

Prostate adenocarcinoma with orbital metastasis in an HIV+ man

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Introduction: *To report an unusual presentation of metastatic prostate cancer to the orbit in an immunosuppressed patient, who received a novel palliative treatment regimen.*

Materials and methods: *A 56 year old HIV+ man presented with proptosis and unilateral blindness. The diagnosis, work up, and treatment are outlined.*

Results: *Metastatic prostate cancer to the orbit is diagnosed, and the treatment with IMRT and hormone ablation is explored.*

Conclusion: *We outline the literature and current thinking surrounding prostate cancer metastases to the orbit. HIV+ patients currently enjoy longer life expectancies, with the caveat that their immunosuppressed status may lead to more unusual metastatic presentations. Treatments and palliation will continue to evolve as these new cases emerge.*

Key Words: orbital metastasis, HIV

Introduction

Prostate cancer is the most common malignancy affecting men.¹ Metastatic prostate cancer classically involves the axial skeleton and local lymph nodes. Metastatic orbital involvement is rare, though case reports have been described. Long et al report 1% of prostate adenocarcinoma metastasizes to the orbit.² As treatment improves and patients live longer with the disease, we expect that the incidence of atypical metastatic sites such as the orbit may increase.

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Case report

A 56-year-old African American male with HIV and a CD 4 count of 418 presented with severe abdominal pain, nausea, vomiting, and subjective fevers. On review of systems, he also reported a 3 month history of 30 pound weight loss, fatigue, left eye pain, light sensitivity, and proptosis. Two weeks prior to admission he lost complete vision in his left eye. On examination he had proptosis, left eye blindness, and no reactivity to light in this eye. This in addition to disconjugate gaze is well demonstrated in Figure 1. CT scan of the abdomen and pelvis demonstrated bulky retroperitoneal and pelvic lymphadenopathy as well as a multifocal pneumonia, explaining his acute symptoms. Suspecting lymphoma given his HIV status, he underwent CT guided fine needle aspiration and core biopsy of the

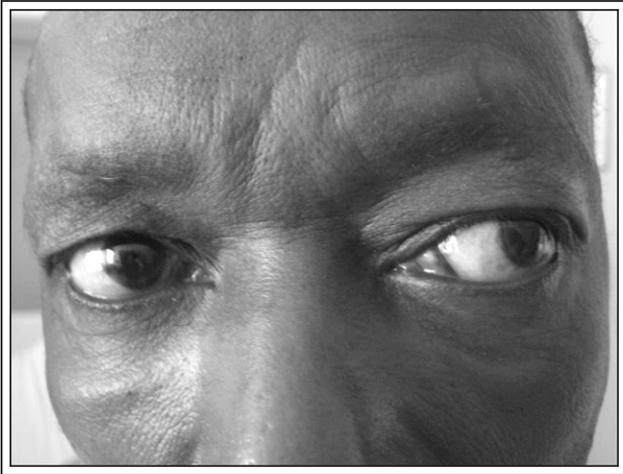


Figure 1. A man with orbital metastasis to the left eye. Note the visible proptosis.

external iliac nodes that were positive for metastatic adenocarcinoma. The biopsy size was too small to determine the primary tissue. CT of head and sinuses with IV contrast demonstrated a large enhancing mass which was osseous in origin, ultimately creating the proptosis. The mass involved the left greater wing of the sphenoid bone with a large intraconal soft tissue component displacing the left optic nerve medially. His digital rectal exam was grossly abnormal with nodularity on the left more than the right lobe, and his PSA was 1830. He was started on Casodex 7 days prior to initiating Lupron injections. Prostate biopsy demonstrated poorly differentiated adenocarcinoma with a Gleason score of $5 + 4 = 9$ with evidence of muscular and lymphovascular invasion on histology. MRI of thoracic and lumbar spine demonstrated diffuse metastatic disease. Ophthalmology recommended against biopsy of the orbital mass to avoid seeding the facial cavity and worsening the tumor burden.

