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Grand Rounds

A 73-year-old man with congestion and mild proptosis of the left eye

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History

A 73-year-old man presented to the Department of Ophthalmology, Amala Institute of Medical Sciences, Kerala, with mild congestion of left eye. He believed that his symptoms began after accidental exposure of his eyes to medicated oil used during a massage session, as part of traditional medical treatment he was taking. He was diagnosed with toxic conjunctivitis and treated with loteprednol eyedrops. At his follow-up visit on the third day, he complained that his left eye had not improved and that it was starting to "bulge out."

The patient denied vision loss, double vision, headache, or other systemic symptoms. He had undergone bilateral orchidectomy and radiotherapy for prostate carcinoma 3 years earlier and was now on hormone therapy with bicalutamide. He had undergone thyroidectomy for hyperthyroidism 15 years previously and was now onlevothyroxine. Ocular history was remarkable for uneventful cataract extraction in both eyes with IOL placement 20 years previously.

Examination

On initial examination, best-corrected visual acuity was 20/20 in each eye. Color vision was normal in both eyes. There was periorbital fullness and partial ptosis of the left eye. Palpation revealed apainless, firm swelling along the lateral one-third of superior orbital margin. It was found to displace the globe inferiorly (Figure 1A). Hertel exophthalmometry measured 16 mm in the right eye and 22 mm in the left eye (Figure 1B). Ocular motility was full on the right side; the left eye showed generalized restriction and complete loss of elevation (Figure 1C).Slit-lamp examination of the anterior and posterior segments was entirely normal except for temporal bulbar conjunctival congestion with chemosis in left eye. Pupils were reactive, with no afferent pupillary defect.

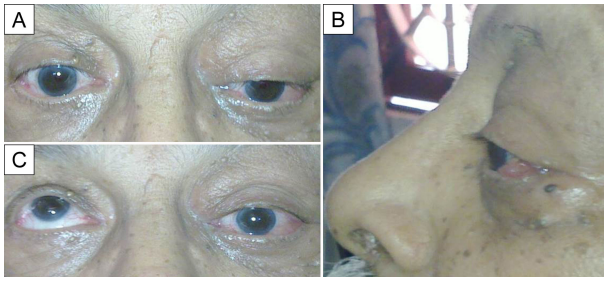

Figure 1. Clinical photograph of the patient at presentation. A, Left periorbital fullness and partial ptosis, with inferior displacement of the globe. B, Proptosis of left eye with temporal conjunctival congestion and chemosis. C, Complete loss of elevation in left eye.

General examination did not reveal any abnormal cervical lymph nodes. Cranial nerve evaluation was within normal limits.

Ancillary Testing

Routine blood testing, thyroid function tests, and prostate specific antigen (PSA; 0.1 ng/ml) were within normal limits. Computed tomography (CT) of brain and orbit demonstrated an enhancing lytic lesion, with a significant soft tissue component and calcification. It measured 22 × 35 × 34 mm and involved the left frontal bone encroaching on the lateral wall of orbit. The lesion was found to indent the globe on its superior aspect. Both the superior rectus and superior oblique muscles appeared to be involved. The left optic nerve was free. These findings were suggestive of left orbital metastasis with intracranial extension (Figure 2).

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Digital Journal of Ophthalmology, Vol. 22

