

Pure prostatic ductal adenocarcinoma with elevated prostate-specific antigen level: a rare case report and literature review



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Received: 2021-02-27

Accepted: 2021-04-30

Published: 2021-05-15

ABSTRACT

Introduction: Prostatic ductal adenocarcinoma (PDA) is rare, representing approximately 0.4 to 0.8% of all prostate malignancies. It usually occurs in the prostatic urethra around verumontanum, its prognosis is generally considered to be worse compared to acinar adenocarcinoma.

Case description: We present a 75-year-old male with PDA with an elevated PSA level. PDA histologically characterized by pseudostratified columnar cells. It is associated with aggressive behavior with an overall poor prognosis. Although normal PSA is a common finding in those with PDA, the presence of elevated PSA levels should not be used to exclude the possibility of PDA.

Conclusion: PDA is a rare variant of prostate cancer which is histologically characterized by pseudostratified columnar cells. Although normal PSA is a frequent finding in those with PDA, the presence of elevated PSA should not be used to exclude the possibility of PDA.

Keywords: prostatic cancer, adenocarcinoma, gleason score.

Cite this Article: Rizal, A., Mochtar, C.A., Umbas, R., Lucianto, S., Saraswati, M., Matondang, S. 2021. Pure prostatic ductal adenocarcinoma with elevated prostate-specific antigen level: a rare case report and literature review. *IJBS* 15(1): 60-62. DOI: 10.15562/ijbs.v15i1.293

INTRODUCTION

Prostatic ductal adenocarcinoma (PDA) is relatively uncommon, accounting for 0.4 to 0.8% of all prostate malignancies. PDA usually occurs in the prostatic urethra around the verumontanum, and its prognosis is generally considered worse than acinar adenocarcinoma. PDA's pure form constitutes only 1% of all cases, while the incidence of mixed ductal and acinar adenocarcinoma is 4.8%.¹ PDA frequently presents with urinary symptoms and is associated with significantly lower serum PSA levels compared to acinar prostate carcinoma cases. We present a 75-year-old male with PDA with elevated PSA level.

CASE REPORT

A 75-year-old male was referred to Cipto Mangunkusumo Hospital. Initially, the patient experienced excruciating pain of the buttock for two years before admission. Subsequently, he came to Awal

Bros Hospital and found that his prostate-specific antigen (PSA) was exceedingly high, noted 20.30 ng/mL. The patient was then referred to Bekasi Hospital to undergo biopsy examination, and it was found that the patient did not have any

malignancy. In April 2017, the patient re-underwent biopsy but the result could not be interpreted; thereby, the patient was referred to Cipto Mangunkusumo Hospital for cystoscopy and additional biopsy.

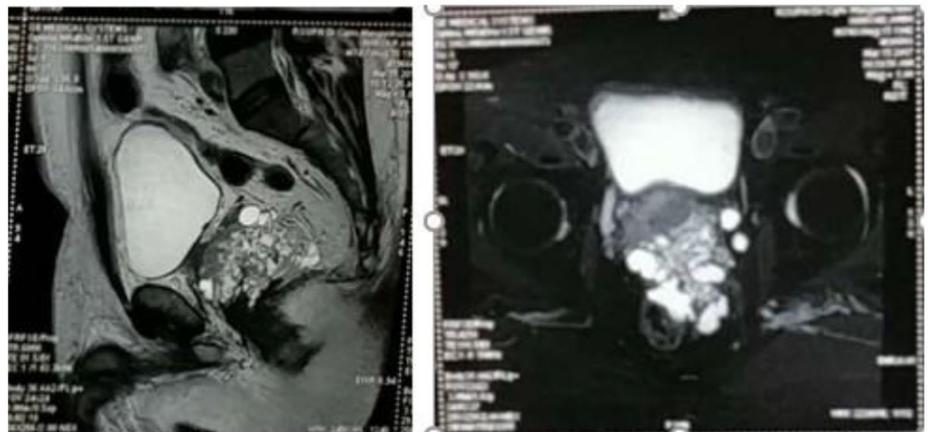


Figure 1a. MRI of prostate demonstrated enlarged prostate with suggestively malignancy

The patient had history of consuming tamsulosin and dutasteride. However, he had history of smoking for over twenty years and ceased two years ago. The patient's mother had previous history of leukemia.