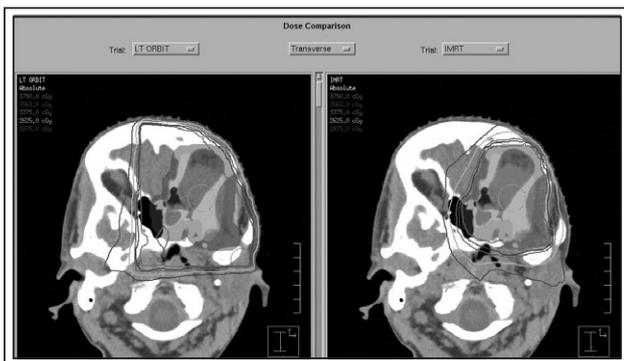


Figure 2. The focused radiation fields used to treat the orbital metastasis.

After receiving one round of lupron injections, his left eye proptosis and eye pain improved significantly, however, his left eye blindness did not improve.

He reported further improvement of left eye pain and almost complete resolution of proptosis following 14 days of palliative radiation therapy of 30 Gy to the retro-orbital tumor. This patient's radiotherapy was novel in that IMRT was used to limit radiation damage to the surrounding structures in the brain, as seen in Figure 2.

After 6 weeks of therapy, his PSA measured 203. CT of head without contrast 3 months after the CT at presentation demonstrated a decrease in proptosis of left globe and retrobulbar soft tissue mass (from 1.2 cm x 2.5 cm x 3 cm to 0.8 cm x 2.1 cm x 2.8 cm).

Discussion

Prostate cancer is a major health concern affecting 230,000 new men each year.¹ The incidence of prostate cancer with distant metastases is not uncommon. The axial skeleton is the most common site of distant spread.³ However, orbital bones are typically spared. Long et al reported 7% of the 508 men with prostate cancer studied had metastases to atypical sites. Of those 508 men, 1% had orbital metastases.² Shields et al studied 100 patients with orbital metastases and determined 12% to have a primary prostate cancer. Prostate cancer was the third most common primary cancer to metastasize to the orbit following breast and lung cancer.⁴ IMRT and hormone ablation is a viable option for palliation for this disease, which is novel in light of previous literature reports.

In the case report by Boldt et al of eight patients with prostate cancer and orbital metastases, it was extrapolated that patients with orbital metastases secondary to prostate cancer differ from patients with orbital metastases from other sites in two ways. First, patients with orbital metastases from prostate cancer have a greater mean age of onset of symptoms, 70.1 years versus 53.6 years respectively. Second, patients with orbital metastases from prostate cancer are more likely to have osteoblastic lesions; and patients with other types of orbital metastases are more likely to have osteolytic lesions or soft tissue masses.⁵ However, it must be noted that no p values were reported.

In nearly 25% of undiagnosed malignancies where an eye is affected by this cancer, the orbital metastases are the initial presenting feature.⁶ Bard et al first described unilateral proptosis as the presenting sign of metastatic prostate cancer.⁷ In the case report by Inagaki et al, hormone and local radiation therapy

alleviated the exophthalmos and eye pain a patient with orbital metastases from prostate cancer.³ This palliative treatment is now considered standard.

In the case report by Reifler et al, immunocytology was used to identify fine needle aspirate of an orbital tumor as metastatic prostate cancer using immunoperoxidase stain for prostate specific antigen (PSA).⁸ Fine needle aspiration or open biopsy is the only means of obtaining a definitive diagnosis. However, it is not necessarily recommended unless there is no history of cancer, no other metastatic site, or the results would change the management.⁶ In our case, no definitive diagnosis of the orbital mass was made, however clinical suspicion was strong in the setting of metastatic prostate cancer. Furthermore, initial treatment of the prostate cancer improved the orbital symptoms.

The atypical presentation of prostate cancer in our case report may be the result of the patient's immunodeficient status. Prostate cancer is a cell-mediated immunodeficient state as well, which may make HIV positive patients more susceptible to such malignancies.⁹ According to Pantanowitz et al, PSA, Gleason score, stage, and response to treatment of prostate cancer was not shown to be altered by HIV status.¹⁰ Pantanowitz et al and Levinson et al demonstrated HIV positive patients may have earlier onset of prostate cancer. Levinson et al determined mean age of diagnosis to be 54 years old in HIV positive patients.¹¹ Few case reports and little research have been done on the relationship between HIV and prostate cancer. Prior to HAART, few HIV positive individuals lived long enough to develop prostate cancer.⁸ As HIV has become more of a chronic disease, we expect more will develop diseases of advanced age. Further research needs to be done to determine if there is a worse prognosis for HIV positive individuals who develop prostate cancer. IMRT and hormone therapy, a reasonably effective therapy in this case, will likely continue to evolve as well. □

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