Gouty Tophus at the Lateral Canthus

Gout is a group of diseases characterized by hyperuricemia that leads to deposition of urate crystals in many tissues of the body, including the joints, skin, bursae, periarticular ligaments, and kidneys.1 One distinctive pathological finding in patients with gout is the tophus, a deposition surrounded by inflammation.1 Tophi rarely involve the face. We found only 2 reports of a gouty tophus on the face, one on the upper eyelid near the lateral canthus2 and the other on the bridge of the nose.3 We present the clinical and histopathological findings in a patient with what, we believe, is only the second reported case of a gouty tophus adjacent to the eye.

Report of a Case. A 44-year-old man was referred for evaluation of a painless mass near the lateral canthus of the right eye (Figure 1) that had been present and gradually enlarging for approximately 1 year. The lesion had not bled, and there had been no discharge. The patient had a history of gout and arthritis, and the joints of his feet and wrists were swollen. Visual acuity with correction was 20/20−2 OU. Intraocular pressure was 19/13 mm Hg by applanation tonometry. Examination of the conjunctiva, cornea, anterior chamber, and pupils demonstrated no abnormalities. The yellow, dome-shaped subcutaneous mass was located about 4.0 mm lateral to the lateral canthus of the right eye. No acute inflammatory signs were visible adjacent to the mass. An excisional biopsy was performed, the specimen was fixed in buffered formalin, and the tissue was submitted for histopathological examination. The incision site healed without incident.

Pathological Examination. Gross pathological examination demonstrated a unilocular cystic appearing mass measuring 6.0 × 5.0 × 4.0 mm and filled with a cheesy tan-white substance. Study by light microscopy revealed a pseudocyst containing amorphous, eosinophilic material with irregular, elongated spaces (Figure 2). One large concentration near the center of the pseudocyst contained a few spindle-shaped nuclei and fine corrugations, suggesting possible sites of crystalline deposits (Figure 3). Examination of this area with polarized light demonstrated parallel birefringent crystals. The lining of the cavity comprised histiocytes, fibroblasts, and rare foreign-body giant cells (Figure 2). Staining with alcoholic eosin Y and viewing with...
polarized light using the method devised by Shidham and Shidham\(^4\) confirmed the presence of urates in this formalin-fixed tissue sample (Figure 4).

**Comment.** There are 3 characteristic pathological findings in gout: acute synovitis with effusion from deposition of crystalline urates secondary to hyperuricemia, chronic arthritis after multiple acute episodes from deposition of urates in the synovial lining and on the articular surfaces, and gouty tophus from localized deposition of crystals in soft tissue and the resultant inflammation.\(^1\) Although any joint in the body is at risk, the great toe is involved in 90% of patients, and other joints in the foot, knee, or wrist are commonly affected. Tophi occur in connective tissue and most commonly involve the helix and antihelix of the ear, the bursae adjacent to the olecranon and the patella, and the ligaments surrounding the joints. The renal medulla or pyramids may also show gouty tophaceous deposits.

Ocular involvement in patients with gout may take many forms. Crystalline deposits have been identified in the conjunctiva, sclera, and cornea.\(^5,6\) Other ocular conditions associated with gout are scleritis, episcleritis, uveitis, asteroid hyalosis, increased intraocular pressure, and chronically hyperemic conjunctivae.\(^7\) However, after studying 69 patients with gout, Ferry et al\(^7\) concluded that gout had been overemphasized as a cause of uveitis.

True tophi are rare on the eye or face. Yourish’s case report described a “conjunctival tophus associated with gout,” but no histopathological examination was performed.\(^5\) The crystals he described in and beneath the conjunctiva were identified as a urate salt by chemical reaction. Martinez-Cordero et al\(^6\) observed a scleral “tophus,” but no inflammation was described, and no histopathological study was recorded. These authors also confirmed the crystals as urates by chemical means. These 2 case reports offered convincing evidence for urate deposition in the sclera and/or conjunctiva in patients with gout, but we do not feel that they meet the strict definition of a tophus. A search of the PubMed database yielded only 2 reports documenting a gouty tophus on the face. One patient had a tophus on the upper eyelid near the lateral canthus\(^2\) and the other on the bridge of the nose.\(^3\) Histopathological examination confirmed both diagnoses. To the best of our knowledge, ours is only the second report of a gouty tophus on or adjacent to the eyelid.

If the surgeon suspects a gouty tophus, the specimen should be fixed in absolute alcohol rather than buffered formalin to assist the pathologist in identifying the crystalline deposits. The surgeon should also inform the pathologist of the presumed diagnosis so that aqueous reagents are avoided during processing of tissue.

Although most patients with tophi have had gout for many years, the presence of a tophus may be the initial sign of gout, allowing the ophthalmologist to participate in the diagnosis of this important and painful systemic disease. The finding of a lesion similar to the one we have described in a patient with gout should cause the ophthalmologist to consider a gouty tophus in the dif-
fential diagnosis of a soft tissue mass on the eyelid.

