Proptosis and Decreased Vision Secondary to Prostate Cancer Orbital Wall Metastasis

ASMITA R. PATEL1, KARIN B. OLSON2 and KENNETH J. PIENTA2

1Sinai Grace Hospital, Detroit Medical Center/Wayne State University, 6071 W. Outer Dr. Detroit, MI 48235;
2University of Michigan, Departments of Medicine and Urology, 7308 CCGC, 1500 E. Medical Center Drive, Ann Arbor, MI 48109-0946, U.S.A.

Abstract. The case of a 66-year-old gentleman who presented with unilateral proptosis, eye pain and partial loss of vision seven years after his original prostate cancer diagnosis is reported. MRI of the orbits revealed a 2-cm lesion in the posterolateral right orbital wall near the optic foramen with compression of the optic nerve. Metastatic orbital lesions are relatively uncommon in prostate cancer. Treatment is palliative and varies according to the time of presentation in the course of the disease. This patient’s symptoms resolved after reinitiation of combined androgen blockade.

Case Report

The patient was a 66-year-old Caucasian male with a history of prostate cancer for seven years, who presented with development of proptosis and diminished visual acuity in the right eye. This patient initially presented with acute urinary retention and outlet obstruction, and he was found to have a Gleason score 6 tumor. CT scan of the abdomen and pelvis was negative and the bone scan demonstrated a question of left acetabular and L-5 vertebral lesion. The patient was treated with definitive radiation therapy to the prostate and pelvis. Five years later, he developed nocturia and a bone scan revealed multiple lesions, including a right periorbital lesion. Combined androgen blockade therapy was started. Four months later, a TURP was performed. He discontinued his hormonal therapy after a total of 6 months, and did not seek follow-up care. Two years later he developed right eye pain with partial loss of vision in the right eye. Ophthalmology evaluation revealed proptosis, visual field loss and loss of depth perception. MRI of the orbits demonstrated a 2-cm lesion in the posterolateral right orbital wall near to the optic foramen with compression of the optic nerve. The patient had no other symptoms of metastatic disease, but his PSA was 168 and bone scan and CT of the abdomen and pelvis revealed extensive skeletal and skull involvement, along with metastatic disease of the lung parenchyma and pancreas. The patient was restarted on combined androgen blockade therapy (Depo-Leuprolide and bicalutamide). Vision in the right eye was restored over a one-month period.

Discussion

Prostate cancer is the most common lethal malignancy affecting males in the United States. It spreads by direct local invasion, perineural invasion, or via the bloodstream and lymphatic system. Hematogenous spread occurs primarily to the bones. Distant visceral metastases are seen in the pelvic lymph nodes, liver and lungs. Clinically evident bone metastases occur in almost all patients with advanced prostate cancer, typically involving the lumbar spine, ribs and pelvis (1). Involvement of skull convexity is frequent, but the skull base and orbits are less commonly affected (2). Metastases of prostate carcinoma to the orbit are rare. In a series of 28 cases of orbital metastases, only 1 (7%) was the result of prostate carcinoma (3).

About 2% to 9% of all orbital neoplasms are metastatic lesions in nature (4). Breast, lung, lymphomas and leukemia are amongst the most common primary neoplasms known to metastasize to the orbit (3, 5). Two major features differentiating orbital lesions from prostate cancer from other orbital metastases are the presenting age and the lesion characteristics. The mean age at onset of symptoms is greater for patients with prostate cancer compared to those with other orbital metastases (70.1 vs. 53.6 years). Other orbital tumors present as osteolytic lesions or soft-tissue masses, whereas prostate metastases to the orbit
frequently present as osteoblastic lesions (6). Osteolytic and mixed osteoblastic-osteolytic lesions are also seen, but these are more common in the terminal stages of the disease, when the diagnosis of prostate cancer is more obvious (7). The other characteristic feature suggestive of prostatic origin is a hyperostotic and spiculated lesion on CT scan (8). Other conditions, such as osteoma, meningioma, osteomyelitis, Paget’s disease, lymphoma and leukemia, may also lead to osteoblastic lesions. Clinical history, high resolution CT scan, MRI as well as immunoperoxidase staining for cytoplasmic acid phosphatase can help establish the diagnosis of prostatic orbital metastases. In a case where a suspected orbital lesion is osteolytic or primarily soft tissue, a biopsy may be useful. In our case, the combination of clinical history, high resolution CT scan, along with MRI of the orbits was used to make the diagnosis. Work-up of osteoblastic orbital metastases in a man over 50 years of age, however, should be initiated with a urological evaluation instead of proceeding directly to orbital biopsy, since most of these patients will be found to have metastatic prostate cancer (1, 2, 4, 6, 9-11).

Prostatic carcinoma can metastasize to the orbit by at least two routes: in patients with lung involvement, emboli can pass via the pulmonary circulation into the carotid arteries and subsequently into the ophthalmic artery. In the absence of pulmonary lesions, prostatic or vertebral lesions may seed into Batson’s plexus, and reach cranial venous sinuses traveling up to ophthalmic and vortex veins (9). The age range of patients presenting with orbital metastases varies from 52 to 85, the mean age being 70 years (4). The clinical presentation of these orbital metastases are, in order of frequency, decreased visual acuity, ocular pain, proptosis, retinal detachment, presence of a mass, uveitis (masquerade syndrome) and secondary glaucoma, as well as osteoblastic lesions of the orbital wall (9).

The course of disease for patients with prostatic orbital metastases is variable and depends on when during the disease course the presentation occurs (2-12). The treatment of prostatic metastases to the orbit is palliative and does not alter survival. Androgen ablation is the preferred treatment if the patient is hormone-naïve. Local radiation therapy is also an effective alternative and has been used for palliation of symptoms in some cases. In this case, the patient had a good response to combined androgen therapy, and restoration of vision in the eye was achieved.

References


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