A 53-year-old man presented with right-sided epiphora and progressive swelling at the right medial canthal area of 2 months’ duration. The swelling was not associated with any pain, purulent or hemorrhagic discharge, or changes in visual acuity. Examination revealed a nontender, rubbery mass over the right lacrimal fossa, measuring approximately 1 cm in maximum size. No material could be expressed from the punctum by applying pressure on the lacrimal sac. Lacrimal irrigation revealed an obstruction without reflux from the opposing punctum. The patient underwent a dacryocystorhinostomy, which revealed a large papillary lesion entirely filling the lacrimal sac and extending into the ethmoid air cells. The tumor could not be completely excised through the surgical site. Orbital and sinus computerized tomographic scans and magnetic resonance images showed possible residual tumor in the ethmoid air cells and/or superior nasolacrimal duct. Additional surgical excision was then performed using an external and transnasal endoscopic approach. The patient was treated postoperatively with 6000 rad of external radiation for 45 days.

Histologic sections of the excised biopsy specimens displayed a papillary lesion with a mixed growth pattern, a combination of exophytic and endophytic (inverted) patterns. The exophytic area demonstrated fungiform masses with projecting, fingerlike proliferations of epithelium (Figure 1). The inverted or endophytic area showed invasive acanthosis of surface epithelium into the underlying stroma (Figure 2). The tumor was composed of cells resembling those normally present in the mucosa of the lacrimal sac, that is, stratified columnar epithelium containing scattered goblet cells (Figures 3 and 4). There were some tumor cells with squamoid appearance, but they did not have abundant pink cytoplasm or intercellular bridges. Most of the tumor cells were spindly and elongated, with areas containing goblet cells. Foci with increased cellularity, nuclear pleomorphism, and mitotic figures were observed (Figure 4, arrow). Microinvasion of the stroma was suspected in some areas (Figure 2).

What is your diagnosis?
Pathologic Diagnosis: Transitional Cell Carcinoma of the Lacrimal Sac

Abstract

Transitional cell carcinoma of the lacrimal sac is the second most common type of lacrimal malignancy; it is potentially lethal if it is not recognized and treated. The tumor in the patient presented here was composed microscopically of a combination of exophytic and endophytic (inverted) papillary lesions. Spindly, elongated cells with goblet cells were found, with areas of increased cellularity, nuclear pleomorphism, and mitotic figures, which was suggestive of a diagnosis of transitional cell carcinoma rather than benign papilloma. This distinction is important, as the former may require the addition of radiation therapy in the treatment protocol because of its poor prognosis, difficulty in achieving complete excision, and high rates of recurrence. In this patient, additional tumor was found on imaging studies and the residual tumor was excised with subsequent radiation therapy.

Tumors of the lacrimal sac are rare; however, they are important because many are malignant and potentially lethal if therapy is delayed or inadequate. Of the approximately 300 lacrimal sac tumors that have been reported, 73% are primary epithelial tumors, and most (75%) of these are malignant.1 Most patients with a lacrimal sac tumor present with a lacrimal mass and signs of obstruction that lead to epiphora, or excessive tearing. In addition, lacrimal hemorrhage with pain is highly suggestive of a malignant neoplasm of the lacrimal sac. Because these symptoms (except bleeding) are also commonly seen in cases of dacryocystitis, a dacryocystogram may be helpful. Dacryocystography often shows a filling defect of the sac lumen or a distended sac with an uneven or mottled appearance. The triad of epiphora, irreducible mass, and a positive dacryocystogram strongly suggests the preoperative diagnosis of a lacrimal sac tumor.2 Once a lacrimal sac tumor is suspected, orbital and sinus computed tomographic scanning is imperative. These studies may provide evidence of expansion or erosion into the lacrimal sac fossa or invasion into neighboring structures.3,4

Histologically, the lacrimal sac is lined by stratified columnar epithelium with scattered goblet cells and foci of ciliated respiratory epithelium. The canaliculi and naso-lacrimal duct are lined by nonkeratinizing, stratified squamous epithelium. This heterogeneous epithelial lining of the lacrimal drainage system gives rise to a variety of epithelial neoplasms.5,6

Tumors of the lacrimal sac are divided into epithelial and nonepithelial neoplasms. The nonepithelial tumors consist of fibrous histiocytoma, lymphoid lesions, malignant melanoma, hemangiopericytoma, lipoma, granulocytic sarcoma, and neurofibroma. Benign epithelial tumors include squamous and transitional cell papillomas, oncocytomas, and benign mixed tumors. Squamous papillomas show acanthotic, stratified squamous epithelium resting on thickened basement, membranellike material. Transitional cell papillomas consist of stratified columnar epithelium containing scattered goblet cells, and mixed cell papillomas show features common to both types.

The benign tumors can display an exophytic, endophytic (inverted), or a mixed growth pattern. The exophytic papillomas consist of fingerlike fronds of proliferating epithelium growing in an outward direction. The inverted papillomas grow inward toward the underlying stroma, creating areas of invasive acanthosis. The inverted papillomas also have a higher incidence of presenting with foci of carcinoma, or of developing frank carcinoma in recurrence.3,4

The malignant epithelial neoplasms include squamous cell carcinoma, transitional cell carcinoma, adenocarcinoma, mucoepidermoid carcinoma, adenoid cystic carcinoma, and poorly differentiated carcinoma. Transitional cell carcinoma is the second most common type of lacrimal sac carcinomas; squamous cell carcinoma is the most common type. Transitional cell carcinoma has a strong association with invasive papilloma.7 Good prognostic factors include well-differentiated cells with uniform columnar cells, rare mitotic figures, and an intact basement membrane. On the other hand, transitional cell carcinomas with marked pleomorphism, squamous metaplasia, numerous mitotic figures, and areas of stromal invasion have high rates of recurrence in spite of radical treatment.8

Excisional biopsy is the preferred method for ascertaining a conclusive pathologic diagnosis. If the entire tumor cannot be removed by this method, incisional biopsy into deep tumor tissue is required; otherwise, a peripheral biopsy of a malignant tumor may prompt the misdiagnosis of chronic inflammation or pseudotumor. If there is any doubt regarding the diagnosis, the patient must be followed closely.9

The treatment of choice for any type of tumor in the lacrimal sac is complete surgical removal of the tumor. However, for transitional cell carcinoma and most other malignant lacrimal cell tumors, extensive surgical excision with subsequent irradiation is imperative. A previous report has indicated that irradiation of a benign papilloma may induce a malignant transformation,10 although this conclusion is limited by the low incidence of these tumors. Nonetheless, it is important to distinguish between benign papillomas and carcinomas in the lacrimal sac as this will determine very different treatment protocols.

The clinical course of lacrimal sac tumors is variable and is found to be correlated with the pathologic type and stage of the tumor at the time of diagnosis and treatment. Transitional cell carcinomas have the poorest prognosis.11 Overall, 50% of carcinomas of the lacrimal sac recur, and of these recurrences, the mortality rate is more than 50%.8

In this case, most of the tumor cells are spindly, elongated cells with scattered goblet cells, resembling those normally present in the mucosa of the lacrimal sac (Figures 3 and 4). The presence of areas with increased cellularity, nuclear pleomorphism, and mitotic figures (Figure 4) favors transitional cell carcinoma as the diagnosis.

References