simplifying the clinical feasibility of split cornea transplantation.

Ludwig M. Heindl, MD, PhD
Stephan Riss, MD
Werner Adler, PhD
Philipp Steven, MD, PhD
Deniz Hos, MD
Claus Cursiefen, MD, PhD

Author Affiliations: Department of Ophthalmology, University Hospital of Cologne, Cologne (Drs Heindl, Steven, Hos, and Cursiefen), and Eye Hospital (Dr Riss) and Departments of Ophthalmology (Dr Riss) and Medical Informatics, Biometry, and Epidemiology (Dr Adler), Friedrich-Alexander University Erlangen-Nürnberg, Erlangen, Germany.

Conflict of Interest Disclosures: None reported.

Funding/Sponsorship: This work was supported by the German Research Foundation (Priority Research Project SFB 643: B10).

Additional Contributions: Gottfried O. H. Naumann, MD, PhD, Department of Ophthalmology, University of Erlangen, provided expert histopathologic advice; Claudia Köhne, MTA, Institute of Pathology, University of Cologne, and Franziska Bucher, MD, and Anna K. Schumacher, Department of Ophthalmology, University of Cologne, provided excellent technical support; and Kerstin Blüthner, PhD, Department of Ophthalmology, University of Erlangen, and Sigrid Roters, MD, and Hans G. Simons, MTA, Department of Ophthalmology, University of Cologne, provided outstanding eye bank management.


Transitional Cell Carcinoma of the Lacrimal Sac Presenting With Bloody Tears

Transitional cell carcinomas (TCCs) of the lacrimal sac are uncommon tumors that can have variable morbidity and mortality if not diagnosed and treated in a timely fashion. These tumors have variable clinical and histologic features. Bloody tears, also known as dacryohemorrhcea, have been reported only once previously as a presenting sign of the tumor.1 We describe a case of lacrimal sac TCC manifesting with epiphora, dacryohemorrhcea, and medial canthal mass.

Report of a Case. A 54-year-old man had right lower eyelid swelling and bloody tears for 6 months. On examination, his visual acuity was 20/25 OD and 20/20 OS, with no relative afferent pupillary defect. Intraocular pressure was 12 mm Hg OU. On external examination, there was a palpable subcutaneous mass in the medial canthal area; on palpating the lacrimal sac, a flesh-colored mass with serosanguineous discharge protruded from the lower eyelid punctum. Nasolacrimal duct irrigation was deferred. Computed tomography demonstrated a heterogeneous soft-tissue mass, measuring 1.8 × 2.2 × 1.8 cm, centered on the right lacrimal sac fossa and extending into the proximal aspect of the nasolacrimal duct (Figure 1A).

The patient underwent an incisional biopsy of the lacrimal sac. It was noted intraoperatorically that the lesion was friable and discolhesive on opening the sac (Figure 1B). On histologic examination, the specimen exhibited papillary proliferation of atypical transitional epithelial cells with conspicuous mitotic figures and severe nuclear pleomorphism (Figure 2A and B). The tumor did not invade the basement membrane. Diagnosis of TCC in situ was made. The specimen was subsequently evaluated for p16 expression, a marker for human papillomavirus 16, and was strongly positive (Figure 2C), suggesting human papillomavirus as an underlying cause. The patient was referred to otolaryngology for multidisciplinary resection and reconstruction; however, to date, he has refused any further surgical intervention.

Comment. Epithelial tumors of the lacrimal sac arise from the transitional epithelium. Histologically, these tumors are divided into squamous cell carcinoma, TCC, and adenocarcinoma. Transitional cell carcinomas of the lacrimal sac carry the worst prognosis.2 Like the more common TCC of the urinary bladder, cells show marked pleomorphism, prominent nucleoli, and conspicuous mitotic figures.

We found a total of 37 cases of TCC of the lacrimal sac in the literature.1,6 The mean age was 50 years, with no sex predilection.1,6 The most common presenting symptoms were epiphora and medial canthal mass.3 Bloody tears are a rare presenting symptom for TCC of the lacrimal sac, and, to our knowledge, they have been reported only once in the literature.1

While it is possible to suspect a diagnosis of TCC of the lacrimal sac based on clinical history, physical examination, and imaging studies, previously reported cases were frequently misdiagnosed as dacryocystitis, nasolacrimal duct obstruction, and mucocele.4 Accurate diagnosis in most published cases was made at the time of surgery and after histologic examination.

Treatment for lacrimal sac TCC consists of surgical excision alone or in combination with radiation therapy.5 The average mortality rate for patients with TCC of the

©2013 American Medical Association. All rights reserved.
The lacrimal sac is 44%, ranging from 0% to 100% depending on the case series. This large variability in the mortality rate is likely due to the higher mortality associated with delayed diagnosis.

Our patient had dacryohemorrhhea in addition to other common presenting signs. Dacryohemorrhhea has been described only once previously in association with TCC of the lacrimal sac. Given the malignant nature of this tumor and high mortality rate, clinicians must have a high index of suspicion when encountering a patient with dacryohemorrhhea and a lacrimal sac mass.

Author Affiliations: Department of Ophthalmology and Visual Sciences, University of Wisconsin–Madison (Drs Azari, Kanavi, Saipe, Lee, Lucarelli, Potter, and Albert); and Ophthalmic Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran (Dr Kanavi).

Correspondence: Dr Azari, Department of Ophthalmology and Visual Sciences, University of Wisconsin–Madison, Room F4/349, 600 Highland Ave, Madison, WI 53792 (amirazarimd@gmail.com).

Conflict of Interest Disclosures: None reported.

Published Online: March 7, 2013. doi:10.1001/jamaophthalmol.2013.2907