Case Report

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Painful Testicular Metastasis of Prostate Cancer; A Case Report

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Abstract

Prostate cancer (PC) ranks as the most prevalent cancer among males and is the second primary contributor to mortality within this demographics. Diagnosed patients can undergo various treatments, from radiation to chemotherapy and surgery. While bone typically serves as the initial site for metastasis, it is crucial to consider uncommon metastatic locations, such as the testicles. In this article, we present the case of a 73-year-old male patient with multiple bone metastases who presented with left testicular pain and swelling and was eventually diagnosed with PC with testicular metastases.
Keywords: Testis, metastasis, orchiectomy, prostate cancer

Introduction

Hormone resistant prostate cancer (PC) has a high incidence of metastases, especially to solid organs such as the lungs, bones, and liver. Other organ metastases are less common. The testicles are important in the development and treatment of PCa. Metastatic disease of the testicles is rare in PCa, with an incidence rate of 0.3% to 3.6% (1). Therefore, it is often not considered a possible clinical metastasis localization.

The aim of this case report was to describe the testis as a rare metastasis localization in castration-resistant prostate cancer (CRPC) with bone metastases and to emphasize that bilateral orchiectomy is the basic step in hormonal therapy management from a different perspective.

Case Report

A 73-year-old male patient was admitted to the emergency medicine unit with complaints of lower urinary tract symptoms and colic-like pain in the left testicular region. The patient consulted the urology clinic. His past medical history was significant for hypertension, hyperlipidemia, coronary heart disease and insulin-dependent mellitus. In his social history, there was no smoking history, alcohol use, and there was no relevant family history of PCa. In the patient's history, it was determined that he had previously received radiation therapy and androgen deprivation therapy in the medical oncology clinic with the diagnosis of Gleason score 4+5 (International Society of Urological Pathology grade 5) prostate adenocarcinoma, and it was determined that the patient used abiraterone acetate, prednisolone, and luteinizing hormone-releasing hormone (LHRH) analog because of the detection of hormonal resistance in the subsequent treatment. He received weekly docetaxel systemic therapy because of the progression of radiological findings and prostate specific antigen (PSA) values under this treatment. The patient's tumor markers (alpha fetoprotein, beta human chorionic gonadotropin), urinalysis, white blood cell count, and C-reactive protein levels were within normal limits, and the PSA level was 134 ng/mL. Before orchiectomy, testosterone levels was 16 ng/mL castrated. A giant solid lesion completely filling the left testicular parenchyma was observed in scrotal Doppler ultrasonography. We performed bilateral orchiectomy, explaining that LHRH could not be continued when bilateral orchiectomy

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was performed. The situation was discussed with the patient, and the patient's decision was to discontinue LHRH therapy and perform bilateral orchiectomy. The operation time was 55 min. There were no complications during the intraoperative and postoperative periods. The hospitalization period was a day. Blood values measured in the postoperative period were within normal limits. The pathological examination under a microscope with hematoxylin/eosin and immunohistochemical staining was consistent with metastatic adenocarcinoma of prostate origin (Figure 1). Normal pathological findings were observed in the right testis. Microsatellite instability (MSI) was positive, and the patient's treatment was continued with pembrolizumab. Written valid informed consent has been obtained from the patient for the publication of this manuscript.

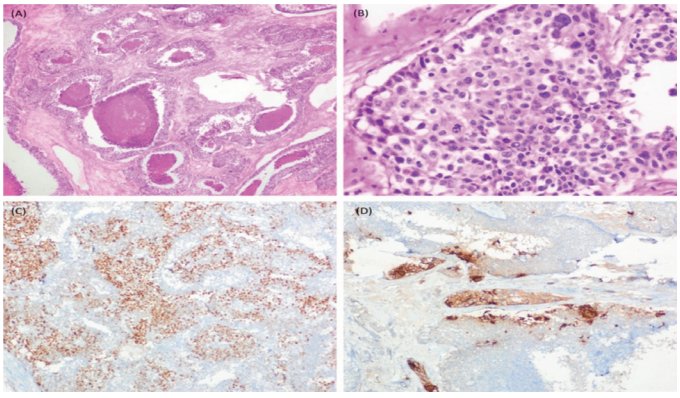

Figure 1. Prostatic adenocarcinoma metastasis in testicular parenchyma, A) Tumor metastasis in the form of solid tumor islands with necrosis in a comedo pattern, which almost completely removes the testicular parenchyma, H&EX40. B) Frequent mitosis and cytological similarity in neoplastic cells, H&EX400. C) Diffuse nuclear NKX3.1 positivity observed in neoplastic cells in immunohistochemical staining, X100. D) Immunohistochemical staining, cytoplasmic chromogranin positivity (brown staining) observed in some of the neoplastic cells, X100

Discussion

Although the testicles have an important place during the clinical course of PCa, especially due to hormone production, they are rarely seen in the areas of metastasis development. In a retrospective evaluation of 1693 orchiectomy cases, 0.18% testicular metastasis was detected (2). Testicular metastasis of PCa is mostly seen in the literature as case reports (3,4,5,6).

The precise consequences of testicular metastases remain uncertain and established recommendations for treatment are lacking. Based on influential research, therapeutic approaches for advanced prostate cancer that has spread to visceral sites (excluding the testicles) involve options such as docetaxel chemotherapy (contingent upon a favorable performance status) or hormonal interventions such as abiraterone or enzalutamide (7). In our patient, prostate cancer had already disseminated extensively at the time of diagnosis, characterized by a Gleason score of 9 and a PSA level of 134 ng/mL. The patient was treated with pembrolizumab after being diagnosed with testicular metastasis.

In terms of morphology, testicular metastases typically resemble primary prostate tumors. Consequently, they can manifest in glandular, cribriform, and cemedo patterns or as individual cells that infiltrate the interstitial space while safeguarding the seminiferous tubules, as observed in our specific case (8).

The US Food and Drug Administration has approved the use of pembrolizumab in addressing metastatic or unresectable solid tumors exhibiting MSI-high or mismatch repair deficiency (9). Manogue et al. (10) documented a solitary instance of complete remission through pembrolizumab treatment in a patient with metastatic CRPC (mCRPC) carrying an *MSH2* alteration identified via tissue sampling. This case also highlighted the potential usefulness of circulating tumor DNA in gaging mutational burden. Among patients undergoing successive tumor evaluations to assess MSI, three out of five individuals displayed MSI acquisition in a second or subsequent sample (10). Pembrolizumab monotherapy has exhibited anticancer activity with a tolerable safety profile among a subgroup of patients whose mCRPC is predominantly situated in bone and who had previously undergone treatment with docetaxel and targeted endocrine therapy (11).

Conclusion

For treating PCa, rare metastatic sites such as testis and epididymis should be appropriately evaluated for accurate staging and early detection of possible metastases. In cases with suspected testicular metastasis, physical examination or imaging, even orchiectomy in newly diagnosed or castration-resistant patients, should be the basic strategy in terms of both treatment and diagnosis regardless of the hormone level.

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Ethics

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Authorship Contributions

Surgical and Medical Practices: H.J., J.H., Concept: J.H., B.Ş., B.C., Design: H.J., B.Ş., Data Collection or Processing: H.J., H.M., B.C., Analysis or Interpretation: J.H., B.Ş., İ.I.G., Literature Search: J.H., H.M., İ.I.G., Writing: H.J., H.M., B.C.

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