

Grand Rounds

A 68-year-old man with a recurrent orbital lesion

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History

A 68-year-old man was referred to our oculoplastics clinic by his primary ophthalmologist with a three month history of an expanding mass in his left supero-temporal orbit. He had been followed yearly with CT scans since a recurrent left lacrimal gland lesion was removed 26 years ago. The initial lesion was resected 13 years prior to that, when the patient was 29 years old. The pathology reports from both surgeries described a pleomorphic adenoma of the lacrimal gland with no malignant criteria. Neither report indicated whether the tumor had been completely resected. The last CT scan was performed almost a year before symptoms started and was read as stable with no tumor recurrence. His only current complaint was of slight episodic pain in the affected area. He denied any diplopia, vision loss, headache or other systemic symptoms. He was also treated for hypertension, hypothyroidism and dyslipidemia.

Examination

On initial examination, best corrected visual acuity was 20/40 in the right eye and 20/30 in the left eye. Pinhole testing improved visual acuity to 20/25 in both eyes. Color vision tested with the HRR plates was normal bilaterally. A painful and fixed mass in the left supero-temporal orbit was identified on palpation and skin changes were seen overlying it. It was also found to displace the globe inferonasally (Figure 1A). Hertel exophthalmometry measurements were 15 mm in the right eye and 21 mm in the left eye (Figure 1B). Extraocular movements were full on the right side with a slight limitation of abduction in the left eye. Pupils were normally reactive with no afferent papillary defect. Slit-lamp examination of the anterior and posterior segments was entirely normal. No choroidal folds were seen in the left eye. Evaluation of the fifth cranial nerve revealed a

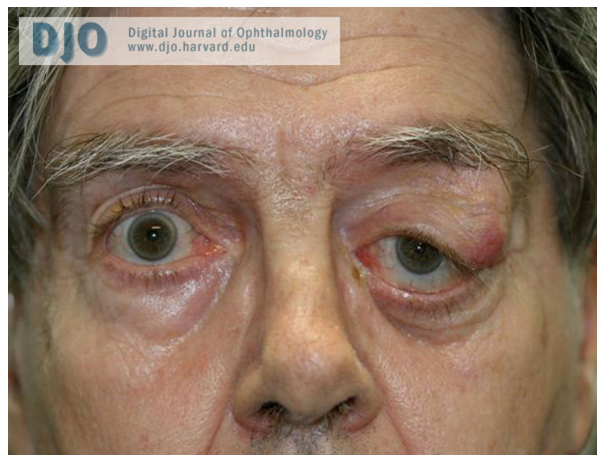


Figure 1A. External examination revealed a fixed mass that was painful on palpation as well as left hypoglobus.



Figure 1B. Photograph demonstrating proptosis of the left globe.

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diminished sensitivity in the left ophthalmic division. The maxillary division was normal bilaterally. No abnormal cervical lymph nodes were palpated.

Ancillary Testing

Radiographic Studies

An orbital MRI was obtained. A polylobulated mass in the superolateral quadrant of the left orbit was found. There was apparent destruction of the lateral wall and lateral part of the orbital roof by the tumor. Upper eyelid infiltration was also seen. The globe itself was normal. (Figure 2A–B)

Pathology

An incisional biopsy was performed via an anterior orbitotomy. It revealed the presence of a malignant mixed tumor arising from a pleomorphic adenoma. Immunohistochemical studies with keratin 7 were also obtained and confirmed the presence of epithelial cells in the malignant clone. (Figure 3A–B)

A consultation with an oncologist was requested and an extensive systemic workup including cerebral MRI, PET scan, chest x-ray, abdominopelvic CT scan, CBC, renal and liver tests was ordered. All results were within normal limit. The remainder of the complete physical examination was normal.

Treatment

A radical exenteration of the left orbit including the roof, lateral wall and orbital apex was performed as a combined procedure by otolaryngology, neurosurgery and oculofacial surgery (Figure 4). All margins were free of residual tumor on intraoperative frozen sections. The left orbit was reconstructed using a Medpor™ Complete Orbital implant and a 2-part temporalis muscle and temporoparietal fascial flap with skin grafts. The implant was contoured to fit the defect and was fixed to the surrounding bone using plate and screws (Figure 5).

One week later the patient developed necrosis of the distal portion of his temporoparietal flap and of the overlying skin graft. This exposed the Medpor™ implant. The patient was taken back to the operating room and the area was debrided and reconstructed with a radial forearm free flap. A left superficial parotidectomy with facial nerve dissection and a left cervical neck dissection were also performed since a tumor was found in the ipsilateral parotid gland on reviewing the MRI. All were free of malignancy. Surprisingly, an entirely benign pleomorphic adenoma was found in the ipsilateral paro-



Figure 2A. T1-weighted fat suppressed image showing the ill-defined mass in the left orbit. The lacrimal gland cannot be distinguished.

