Intraorbital Mass as a Complication of Metastatic Prostate Cancer

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Abstract

Orbital metastasis from adenocarcinoma of the prostate is an unusual, but serious complication. We report two patients with visual complications from orbital metastases. It was either the first manifestation of metastatic spread or a possible site for disease progression.

Report of Two Cases: A 45-year-old man with Gleason 9 Adenocarcinoma of the prostate was treated with radical prostatectomy, followed by external beam radiation because of positive surgical margins. Post-radiation the patient was disease-free. Five months later he presented with left eye proptosis and diplopia. Computed Tomography (CT) and Magnetic Resonance Imaging (MRI) showed a 4cm mass involving the greater wing of sphenoid, and displacing the optic nerve medially, and extending along the dura of the middle cranial fossa. PSA was 26.6ng/ml. Biopsy revealed adenocarcinoma consistent with a prostate primary.

Another 66-year-old man with widespread bone metastases, hormone refractory had a rapid rise in PSA to 2643.65ng/ml. The patient complained of diplopia. CT of the orbit showed a left orbital mass.

Conclusion: Review of literature reveals 59 reported cases with similar presentation. In the two patients we report here, the metastases threatened these patients’ vision which is definitely a serious complication. Bone scan did not provide appropriate visualization of the orbital masses. Particularly in our first patient, the orbital metastasis was the first manifestation of metastatic spread. We recommend that any patient with prostate cancer who develops visual disturbances should undergo CT or MRI imaging of the orbit. Questionable assessment of HIV status might be worth further studies.

Keywords: Metastatic Prostate Cancer; Orbital mass; Diplopia

Introduction

Although bone metastases in Prostate cancer are common, they rarely affect the periorbital area to the extent of the direct interference with vision. In other words, orbital metastasis from adenocarcinoma of the prostate is an unusual, but a serious complication [1]. We report two patients who presented with the unusual presentation of metastases to the peri-orbital region resulting in diplopia.

Report of Two Cases

First case

A 47- year-old male patient presented to us with a slowly progressive, left eye swelling. He noticed the change over a 3-week period, but had a dramatic increase in eye protrusion over a 24-hour period prior to seeking medical advice.

He denied fever, chills or recent upper respiratory tract infection.

His past medical history was significant for an extensive left sided maxillary sinus surgery 27 years prior for a periorbital abscess complicating cellulitis and sinusitis; and Prostate cancer diagnosed 5 months prior to the current illness. He underwent radical prostatectomy; histopathology revealed Adenocarcinoma of the Prostate with positive surgical margins and Gleason score of 9. There was no evidence of metastases. Bone scan revealed a left orbital increased uptake, but this was attributed to his prior surgery. He received adjuvant radiation therapy to the prostate bed and Leuprolide depot injections.

After seeking medical advice for the left orbital swelling, he was admitted for further evaluation. He was treated with intravenous antibiotic therapy for suspected orbital cellulitis and abscess. Steroids were commenced to decrease orbital edema. Narcotic analgesics were given for pain control.

On admission, the patient’s physical examination revealed a well-built man. Vital signs were normal. He was afebrile. Examination of the heart, chest, and abdomen showed a healed abdominal wall incision from his suprapubic prostatectomy. No inguinal lymph nodes were palpable. His PSA level was elevated; 26.26ng/ml compared to 6.77ng/ml four months prior to admission.

Eye exam revealed a prominent left eye proptosis, with upper and lower eyelid edema and mild septal tenderness. The visual acuity was 20/20 with correction in both eyes. Extra ocular muscles were intact, other than mild tenderness upon palpation around the globe inside the left orbit. There was no erythema, increased temperature or lymphadenopathy noted.

Computed tomography of the orbit revealed a left orbital mass (Figure 1), which was further investigated via Magnetic Resonance Imaging (Figure 2). The latter showed the same irregular large mass involving the lateral wall of the left orbit as well as the greater wing of sphenoid bone with displacement of the left optic nerve medially. There was also an extension along the dura of the left middle cranial fossa and left orbital extension.

This mass measured 4 cm in its maximum dimensions, and

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displayed abnormal enhancement of the dura overlying the left frontal lobe.