The patient had Karnofsky score of 90. Urological examination revealed no abnormality in flank, supra symphysis and ostium urethra externa (OUE) region. Digital rectal examination showed good tone, non-collapsible ampulla, the prostate was palpable rubbery with nodule in the left lobe, and estimated prostate weight <40 grams.

Magnetic resonance imaging of the prostate demonstrated enlarged prostate with suggestively malignant component invading the inferoposterior wall of the urinary bladder, rectum and left

Levator Ani muscle. The lesion extended to extracapsular prostate until seminal vesicle. There was hyperintense lesion T2WFS on corpus vertebrae L5, attenuated post-contrast (Figure 1a). The lesion was suspected of bone hemangioma. A whole-body bone scan demonstrated metastases in right anterior costae III to VII, T8 and T9 corpus vertebrae, and possibly right maxilla (Figure 1b).

Histopathology examination demonstrated epithelial tumors composed of glandular and papillary components. The covering epithelia were pseudostratified columnar epithelium, and the nucleated cells were tapered and moderately pleomorphic. There were rough chromatin and prominent nucleated cells (Figure 2).

Pathological anatomy examination demonstrated PDA with Gleason score of 4+4 = 8 and group grade of 4 (Figure 2). It was found that there are tumor cells in 4 pieces of 6 pieces of left prostate pieces. The patient was diagnosed with prostate cancer T4N0M1b. The patient rejected undergoing chemotherapy and was treated with transurethral resection of the prostate (TURP) for his lower urinary tract symptoms (LUTS) complaints. After the surgery, the PSA level dropped to 0.78 ng/m

DISCUSSION

The characterization of PDA and acinar cancers is challenging since both frequently coexist. However, recent advances in diagnostic modalities and careful pathological analysis, it may

become possible to differentiate prostatic ductal adenocarcinomas from the acinar subtype. Men diagnosed with PDA usually between the ages of 60 and 80, and present with obstruction or hematuria.¹ In this case, patient was 75 years old with urgency; however, hematuria was not present. PDA tends to present at a more advanced stage, with larger tumors that are more likely to be high grade¹⁴ when compared with acinar adenocarcinoma.

PDA may arise in peripheral or secondary peripheral or secondary periurethral ducts. Given that PDA tends to occur near the urethra, digital rectal examination (DRE) is often normal in these patients, which is also found in our case. Referral to a urologist usually follows for staging and further workup. Histopathologically, PDA is characterized by tall columnar cells. Patients with PDA often have serum PSA elevation lower than in typical acinar adenocarcinoma patients.² Changes of the PSA value, however, may correlate with the clinical course in some cases. Whereas PDAs are characterized by pseudostratified epithelial cells, acinar carcinomas are dominated by cuboidal epithelial cell layers.³

Compared to acinar cancers, PDA has shown more rapid progression after therapy and an independent predictor of disease-specific mortality. However, this is unclear whether PDAs demonstrate more adverse prognosis when matched for PSA, Gleason score in biopsy and clinical stage. Although PSA is expressed by ductal carcinoma cells, serum PSA is normal in many of these patients.⁴ However, we found elevated PSA in this case. In previous studies, lower PSA levels were observed in PDA's initial stages compared to the acinar ones. In the present case, the patient, had bone metastases, which may cause a relatively high PSA level. However, after therapy, the PSA level decreased significantly, from 20.30 to 0.78 ng/mL.

Patients with PDA are likely to have a clinical-stage T3 or more aggressive cancer, which confirmed previous studies of a greater rate of advanced cancer at the time of radical prostatectomy.⁵ This patient had a clinical-stage T4N0M1b, with metastatic bone cancer.