Digital Journal of Ophthalmology, Vol. 22

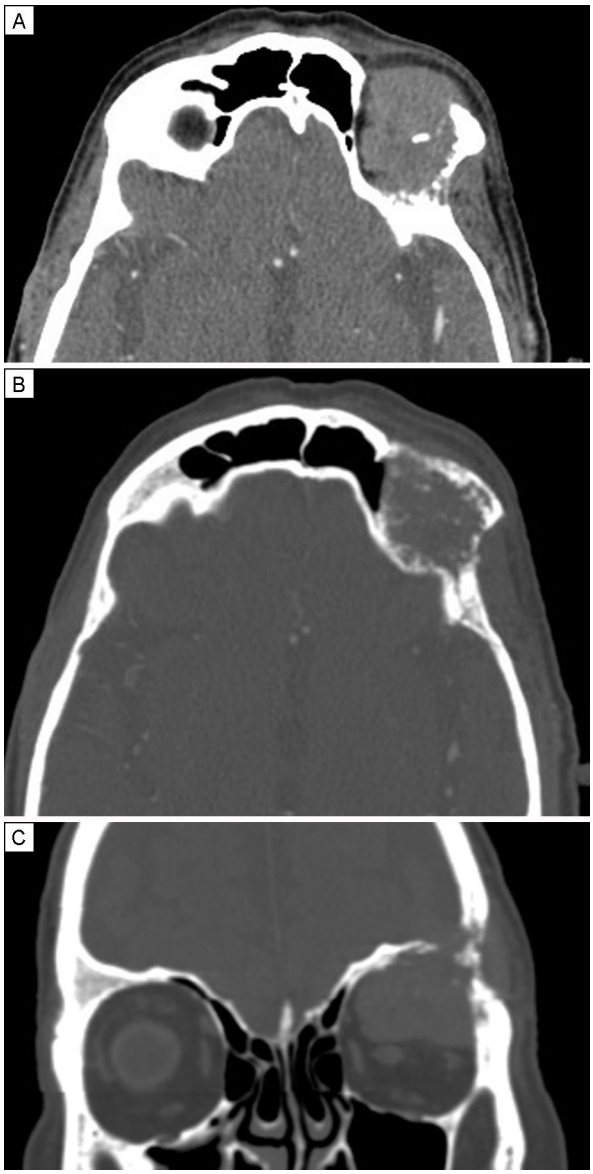

Figure 2. Computed tomography of the brain and orbits. Axial images (A, soft tissue window; B, bone window) showing enhancing lytic lesion (22 × 35 × 34 mm), with significant soft tissue component and calcification. Coronal reconstruction (C) showing the lesion eroding left frontal bone on the lateral wall of the orbit.

Fine-needle aspiration cytology of the mass was undertaken and a diagnosis of poorly differentiated carcinoma, possibly adenocarcinoma was made (Figure 3). PSA staining confirmed prostatic origin.

Treatment

The patient was referred to an oncologist for treatment. He underwent metastatic evaluation with bone scintigra-

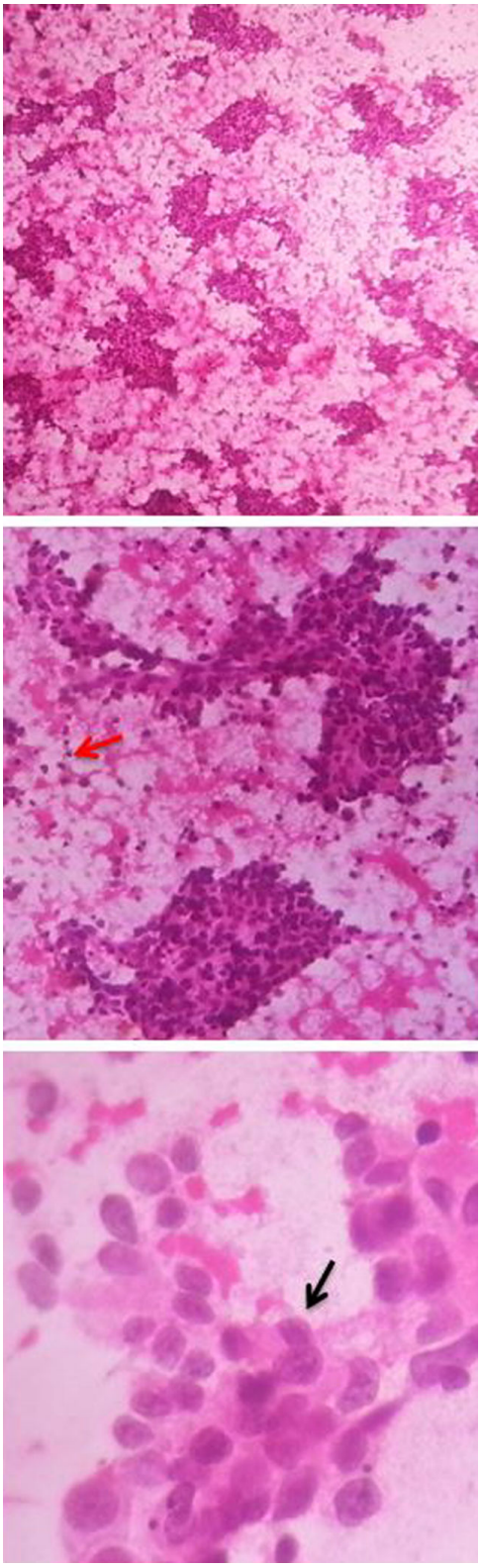

Figure 3. Fine-needle aspiration cytology showing round to polygonal cells having hyperchromatic pleomorphic nuclei, with indistinct nucleoli and moderate amount of eosinophilic cytoplasm (black arrow); scattered bare nuclei (red arrow) were also noted (H & E, original magnification ×40, ×100, ×400).