The patient was referred for open biopsy. Histopathology of the left orbital mass (with sphenoidal extension) showed Metastatic Adenocarcinoma of the Prostate (Figure 3).

He underwent radiation therapy to his left sphenoid bone for local control and for prevention of disease progression. He was also started on bicalutamide 50 mg daily (in addition to the leuprolide depot injections) with significant improvement clinically and a marked reduction in his PSA level to 4.80ng/ml.

Second case

Similarly, a 66 year-old male patient presented with an identical complication. Three years after radical prostatectomy, hormonal therapy and postoperative radiation therapy; the patient demonstrated a rising PSA. His PSA level rose to 2643.65ng/ml from 573.87 ng/ml over a three-month period. The patient had known bone metastases refractory to hormonal therapy, to Mitoxantrone in addition to steroids as well as to Docetaxel. Worsening of metastatic spread noted on a Technetium 99 bone scan.

The patient complained of diplopia with increased sensitivity to touch around the left eye.

Eye exam revealed a subcutaneous nodule over the left lateral orbit pushing the eye downward and medially. In addition, he had a subcutaneous soft tissue mass adjacent to the right maxilla. CT scanning revealed a left lateral orbital mass. The bone scan also showed widespread bone metastases including the left lateral orbit.

He received palliative radiation therapy to the left orbital area. He was also commenced on Ketoconazole for his widespread disease however it was discontinued after one month due to progression of disease in the thoracic spine complicated by spinal cord compression.

Results

We report an unusual complication of metastatic prostate cancer. Our review of literature reveals only 59 reported cases of orbital metastases secondary to prostate cancer. This emphasizes the importance of considering the orbit as a site of possible metastatic spread from the prostate not only in patients with documented prostate cancer, but also as a possible site of initial presentation or relapse [2].

In our first patient; the presentation of metastatic disease was an orbital mass. His left orbital mass biopsy revealed adenocarcinoma metastatic from the prostate along with elevated PSA levels.

Our second patient was known to have metastatic prostate cancer with primarily bone involvement, but the diplopia and left lateral orbital mass developed as an unusual complication of the metastatic disease.

Discussion

Adenocarcinoma of the prostate accounts for 3.6-4% of orbital metastases encountered in clinical practice [3,4] and is the third most common cancer to metastasize to the orbit [5]. Another study suggests a substantially higher proportion of orbital metastases attributable to prostate cancer (A study of 100 patients with orbital metastases, 12% were found to be attributable to prostate cancer, accounting for 33% of the male population contributed in the study) [6]. The tumor follows one of two ways to reach the orbit [2,7]; either through the carotid-ophthalmic artery which is considered the general hematogenous way, or through the venous way which involves Bateson’s venous plexus then the cranial venous sinuses/ophthalmic vein. Signs and symptoms most commonly seen in metastatic orbital tumors are: decreased vision, periorbital pain, exophthalmus, diplopia, eyelid swelling, and redness [4,8].

In several case reports orbital metastases was the first manifestation of either metastatic spread, as our first case or even the first indication of prostate cancer [3].

Similar to our diagnostic approach, most of the reports showed the importance of utilizing CT scan/MRI for orbital involvement in
metastatic prostate cancer rather than the bone scan alone. Metastatic prostate cancer differs from other metastases to the orbit in its osteoblastic features versus osteolytic or soft tissue features of the other metastases [8].

In regards to therapy for this rare disease entity, as it is considered one of the ophthalmic emergencies [9], cranial radiation therapy and antiandrogen endocrine therapy were utilized with regression of symptoms in more than 80% of patients treated with adequate dose [9,10]. In other reports, steroids used in addition to the radiation therapy helped to induce long lasting remission [11].

In our two case reports, we did not investigate the HIV status. In a recent report, a known HIV patient manifested with intra-orbital metastases from prostatic cancer. It was postulated that HIV+ patients currently enjoy longer life expectancies, but with the caveat that their immunosuppressed status may lead to more unusual metastatic presentations [12]. It might raise an interesting question if there is any association between the orbital metastases as an unusual site of metastases and the HIV status.

References