Multimodal therapy in the treatment of metastatic prostate cancer: A case report

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Introduction

For men in the United States, prostate cancer is not only the most common cancer but also the second leading cause of cancer-associated death. Advanced prostate cancer can metastasize to several different organ systems including the lymph nodes, bones, lungs, and visceral organs. Prognosis for metastatic prostate cancer is poor with the relative 5-year survival rate being about 28%.1 We present a case of metastatic prostate cancer in complete remission after androgen deprivation, surgery, androgen receptor blockade, and Radium 223 therapy.

Case presentation

A 65-year-old male presents with benign prostatic hyperplasia (BPH) with an average PSA over the past 5 years of 2.5. His past medical history is significant for type II diabetes and lumbar disc disease.

The patient started to experience low back pain and was subsequently referred to physical therapy. After two weeks without improvement pain, a follow-up MRI with Gadolinium disclosed lumbar disc disease and blastic lesions in the lumbar spine. The patient's PSA was checked and found to have risen from 2.5 to 76. The following day the patient had a bone scan that revealed increased uptake in the proximal femur, acetabulum, right hemi-pelvis, sacrum, and multiple lesions in the lumbar and thoracic spine, as well as the ribs (See Fig. 1). A CT scan of the chest, abdomen, and pelvis confirmed the bony lesions seen in the bone scan and failed to disclose any evidence of lymphadenopathy.

Following the CT Scan, the patient had a prostate needle biopsy which revealed diffuse Gleason 4 + 5 involving 80% of the right-sided cores. Additionally, perineural invasion was noted.

The patient was started on degarelix (240 mg followed by monthly doses of 80 mg). After the second monthly dose, the patient's PSA was undetectable. During this time, the patient also took zoledronic acid (monthly dose of 4 mg). However, the zoledronic acid therapy had to be terminated after 15 months due to the development of osteonecrosis of the jaw.

After the 16 months of hormonal treatment, the patient underwent a robotic-assisted laparoscopic prostatectomy (RALP). The pathology report revealed 10% of the prostate still had residual carcinoma. Additionally, bone biopsies of the proximal femur were performed at the time of the prostatectomy. These were all interpreted as being negative for tumor.

Six months after the RALP, docetaxel therapy was initiated for a total of six monthly cycles. This treatment was followed by 3 months of enzalutamide, and subsequently by 6 months of IV Radium-223. This round of combined therapy was completed after 15 months.

Three months after the completion of the radium therapy, the patient had a 68Ga-PSMA ligand PET/CT scan. The scan failed to disclose any evidence of tumor (see Fig. 2). A follow-up standard Technetium-99 m (Tc-99 m) bone scan was conducted eight months after the PET/CT scan which confirmed resolution of all the previously noted bony lesions.

The patient is now 54 months post diagnosis with an undetectable PSA and no noted bony lesions after diagnosis of metastatic prostate cancer. His testosterone has remained below 5 since the initiation of
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Though the previous two treatments are known to improve outcomes in patients with metastatic prostate cancer, neither one alone has consistently been able to eliminate the disease. Instead, patients remain on palliative care following treatment. A recent paper published by O'Shaughnessy et al. points to the efficacy of a multimodal treatment approach.

Discussion

The first-line treatment for prostate cancer continues to be androgen deprivation therapy (ADT). However, there has been a growing interest in the role of more aggressive multimodal therapy in an attempt to provide a cure or increase long-term survival for metastatic prostate cancer. Heidenreich et al. compared men treated with ADT plus radical prostatectomy to men treated with ADT alone for metastatic prostate cancer to the bone. They reported that cancer-specific survival rates favored men who were treated with radical prostatectomy (95.6% vs 84.2%; p = 0.043).

Though the previous two treatments are known to improve outcomes in patients with metastatic prostate cancer, neither one alone has consistently been able to eliminate the disease. Instead, patients remain on palliative care following treatment. A recent paper published by O'Shaughnessy et al. points to the efficacy of a multimodal treatment approach.
for early-stage metastatic prostate cancer. They found that treatment consisting of ADT, surgery, and radiotherapy resulted in 20% of patients achieving endpoints of non-castrate levels of testosterone and undetectable PSA. They note that neither of these outcomes could have been reached by any single therapy.

Conclusions

This case supports the hypothesis that an aggressive multimodal treatment strategy can eliminate detectable disease in patients who present with metastatic prostate cancer. Specifically, those patients who do not see progress with any one form of treatment may benefit from this approach.

Conflict of interest disclosure

None.

Author contribution

Olamide Omidele – Literature Search, Data Collection, Writer.
Dr. Howard Schiff – Data collection, Writing, Editing.
Dr. Ashutosh Tewari—Involved in patient care.
Dr. William Oh—Involved in patient care.

Disclosures

None.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.eucr.2018.09.010.

References

1. Society AC. Cancer Facts and Figures 2013. 2013; 2013.
2. Culp SH, Schellhammer PF, Williams MB. Might men diagnosed with metastatic prostate cancer benefit from definitive treatment of the primary tumor? A SEER-based study. Eur Urol. 2014;65(6):1058–1066.
3. Sooriazumaran P, Karnes J, Stief C, et al. A multi-institutional analysis of perioperative outcomes in 106 men who underwent radical prostatectomy for distant metastatic prostate cancer at presentation. Eur Urol. 2016;69(5):788–794.
4. Heidenreich A, Pfister D, Porres D. Cytoreductive radical prostatectomy in patients with prostate cancer and low volume skeletal metastases: results of a feasibility and case-control study. J Urol. 2015;193(3):832–838.
5. O'Shaughnessy MJ, McBride SM, Vargas HA, et al. A pilot study of a multimodal treatment paradigm to accelerate drug evaluations in early-stage metastatic prostate cancer. Urology. 2017;102:164–172.