapping immunohistochemical phenotype. More cases of urothelial-type adenocarcinoma of the prostate are required to better determine its clinical and pathological features.

...and metastatic colonic adenocarcinoma. The diagnosis of mucinous adenocarcinoma of the prostate includes a total tumour volume at least 25% mucinous and single or clustered tumour cells floating in mucin lakes [13]. It is crucial that the tumour cells express PSA and PSAP, and the tumour cells were diffusely positive for CK7, CK20, and 34βE12. It was reported that the CK7+/CK20+ immunophenotype in colonic adenocarcinoma was identified from 5.0% to 15.3% [30–32], the metastatic colonic adenocarcinoma could not be excluded. But this patient had a negative result for gastrointestinal tract examination, and we conclude that the prostatic adenocarcinoma cell of this case originated in the prostatic urethra.

...from secondary colonic adenocarcinoma of the prostate were reported in the previous literature. More data about the prognosis should be collected to predict its behaviour.

In conclusion, we have described one case of unsuspected urothelial-type adenocarcinoma of the prostate in a patient with inverted papilloma of the bladder. More data are needed to determine whether mucusuria and dysuresia relieved by ejaculation could be a characteristic complaint of patients with urothelial-type adenocarcinoma of the prostate. The primary prostatic adenocarcinoma could not be distinguished from secondary colonic adenocarcinoma because of its striking morphological resemblance and overlapping immunohistochemical phenotype. More cases of urothelial-type adenocarcinoma of the prostate are required to better determine its clinical and pathological features.

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References
1. Tran KP, Epstein JI. Mucinous adenocarcinoma of urinary bladder type arising from the prostatic urethra. Distinction from mucinous adenocarcinoma of the prostate. Am J Surg Pathol 1996; 20: 1346-50.
2. Curtis MW, Evans AJ, Srigley JR. Mucin-producing urothelial-type adenocarcinoma of prostate: report of two cases of a rare and diagnostically challenging entity. Mod Pathol 2005; 18: 585-90.
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8. Pritchett TR, Moreno J, Warner NE, et al. Unsuspected prostatic adenocarcinoma in patients who have undergone radical cystoprostatectomy for transitional cell carcinoma of the bladder. J Urol 1988; 139: 1214-6.

9. Romero FR, de Castro MG, Andriolo Junior A, de Menezes AH, Fernandes RC, Perez MD. Coexistence of prostate neoplasia in patients undergoing radical cystoprostatectomy due to vesical neoplasia. Int Braz J Urol 2004; 30: 296-301.

10. Abbas F, Hochberg D, Civantos F, Soloway M. Incidental prostatic adenocarcinoma in patients undergoing radical cystoprostatectomy for bladder cancer. Eur Urol 1996; 30: 322-326.

11. Moutzouris G, Barbatis C, Plastiras D, et al. Incidence and histological findings of unsuspected prostatic adenocarcinoma in radical cystoprostatectomy for transitional cell carcinoma of the bladder. Scand J Urol Nephrol 1999; 33: 27-30.

12. Kabalin JK, McNeal JE, Price HM, Freiha FS, Stamey TA. Unsuspected adenocarcinoma of the prostate in patients undergoing cystoprostatectomy for other causes: incidence, histology and morphometric observations. J Urol 1989; 141: 1091-1094.

13. Ro JY, Orignon DJ, Ayala AG, Fernandez PL, Ordonez NG, Wishnow KI. Mucinous adenocarcinoma of the prostate: histochecmical and immunohistochemical studies. Hum Pathol 1990; 21: 593-600.

14. Epstein JI, Lieberman PH. Mucinous adenocarcinoma of the prostate gland. Am J Surg Pathol 1985; 9: 299-308.

15. Wang NP, Zee SZ, RJ, Bacchi CE, Gown AM. Expression of alpha-methylacyl-CoA racemase in nephrogenic adenoma. Mod Pathol 2005; 18: 179-82.

16. Bassily NH, Vallorosi CJ, Akdas G, Montie JE, Rubin MA. Subcellular localization and physiological role of alpha-methylacyl-CoA racemase. J Lipid Res 2000; 41: 1890-6.

17. Varma M, Morgan M, Amin MB, Wozniak S, Jasani B. High molecular-weight cytokeratin (clone 34betaE12 + p63) improves the detection of prostate basal cells. Am J Surg Pathol 1996; 20: 2220-6.

18. Allan CH, Epstein JI. Nephrogenic adenoma of the prostatic urethra: a mimicker of prostate adenocarcinoma. Am J Surg Pathol 2001; 25: 802-8.

19. Luo J, Zha S, Gage WR, et al. Alpha-methylacyl-CoA racemase: a new molecular marker for prostate cancer. Cancer Res 2002; 62: 2220-6.

20. Chu P, Wu E, Weiss LM. Cytokeratin 7 and cytokeratin 20 expression in epithelial neoplasms: a survey of 435 cases. Mod Pathol 2000; 13: 962-72.

21. Bayrak R, Yenidunya S, Haltas H. Cytokeratin 7 and cytokeratin 20 expression in colorectal adenocarcinomas. Pathol Res Pract 2011; 207: 156-60.

22. Vang R, Gown AM, Wu LS, et al. Immunohistochemical expression of CDX2 in primary ovarian mucinous tumors and metastatic mucinous carcinomas involving the ovary: comparison with CK20 and correlation with coordinate expression of CK7. Mod Pathol 2006; 19: 1421-8.

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