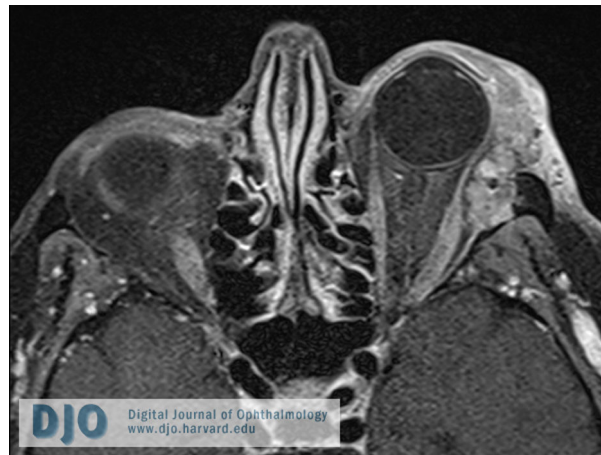


Figure 2B. T1-weighted fat suppressed image showing the tumor coming in close contact with the left lateral rectus muscle and its insertion on the globe. The optic nerve is intact. The lesion measures 5.1 × 3.4 × 2.4 cm.

tid gland with no evidence of metastasis. The patient then received radiotherapy to the orbital region. Figure 6 shows him 3 months after the second procedure.

Differential Diagnosis

The differential diagnosis of orbital tumors is extensive. Lymphoid tumors and inflammatory disorders (idiopathic orbital inflammation, inflammation related to a systemic disorder) are the two most common causes of lesions in the lacrimal gland area. Epithelial tumors including pleomorphic adenoma (benign mixed tumor),

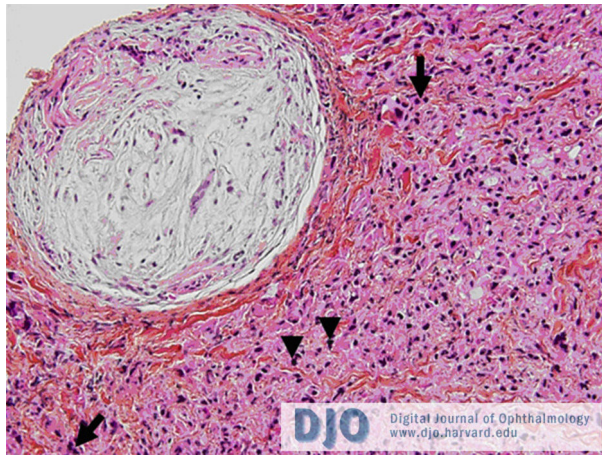


Figure 3A. Benign mixed tumor composed of clumps of ovoid and fusiform-shaped cells embedded in a myxoid stroma is seen in the upper left corner. The malignant component is on the right. Mitotic figures can be seen (arrows) as well as dense chromatin in the nuclei of cells showing an elevated nuclear-cytoplasmic ratio (arrowheads).

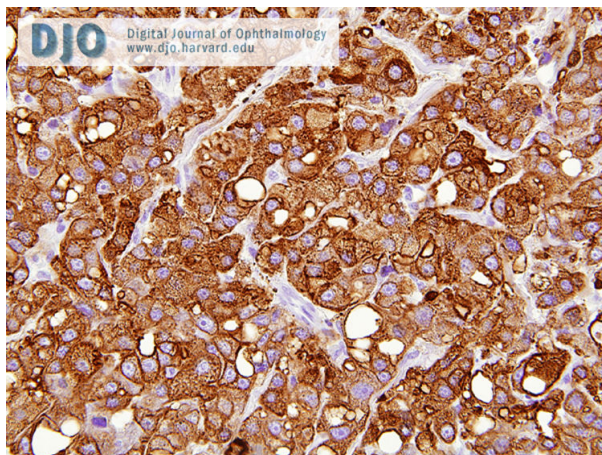


Figure 3B. Positive staining of the malignant cells for keratin 7, which confirms the epithelial origin of the tumor.

malignant mixed tumor and adenoid cystic carcinoma are also relatively common. Other possibilities include infectious dacryoadenitis, metastases, dermoid cyst and a lacrimal gland cyst (dacryops).

In our patient, the past history of an incompletely resected pleomorphic adenoma combined with the aggressiveness of the recurrence he was experiencing pointed to a diagnosis of carcinoma ex-pleomorphic adenoma (malignant mixed tumor).



Figure 4. Perioperative image showing the extent of the defect.

