Basal cell carcinoma with concomitant insignificant adenocarcinoma of the prostate

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Abstract Basal cell carcinoma (BCC) of the prostate is a rare tumor, comprising <0.01 % of all malignant tumors of the prostate. A 75-year-old Japanese man visited a general hospital with acute urinary retention. He underwent a transurethral resection of the prostate. Immunohistochemical examination revealed that the tumor cells were strongly positive for p63 and high-molecular-weight cytokeratin (34βE12 and CK 5/6). Magnetic resonance imaging indicated that there was no involvement of the bladder neck or periprostatic tissue with the BCC. Retropubic radical prostatectomy was performed. Histological examination revealed insignificant acinar adenocarcinoma in the peripheral zone of the prostate, while BCC was not identified in the specimen. BCC with concomitant adenocarcinoma of the prostate is extremely rare, and has previously been reported in only four cases.

Keywords Basal cell carcinoma · Prostate cancer · Malignant tumor of the prostate

Introduction

Basal cell carcinoma (BCC) of the prostate is a rare tumor, comprising <0.01 % of all malignant tumors of the prostate [1]. BCC with concomitant adenocarcinoma of the prostate is extremely rare; only four cases have been reported [2].

Herein, we report a case of BCC with concomitant adenocarcinoma of the prostate and review the relevant literature.

Case report

A 75-year-old Japanese man visited a general hospital with acute urinary retention. The prostate was enlarged and firm, with a smooth surface on digital rectal examination. His serum prostate-specific antigen (PSA) level was 2.31 ng/mL. He underwent a transurethral resection of the prostate (TURP). Histological examination revealed a malignant tumor composed of basaloid cells with round nuclei, scant cytoplasm, palisading, and solid nest formation (Fig. 1). Immunohistochemical examination revealed that the tumor cells were strongly positive for p63 and high-molecular-weight cytokeratin (HMW-CK) (34βE12 and CK 5/6) (Fig. 2a, b). No staining was seen for PSA, P504S, cytokeratin 7, or cytokeratin 20. On the basis of these findings, the patient was diagnosed with BCC of the prostate and referred to our hospital for further evaluation.

The cavity of the prostatic urethra was identified on the pelvic magnetic resonance image (Fig. 3). No involvement of the bladder neck or periprostatic tissue with the BCC was detected. Computed tomography did not visualize lymph node enlargement or distant metastases. Retropubic radical prostatectomy (RRP) was performed. Histologically, basal cell hyperplasia (BCH) was seen within the prostate gland and BCC was not detected in the surgical specimen. Acinar adenocarcinoma of the prostate (Gleason score 4 + 3) was identified in the peripheral zone of the prostate; the tumor volume was 0.48 mL.

The patient has been followed up for four years and has shown no evidence of local recurrence or distant metastasis

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Fig. 1 Hematoxylin–eosin-stained section revealed a malignant tumor composed of basaloid cells with round nuclei, scant cytoplasm, palisading, and solid nest formation ($\times 100$)

Fig. 2 Immunohistochemical examination showed that the tumor cells were positive for p63 (a) and high-molecular-weight cytokeratin 34βE12 (b) ($\times 200$)

Fig. 3 Magnetic resonance imaging identified the cavity of the prostatic urethra, and no involvement of the bladder neck or periprostatic tissue with the basal cell carcinoma was observed

in that time. The PSA level has remained undetectable during the follow-up period.

Discussion

Basal cell proliferations (BCP) within the prostate gland usually arise in the transition zone, and are characterized by multiple layers of basal cells in the gland [3]. They are more commonly diagnosed by TURP than by needle biopsies from the peripheral zone [4]. Malignant tumors composed of basal cells are categorized as adenoid cystic carcinoma (ACC)/basal cell carcinoma (BCC) of the prostate [5]. BCC of the prostate includes malignant basaloid proliferations and neoplasms that resemble ACC of the salivary glands [5]. In 2004, the World Health Organization proposed that malignant basal cell tumors of the urinary system and male genital organs should be classified under the single term “BCC” [6].

Immunohistochemical markers are frequently accessed in cases of BCC. BCCs are usually negative for enzyme markers such as PSA. This feature can be used to distinguish a BCC from a poorly differentiated adenocarcinoma [7]. HMW-CK 34βE12 specifically stains normal basal cells and benign basal cell lesions of the prostate [5]. P63 is another marker that stains basal cells and rarely secretory cells when they are poorly differentiated [8]. Shah et al. [8] stated that a combination of 34βE12 and p63 staining was better for identifying basal cell lesions than 34βE12 or p63 staining alone.

BCC is considered to have indolent biological potential and a good prognosis, and requires less aggressive treatment than an acinar adenocarcinoma [7]. However, its biological behavior is still rather uncertain due to a lack of follow-up. Ayyathurai et al. [7] reported that 17 % of patients with ACC died from the disease while none of the patients with BCC died a cancer-related death. On the other hand, five specimens from the seven patients who underwent RRP showed extraprostatic extension of the BCC [2]. Metastasis or local recurrence occurred in 10.3 % of the patients with pure BCC who underwent TURP or RRP [2]. Some tumors show local aggression with involvement of the bladder neck and periprostatic tissue, and metastatic disease to multiple organs [9, 10]. Ali et al. [2] suggested that the predominant basaloid pattern, with a large solid nest and central necrosis, is indicative of an aggressive disease with an adverse outcome. Komura et al. [10] described that three patients (5.3 %) died of BCC, while one patient (1.8 %) had a BCC but was still alive.

Overall, a third of the patients were treated with TURP and a third with RRP [7]. Although their biological behavior is not well understood, BCCs have the potential to invade locally, mainly along the nerves, and metastasize distally [7]. Radical surgery may be the first-line management option.

Conflict of interest The authors have no conflict of interest.

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