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Basal Cell Carcinoma of the Prostate: Case Report and A Literature Review

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Abstract

Basal cell carcinoma of the prostate is a rare non acinar variant of prostate cancer. Therefore a few case reports are published in the literature. Traditionally surgery has been used but these tumors also respond to concurrent chemoradiation therapy. Here we report a case of basal cell carcinoma of prostate in a 68-year-old male patient.

***Key Words**: Basal cell carcinoma, prostate cancer, chemoradiation, case report.*

Introduction

Basal cell carcinoma (BCC) is a rare malignant neoplasm of the prostate that is composed of prostate basal cells.**[**1**]** BCC is an extremely rare variant that is histologically difficult to detect, with uncertain behavior and about 100 cases reported in the literature compared to over 1 million acinar prostate cancer diagnoses every year.**[**2**]** The first case of prostatic BCC was published in 1974.**[**7**]**

Case Report

Symptoms description

A 68-year-old male patient presented with lower urinary tract symptoms, poor stream and nocturia in December 2021.

Examination

Examination revealed a large homogenous smooth borders gland, no irregularity or nodules detected; T1c.

Prostate measured 100 cc on prostate Ultrasound. Prostate Specific Antigen Total (TPSA) was 10.27 ng/L.

Imaging Results

Prostate MRI done in December 2021 showed ill-defined lesion at the right site anteriorly within the transitional zone with restrictive pattern at the DWI and ADC map that enhancing post contrast (Figure1).

No lesions seen in prostatic peripheral zone. Seminal Vesicles appear normal, there is 10*12 mm left sided pelvic sidewall lymph node.

Clinical Presentation

Findings in the imaging and PSA result lead to prostate transrectal ultrasound (TRUS) needle biopsy that showed benign prostatic tissue with no evidence of high grade prostatic intraepithelial neoplasia (PIN) or malignancy in both lobes. So, the diagnosis was benign prostatic hyperplasia (BPH) treated medically till June 2022 when he had transurethral resection of prostate (TURP) that showed the unusual finding of prostatic basal cell carcinoma and with a TPSA of 1.72 ng/L.

Pathology

Gross Description:

Prostatic weighing 60g.

Microscopic Examination:

The specimen represents prostatic tissue showing a few foci of basal cell carcinoma. The largest focus is 4 mm in maximum dimension. The tumor is composed of expansive growth of basaloid cells arranged in clusters and some have punched out lumens. The cells show pleomorphic atypical hyperchromatic nuclei with irregular nuclear contours and conspicuous nucleoli. The tumor merges with basal cell hyperplasia. The remaining prostatic tissue shows multiple foci of high grade prostatic intraepithelial neoplasia (PIN). CK20 is negative. PSA is non- contributary (Figure 2).

Management

Metastatic work up was done. Bone Scan show no evidence of bone metastases. Chest abdomen pelvic CT scan showed small calcific peripheral lung nodules less than 5mm, liver lesion measures 13*11 mm in segment VII. Liver MRI showed liver cyst.

The patient seen by urologist; radical prostatectomy was offered, and patient refused so he has referred for radiation oncology consultation. We discussed with the patient the rare histopathology result of prostatic BCC and made it clear to his that the well-known treatment for his case is surgery, yet he is still not willing to go for surgery due to possible side effects mainly urinary incontinence.

This case was discussed in multidisciplinary meeting. Based on recommendations from the meeting, the patient received concurrent chemoradiotherapy to 70 Gy in 35 daily fractions over seven weeks over two phases treating whole pelvis to 46 Gy in 23 daily fractions, then boost to prostate and seminal vesicles to 36 Gy in 12 daily fractions using VMAT technique with IGRT daily CBCT on our VERSA HD linear accelerator machine from October 2022 to November 2022. Chemotherapy was based on a protocol common for anal cancers and comprised 10 mg/m2 of Mitomycin on Day 1 and 750 mg/m2 of 5-Flurouracil given as a continuous infusion on Day 1 to 4 during the first and fifth week of standard pelvic radiotherapy for prostate cancer.

Patient tolerated treatment well, he will be seen in 4 to 6 weeks for evaluation of early side effects, then in 3 months annually to check his PSA and to repeat imaging in 3 to 6 months.

Figure 1a. Axial T2 weighted MRI section.