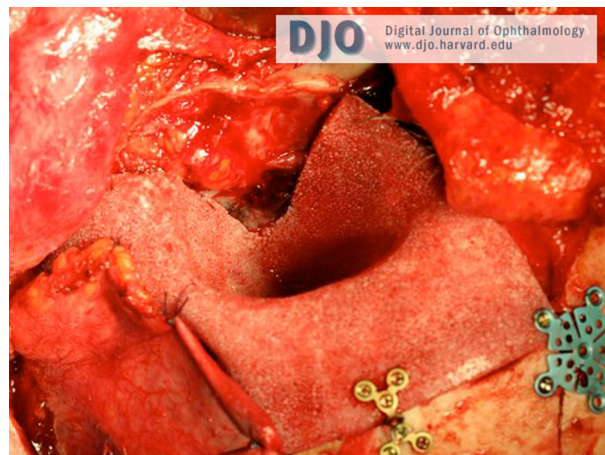


Figure 5. Orbit reconstructed with the Medpor™ implant.

Diagnosis

Carcinoma ex-pleomorphic adenoma (malignant mixed tumor)

Lacrimal gland lesions constitute almost 10% of all space-occupying orbital lesions. Between 50 and 80 percent are inflammatory or lymphoid tumors. Epithelial tumors, of which approximately 55 percent are benign and 45 percent malignant, represent the vast majority of remaining lesions.^{1,2}

Pleomorphic adenoma is the most common benign neoplasm of the lacrimal gland, and it is almost always found in the orbital lobe of the gland. It tends to affect men slightly more than women. Typically, a patient between 40 and 50 years of age will present with a



Figure 6. Picture taken 3 months after the last surgery.

slowly progressive and painless proptosis. Globe dystopia is commonly seen. Orbital imaging shows a well-circumscribed mass usually without bony erosion. Histopathologically, these lesions consist of a mixture of epithelial, myoepithelial and mesenchymal elements that led to the term benign mixed tumor. Management consists of complete surgical excision of the tumor with its pseudocapsule and a surrounding margin of orbital tissue. Incisional biopsy prior to surgery should be avoided. One series found a recurrence rate of 32 percent at 5 years in previously biopsied lesions, compared to 3 percent for those without biopsy.³ This surgical dictum has however come under recent debate.⁴

Of recurrent pleomorphic adenomas, it is estimated that 10 percent will become malignant after 20 years and that 20 percent will become malignant after 30 years.³ Malignant transformation will result in a malignant mixed tumor, termed carcinoma ex-pleomorphic adenoma. Patients are typically older than those with pleomorphic adenoma, and they present with a rapidly growing painful lesion. Bony erosion is commonly seen on orbital imaging. Histopathologic diagnosis can only be made if one has either earlier biopsy evidence of a pre-existent pleomorphic adenoma, or if the coexistence of

vestiges of a pleomorphic adenoma is seen along with the outgrowth of a malignant clone in the material.⁵ Most commonly, the malignant epithelial elements will be a poorly differentiated adenocarcinoma, but adenoid cystic carcinomas have also been described.⁶ Incisional biopsy is recommended to confirm the diagnosis and a systemic workup for metastasis should be conducted. Malignant mixed tumors that have invaded beyond their capsule carry a poor prognosis, with a survival rate at 5 years of only 35 to 45 percent.⁷ Management consists of some form of radical exenteration followed by adjunctive radiotherapy. As regional metastases have been described months after orbital surgery, it might be advisable to perform parotid and cervical lymph node dissections at the time of the first intervention.⁵

This case illustrates the potentially devastating hazards of an incompletely resected pleomorphic adenoma. It is important that such tumors be completely excised during the initial surgery to prevent recurrences and possible malignant transformation.

References

1. Shields JA, Shields CL, Scartozzi R. Survey of 1264 patients with orbital tumors and simulating lesions. *Ophthalmology* 2004;111:997-1008.
2. Font RL, Smith SL, Bryan RG. Malignant epithelial tumors of the lacrimal gland: a clinicopathologic study of 21 cases. *Archives of Ophthalmology* 1998;116:613-616.
3. Font, RL.; Gamel, JW. Epithelial tumors of the lacrimal gland: an analysis of 265 cases In: Jakobiec FA, ed *Ocular and Adnexal Tumors* New York: Aesculapius; 1978. p. 787-805.
4. Lai T, Prabhakaran VC, Malhotra R, Selva D. Pleomorphic adenoma of the lacrimal gland: is there a role for biopsy? *Eye* 2009;23(1):2-6.
5. Jakobiec, FA.; Font, RL. Orbit. In: Spencer, WH., editor. *Ophthalmic Pathology* Philadelphia: WB Saunders Company; 1986. chap. 12.
6. Ni C, Kuo PK, Dryja TP. Histopathological classification of 272 primary epithelial tumors of the lacrimal gland. *Chinese Medical Journal* 1992;105:481-485.
7. Rootman, J. *Diseases of the orbit: a multidisciplinary approach* Philadelphia: Lippincott Williams & Wilkins; 2003. p. 351-60.