William R. Morris, MD
James C. Fleming, MD
Memphis, Tenn

The authors have no relevant financial interest in this article.

This study was supported in part by Research to Prevent Blindness, Inc., and the St Giles Foundation, New York, NY.

Corresponding author: William R. Morris, MD, Department of Ophthalmology, University of Tennessee Health Science Center, 956 Court Ave, Room D-222, Memphis, TN 38163 (e-mail: wmorris@mail.eyetnmem.edu).


Pyogenic Granuloma of the Cornea in an Infant With Unilateral Microphthalmia

Pyogenic granuloma is an exuberant proliferation of granulation tissue that typically develops after minor trauma or surgery. This well-known, common inflammatory entity occurs most often on the skin of the face and extremities.1,2 Ocular pyogenic granulomas are usually found on the external surface of the eyelid or the palpebral conjunctiva.3,4 They can also occur at the limbus or on the bulbar conjunctiva, simulating a pterygium or a squamous cell carcinoma.3,5,6 Few have been reported on the cornea, probably because of its avascularity.1,2,6-8 A constant clinical finding of these reported corneal lesions is either an epithelial defect in the presence of corneal neovascularization and ocular surface disease or chronic chemical and/or mechanical irritation. Abnormal corneal vessels are the source of the newly formed proliferating capillaries.

We report an unusual case of a pyogenic granuloma of the cornea in an infant secondary to mechanical ocular trauma induced by prosthetic fitting for microphthalmia. The granuloma initially was thought to be a sporadic event, but the histopathologic findings implicate an in utero perforation, presumably the result of early mid trimester amniocentesis.

Report of a Case. A healthy 1-week-old girl was referred because, at birth, her left eye was noted to be small and a spot was noted on the left cornea. She had no family history of ocular abnormalities. A transabdominal amniocentesis was performed in the 19th week of gestation because of an elevated α-fetoprotein level. The procedure was performed by an experienced gynecologist in a single attempt under ultrasonographic guidance. It was reported to us that the tap was not bloody, and therefore the procedure was considered to be nontraumatic. It is not known whether the ultrasonographer had the amniocentesis needle in constant ultrasonic view or whether the fetus shifted during the procedure.

Examination at age 1 week showed that the left orbit was slightly shallow. The left palpebral fissure was estimated to be two thirds the size of the right. The left cornea was estimated to be 5 mm in diameter compared with 9 mm for the right eye. There was a small tan corneal opacity, about 2 mm in diameter, just above the pupil. The anterior segment appeared otherwise normal, except for a small pupil that could not dilate well and precluded examination of the left fundus. The right eye was anatomically normal.

The child was referred to an oculist to be fitted with a scleral shell to expand the size of the smaller left fissure. A scleral shell composed of polymethylmethacrylate that measured 12.8 × 12.3 × 3.7 mm was fitted at age 3 weeks. One month later, a larger scleral shell (16.1 × 14.4 × 4.5 mm) was fitted. Each scleral shell had a stem to aid in its removal. The scleral shell was worn constantly and removed and cleaned on a weekly basis.

Shortly afterward, the mother noted that the child’s left eye was red with mucous discharge and swelling of the eyelids. Examination by an ophthalmologist revealed a corneal ulcer with a white infiltrate in the left eye. The patient was treated with topical and intravenous antibiotics. A culture was not obtained. The eyelid swelling and ocular hyperemia resolved, although the mother noted a lump on the left cornea that gradually grew during a 1-week period. Examination at that point revealed no eyelid swelling and a white conjunctiva. A smooth-surfaced, pink, elevated mass occupied the central four fifths of the cornea, covering the previously existing tan opacity. The central part of the lesion was tan. The lesion moved with the eyeball, which precluded detailed examination of the other intraocular structures. The fellow eye was normal.

The following week, the mother reported that the lesion had increased markedly in size. An examination under anesthesia was performed to define further the extent and nature of the lesion. The palpebral fissures measured horizontally 17 mm OD and 14 mm OS. The corneas measured horizontally 10 mm OD and 6.5 mm OS. The conjunctiva of the left eye was hyperemic. On the central cornea there was a well-circumscribed, elevated, sessile, smooth, vascular mass measuring 6 × 4.5 mm (Figure 1). Ultrasound biomicroscopy revealed a corneal mass sealing a site of what appeared to be a corneal perforation (Figure 2). The right eye was normal. An excisional biopsy of the corneal lesion was performed. After excision, exposed uveal tissue was noted in the central part of the cornea, so a Gunderson conjunctival flap was used to cover the defect. Because there was concern about sympathetic ophthalmia, the left eye was enucleated 1 month later, and a Medpor (Porex Surgical Inc, Newnan, Ga) implant was placed in the left socket.

Histopathologic Findings. Macroscopically, the excisional biopsy