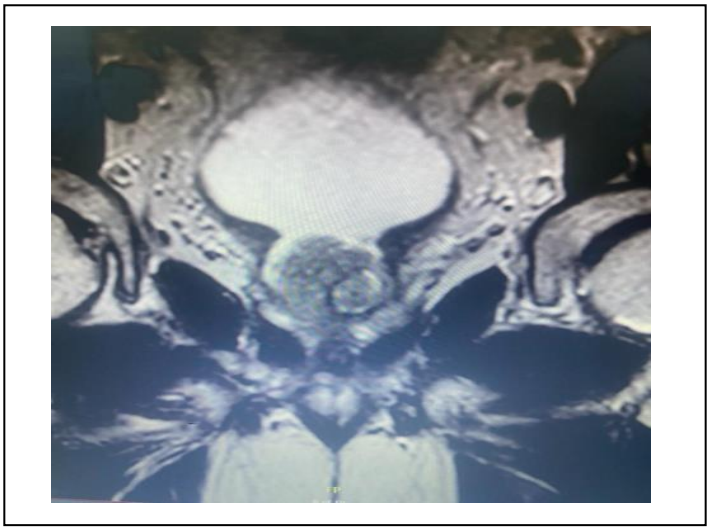

Figure 1b. Coronal T2 weighted MRI section.

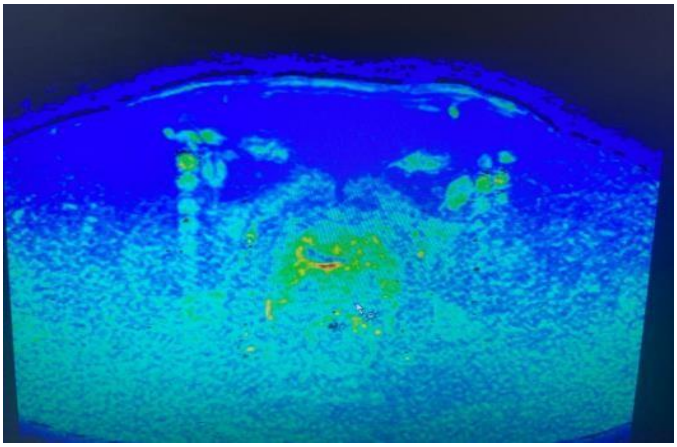

Figure 1c. Dynamic MRI of the prostate.

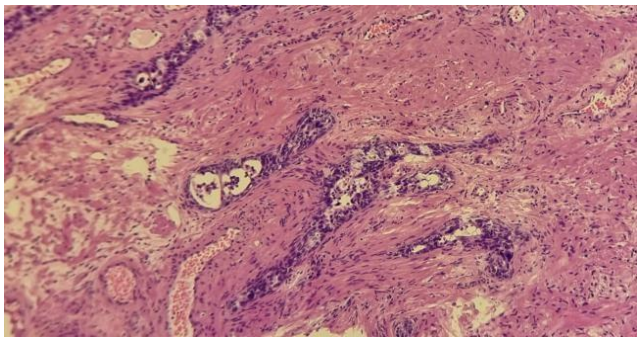

Figure 2a. Histopathology of the resected specimen. Infiltrative malignant squamous cells of basaloid morphology (10x).

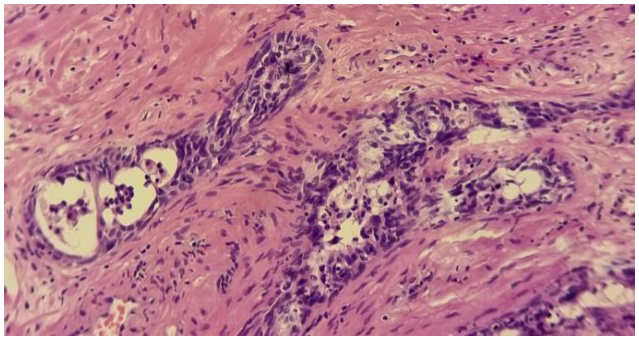

Figure 2b. Histopathology of the resected specimen. The malignant cells form glands containing punched out spaces (20x).

Figure 2c. Immunohistochemical findings in the prostate tumor. The cells show immunoreactivity to high molecular weight cytokeratin.

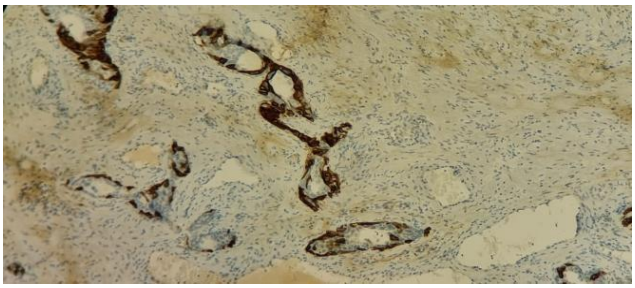

Figure 2d. Immunohistochemical findings in the prostate tumor. The cells show immunoreactivity to p63.

