Oncology

Unilateral proptosis as initial presenting sign of prostate cancer in a 45-year-old man

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A B S T R A C T

We describe the case of 45-year-old man presented with a 3-month history of progressive unilateral proptosis, voiding symptoms, and a 20-pound weight loss. Imaging showed a large brain mass as well as significant extra cranial involvement. He was diagnosed with metastatic prostatic adenocarcinoma and underwent craniotomy, androgen deprivation therapy, and chemotherapy.

1. Introduction and background

Orbital metastases from prostate cancer are rare, occurring in about 3.5—8.3% of all orbital metastatic disease.1 Symptoms of orbital metastases include proptosis, diplopia, and decreased visual acuity.2 In this report, we present a case of a patient presenting with unilateral proptosis as the initial symptom of metastatic prostate cancer involving the sphenoid bone. While the prognosis is poor with a median survival of less than one year, early identification of tumor is essential to preserve ocular function and initiate therapy.1

2. Case presentation

A 45-year-old male presented to the ED with a 3-month history of progressive unilateral proptosis with associated diplopia and pressure of his left eye. He also reported diffuse body aches, increasing obstructive voiding, 20-pound weight loss and generalized malaise for the past 6 months.

A CT head and MRI brain showed a large infiltrating brain mass with extracranial involvement of the mandible, orbit and maxilla as demonstrated in Figs. 1 and 2. Further imaging showed multiple lytic lesions throughout his spine and pelvis along with L2 compression fractures. His lab work was significant for an elevated serum prostate-specific antigen level of 115 ng/mL.

A fine needle aspiration of the left sphenoid mass was consistent with metastatic prostate adenocarcinoma. The patient was started on androgen-deprivation and underwent palliative craniotomy for tumor debulking to preserve neurologic function. Chemotherapy was initiated 4 weeks after surgery and palliative radiotherapy was initiated for spinal metastasis.

3. Discussion

This unique case of metastatic prostate cancer demonstrates an atypical pattern of metastasis in a young male. Prostate cancer is the most common cancer among American men and is the second leading cause of cancer death in the United States. The average age at diagnosis of prostate cancer is 66 years old and 97% of prostate cancer diagnoses occur in those over age 50.3 It spreads directly through local invasion, perineural invasion, hematogenously, or via the lymphatic system.4 Prostate cancer typically metastasizes to pelvic lymph nodes, bones, lung, and liver.4 Prostate cancer that disseminates hematogenously spreads primarily to bones and most commonly axial spine, presenting with lytic lesions, which can result in pathological fractures.4

Prostate cancer metastasis to the orbit typically presents with signs of diplopia, proptosis, ophthalmoplegia, ptosis, red eye, rapidly progressive pain, or decreased visual acuity which, in up to 25% of patients, can be the initial presenting sign of primary tumor.5 Symptoms of metastasis to nearby paranasal sinuses can mimic a sinus infection, and present with diplopia, nasal mass or obstruction, and nasal pain.2 Metastases to the orbit typically occur via hematogenous spread through the carotid and ophthalmic arteries.2 Complications of orbital metastases can include retinal detachment, uveitis, papilledema, and glaucoma secondary to disease.2 Compared to other cancers, orbital metastases from prostate cancer typically affect older patients with an average age of presentation of 70.1 in prostate cancer versus 53.6 seen in other cancers.2 Tumors that more commonly affect the orbit include breast, and lung, with prostate being the third most common.2

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Our patient’s case is unusual given his young age and widely metastatic disease, with metastases to his axial spine, orbit, and brain. His case is also unique in the need for craniotomy and bony reconstruction of the sphenoid due to invasive nature of surrounding structures. Imaging is crucial to management of metastatic disease with CT scan being the gold standard for initial diagnosis due to quickness. MRI can be used to further characterize soft tissue and optic nerve involvement.\(^2\)

Hormonal therapy is the first line therapy for metastatic prostate cancer and is effective in about 85% of cases of prostate cancer.\(^1\) Recent studies have shown promise for upfront chemotherapy, as significant improvement in overall survival was noted in two studies where upfront docetaxel plus ADT was given for metastatic prostate cancer as compared to ADT alone.\(^5\) For palliation of symptoms, radiotherapy may be effective as well as steroids for visual symptoms.\(^7\) Goals of therapy include preservation of remaining vision as well as alleviation of symptoms given poor prognosis. A high index of suspicion for metastatic prostate cancer should be maintained in men who present with unilateral proptosis and urinary symptoms.

### 4. Conclusion

Orbital and brain metastases are rare occurrences in prostate disease. Mainstays of treatment include androgen deprivation therapy and palliative radiotherapy with an expanding role for chemotherapy as recent studies suggest promising outcomes with upfront chemotherapy for metastatic prostate cancer. Early recognition and treatment of metastatic disease is crucial for preservation of function and treatment direction.

### References

1. Pouncey AL, Fox TP, Bryant CA. Unilateral proptosis: an unusual presentation of prostatic carcinoma. BMJ Case Rep. 2013;2013.
2. Lefresne S, Fairchild A, Johnson R, et al. Genitourinary malignancy presenting as an ocular metastasis: a case report and review of the literature. Can Urol Assoc J. 2012;6:E67.
3. Group., U. S. C. S. W.. United States Cancer Statistics: 1999–2013 Incidence and Mortality Web-based Report. Atlanta (GA). 2016.
4. Patel AR, Olson KB, Pienta KJ. Proptosis and decreased vision secondary to prostate cancer orbital wall metastasis. Anticancer Res. 2005;25:3521.
5. Lam ET, Flag TW. Upfront chemotherapy for metastatic prostate cancer. Oncology (Williston Park). 2015;29:956.