Digital Journal of Ophthalmology, Vol. 22

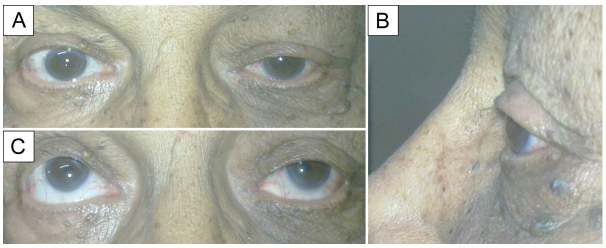

Figure 4. Clinical photographs 2 weeks after radiotherapy. A, Reduced lid edema and partial ptosis of left eye. B, Reduced proptosis and resolved conjunctival chemotic congestion of left eye. C, Moderate restriction of elevation in left eye.

phy and contrast enhanced CT of the thorax, abdomen, and pelvis. No other foci of metastasis were identified, and he subsequently underwent palliative conformal radiotherapy to left orbit (total dose, 30Gy/10#).Two weeks after radiotherapy, the left eye showed madarosis with partial ptosis (Figure 4A). The lid edema and proptosis were significantly reduced compared to the previous visit. The conjunctival chemosis and congestion had resolved completely (Figure 4B). Extraocular movements had improved, but moderate restriction of elevation persisted (Figure 4C).

Differential Diagnosis

In this patient, the differential diagnosis included a lacrimal gland tumor or idiopathic orbital inflammation, which are the most common lesions in the lacrimal gland area. A history of thyroid disorder, with clinical signs of unilateral proptosis, restricted ocular motility, and the presence of temporal flare and chemosis of the conjunctiva, prompted us to include thyroid ophthalmopathy in the differential diagnosis. The possibility of primary or metastatic orbital tumors was also considered in view of the patient's history of prostate carcinoma.

Diagnosis and Discussion

The patient was diagnosed with left orbital metastasis from adenocarcinoma of the prostate with intracranial extension. About 2%–9% of all orbital neoplasms are metastatic lesions.[1] Breast, lung, lymphomas, and leukemia are among the most common primary neoplasms known tometastasize to the orbit.[2,3] The average age of onset of orbital metastasis from prostate carcinoma is later, compared to orbital metastasis from other malignancies (70.1 vs 53.6 years).[4,5]

Another differentiating feature is that prostate metastases usually present as osteoblastic lesions in contrast to other orbital metastases which present as osteolytic lesions.[4,5] However, in the terminal stages of the disease, osteolytic and mixed osteoblatic-osteolytic lesions are seen.[6]A characteristic feature suggestive of prostatic origin is a hyperostotic and spiculated lesion on CT scan.[7] Soft tissue involvement is rare and the PSA level is elevated in 99% cases of metastatic disease.[8,9] In contrast to the aforementioned typical features, the present case was unusual because the patient presented with osteolytic metastasis to the orbit with significant soft tissue involvement and low PSA values, necessitating a biopsy to confirm the diagnosis.

Tumor metastasis to the orbit from prostate cancer may occur through the general hematogenous route of the carotid/ophthalmic artery or through Batsons venous plexus, which transports tumor emboli from the prostate to the cerebral venous sinuses/ophthalmic vein.[10–12] Patients usually present with one or more clinical features, such as decreased visual acuity, ocular pain, proptosis, retinal detachment, presence of a mass, secondary glaucoma, and osteoblastic lesions of the orbital wall.[12] The treatment of prostatic metastases to the orbit is palliative (androgen ablation or local radiotherapy) and does not alter survival.[5]

Prostate cancer is the second most common cancer in men and the fifth most common cause of death from cancer in men worldwide.[13] Hence, clinicians should maintain a high index of suspicion of metastasis from prostate cancer in any elderly male who presents with even a mild conjunctival chemosis. This is especially relevant in patients with comorbid conditions that can lead to a similar clinical presentation. The present case highlights the fact that neither the osteolytic nature of the orbitallesion nor normal PSA levels can conclusively rule out orbital lesions secondary to prostate carcinoma and that early and accurate diagnosis may only be possible with a biopsy.

Literature Review

Pubmed, MEDLINE, Google Scholar, were all searched, without language restriction, on February 3, 2016, using the following terms: *prostate carcinoma, orbital metastasis in prostate carcinoma, proptosis in orbital metastasis, PSA levels, vertebral veins AND prostate carcinoma.*

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Digital Journal of Ophthalmology, Vol. 22