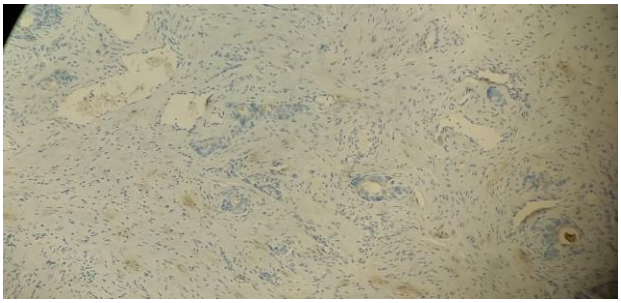

Figure 2d. Immunohistochemical findings in the prostate tumor. The cells are negative for PSA.

Discussion

Prostatic BCC is composed of neoplastic prostatic basal cells unlike the more common variant of prostatic acinar adenocarcinoma that arises from the secretory epithelial cells of the prostate ducts and acini. The number of basal cells is significantly less compared to secretory cells in the prostate gland, perhaps explaining why prostatic BCC is rare.**[**8**]**

The age of onset ranges from 28 to 97 years, with peak incidence between 60 and 75 years; however, cases of young adults have been reported. When occurring in the prostate, these tumors predominantly show local infiltrative behavior.**[**2**]**

It generally causes an obstructive symptomatology with a high incidence of acute urinary retentions considering their frequent localization on the prostatic transitional zone.**[**3**]** At examination, the prostate is often hypertrophic and partially indurated.**[**4**]**

In 2016, WHO Classification of Tumors of the Urinary System and Male Genital Organs categorized adenoid cystic hyperplasia carcinoma and basaloid variants as malignant basal cell tumors (BCC).**[**14**]**

Since it is developed from the non- secreting basal prostatic cells which does not synthesize kallikreine, it does not cause an increase in PSA levels unless associated with a glandular pattern. **[**3,5,6**]** While BCC borrows the basocellular skin cancer morphology and the adenoid cell carcinoma (ACC) tends to look like the accessory salivary glands ACC, multiple overlapping architectures of adenoid or basaloid pattern can be observed.**[**15,16**]** The Gleason score cannot be applied to these specific tumors because of their basal cell's origin.**[**4**]**

Differential diagnoses range from benign prostatic hyperplasia to poorly differentiated adenocarcinoma or squamous cell carcinoma.

Although most reported BCP are of indolent behavior, there are reports of local recurrence and metastases. **[**11-13**]** Of interest is that metastases often involve the liver, lung, and bowel but not bone, as is commonly observed in prostate adenocarcinoma.**[**13**]**

Our review of the literature indicates that BCP is a rare tumor with clinical- pathological features distinct from classical prostate adenocarcinoma.

Whilst surgery has been mainly used, our case showed that combination chemoradiotherapy is an alternative and/or additional treatment option for BCP.

According to the previous literature, radiation therapy, chemotherapy and hormone therapy have been included in the treatment in addition to surgery, but the efficacy of these treatment options has not yet been established.

While the retropubic prostatectomy appears to be the preferred treatment option in localized disease **[**10**]**, the role of surgery remains unclear in front of locally extended or metastatic forms.

Some cases reported treatment by definitive or concomitant radiation therapy in locally advanced cases leading to a mean overall survival of 38 months.**[**10**]** Very few data are available for locally advanced non-metastatic stages treated by radiation therapy.

With more extensive disease and regional nodal involvement, chemo- radiation is reasonable.

As for the chemotherapy, there is no standard regimens and no clinical response described.

We opted for aggressive combined chemo-radiation taking in mind his excellent performance status and nodal pelvic sidewall findings. We treated our case with chemo-radiation to 70 Gy in 35 daily fractions over seven weeks with Mitomycin and 5-Flurouracil chemotherapy.

Tuan et al reported the only case of BCC of the prostate where complete remission was achieved by a combination of chemotherapy and radiotherapy, in 2003 they used concurrent chemoradiotherapy to 65 Gy in 35 daily fractions over seven weeks with Mitomycin and 5-Flurouracil chemotherapy. With patient remained disease-free until 10 June 2005 when he passed away from a ruptured abdominal aneurysm unrelated to his cancer or treatment.**[**9**]**

Ridai et al reported a case of BCC of the prostate, treated with a combination of chemotherapy and radiotherapy with total dose of 70 Gy, delivered in 35 fractions to the prostate and involved seminal vesical, 56 Gy on entire seminal vesicles and a total dose of 46 Gy on the pelvic nodes with weekly cisplatin. Eighteen months after his treatment, new CT scan showed that the patient was still on complete local response with the disappearance of the lower urinary tract symptoms, as long as the pain and the appearance of a prostatic atrophy.**[**17**]**

Conclusion

The basal cell carcinoma (BCC) rarely seen in prostate gland with a paucity of data on how to be treated with no clinical practice guidelines to describe the optimal management.

Here we reported this case of PBC treated at our center with definitive concomitant chemoradiation which is one of few reported cases treated with that modality.

Further data are expected to be reported on future follow up and treatment response.

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