The treatment for this cancer is controversial; in the early 1970s, estrogen

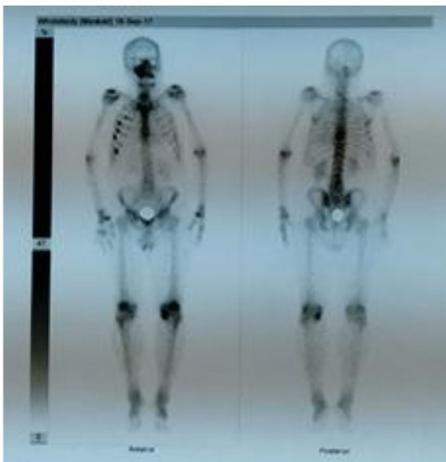


Figure 1b. Whole-body bone scan examination demonstrated metastases region

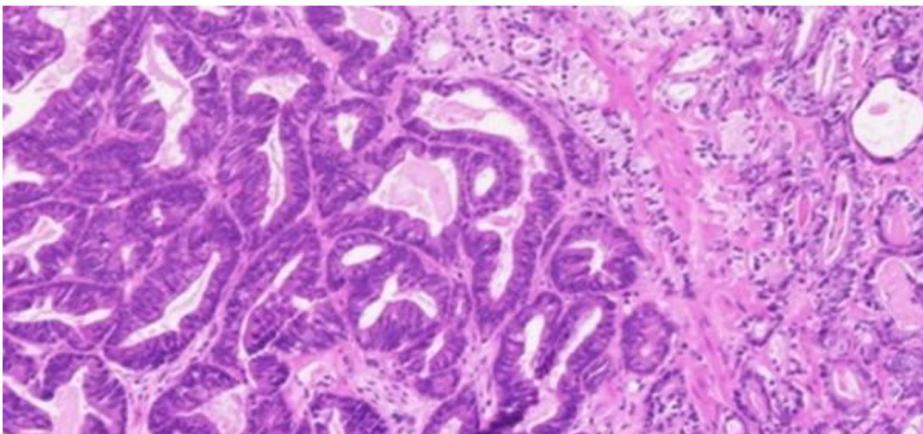


Figure 2. Pathology image of prostatic ductal adenocarcinoma (taken from biopsy)

therapy was felt to be inappropriate because of the proposed origin from Mullerian remnants and its resemblance to endometrial carcinoma of the uterus. Only after a patient with PDA underwent orchidectomy and showed tumor regression was treatment with estrogens accepted.⁵ Although PDA's standard treatment is like that of acinar adenocarcinoma, radical prostatectomy for a localized prostatic ductal adenocarcinoma does not necessarily achieve a complete resection.

CONCLUSION

PDA is a rare variant of prostate cancer which is histologically characterized by pseudostratified columnar cells. Compared to acinar cancers, PDA is associated with aggressive behavior with an overall poor prognosis. Although normal PSA is a frequent finding in those with PDA, the presence of elevated PSA should not be used to exclude the possibility of PDA.

FUNDING

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

ETHICAL APPROVAL

The authors declare that we obtained permission from ethics committee in our institution.

CONSENT

Written informed consent for publication of this case report with accompanying images was obtained from the patient.

AUTHOR CONTRIBUTION

All authors contributed to the collection of patient's data and writing process of the manuscript.

Stevano Lucianto: Conceptualization; Data curation; Investigation; Methodology; Resources; Validation; Visualization; Writing. Agus Rizal: Conceptualization; Supervision. Chaidir Arif Mochtar: Supervision. Rainy Umbas: Supervision. Meilania Saraswati: Supervision. Sahat Matondang: Supervision.

DECLARATIONS OF INTEREST

There is no conflict of interest to disclose.

ACKNOWLEDGEMENT

None.

REFERENCES

- Mazzucchelli R, Lopez-Beltran A, Cheng L, Scarpelli M, Kirkali Z, Montironi R. Rare and unusual histological variants of prostatic carcinoma: Clinical significance. *BJU Int.* 2008;102(10):1369-1374. doi:10.1111/j.1464-410X.2008.08074.x.
- Samaratunga H, Delahunt B. Ductal adenocarcinoma of the prostate: current opinion and controversies. *Anal Quant Cytol Histol.* 2008;30(4):237-246.
- Kim A, Kwon T, You D, et al. Clinicopathological features of prostate ductal carcinoma: Matching analysis and comparison with prostate acinar carcinoma. *J Korean Med Sci.* 2015;30(4):385-389. doi:10.3346/jkms.2015.30.4.385.
- Eade TN, Al-Saleem T, Horwitz EM, Buyyounouski MK, Chen DYT, Pollack A. Role of radiotherapy in ductal (endometrioid) carcinoma of the prostate. *Cancer.* 2007;109(10):2011-2015. doi:10.1002/cncr.22644.
- Tavora F, Epstein JI. High-grade prostatic intraepithelial neoplasialike ductal adenocarcinoma of the prostate: a clinicopathologic study of 28 cases. *Am J Surg Pathol.* 2008;32(7):1060-1067. doi:10.1097/PAS.0b013e318160edaf.



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