conjunctival myxoma in the literature were associated with Mazabraud or McCune-Albright syndromes. 8-21

In summary, conjunctival myxoma can appear as a well-circumscribed, translucent, yellow-pink conjunctival mass in middle-aged patients. Management is generally complete surgical resection.

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Corneal Decompensation Following Bleb Revision With Absolute Alcohol: Clinical Pathological Correlation

Topical alcohol has been commonly used to facilitate removal of corneal epithelium. 1 More recently, a technique for bleb revision has been described in which absolute alcohol is used topically to remove the epithelium of a previously existing bleb. 2 Unlike other techniques in which the prior bleb is excised, this technique has the advantage of leaving the prior bleb in place while resurfacing it, thus minimizing the potential for contraction that may otherwise occur during formation of an entirely new bleb.

We report a case of a patient who suffered acute corneal decompensation following surgical bleb revision in which a large amount of absolute alcohol had been used to de-epithelialize a leaking bleb. Results of an experimental rabbit model are presented to demonstrate the possibility that absolute alcohol could cause the corneal toxicity in this case.

Report of a Case. A 79-year-old man had a 3½-month history of a Seidel-positive bleb leak and declining visual acuity. Two and one-half years earlier, he had undergone combined phacoemulsification and trabeculectomy with 0.5 mg/mL mitomycin C for 4 minutes under retrobulbar anesthesia. On examination, his visual acuity had decreased from a baseline of 20/25 to 20/80. Applanation intraocular pressure measured ranged between 5 and 10 mm Hg on serial examinations. Slitlamp examination revealed a large, avascular bleb with 2 epithelial defects that were briskly positive on Seidel test. The cornea showed folds in the Descemet membrane. No corneal guttata were seen. Examinations of the cornea prior to the bleb leak showed no signs of corneal guttata, early edema, or other disease. There was no sign of guttata or other corneal disease in the fellow eye. The disc showed a 0.8 cup. The macula was flat.

The patient underwent revision of trabeculectomy using a conjunctival advancement flap under topical and subconjunctival but not intracameral anesthesia. An incision was made around the bleb and the surrounding tissues were freed from the underlying sclera. The bleb was de-epithelialized using 100% ethanol (absolute alcohol) soaked on a cotton swab. We used a cotton swab rather than the cellulose spear originally described 2 because it had been observed that the anhydrous ethanol did not expand the spear, and thus little alcohol was applied with it. More alcohol could be applied with the cotton that did absorb the alcohol. Residual epithelium was removed using a sharp blade. The conjunctival advancement flap was then sutured into place at the limbus with a combination of polyglactin sutures at the ends of the flap and a mattress-style nylon suture at the midpoint of the flap. A circumferential relaxing incision through conjunctiva was cut as posteriorly as possible to relieve tension on the flap.

One week postoperatively, the patient’s visual acuity measured
20/200. Slitlamp examination revealed a Seidel-negative bleb. Ap-planation intraocular pressure measured 9 mm Hg. The cornea revealed gross thickening and microcystic edema commensurate with the visual acuity measurement. Over the next 6 months, the corneal edema remained unchanged (Figure 1). We made a diagnosis of corneal de-compensation. Given the history of only 1 uncomplicated surgery followed by a bleb revision, the lack of any signs of incipient corneal disease in either eye prior to the revision, and the generous amount of alcohol used in the surgery to de-epithelialize the bleb, the possibility of alcohol toxicity was entertained as a hypothesis for the cause of the corneal decompensation. The patient underwent penetrating corneal keratoplasty 6 months later. We made a histological assessment of the recipient corneal button.

Because of concern about the potential toxicity of the ethanol used during the bleb revision and the lack of any other identifiable cause for acute postoperative corneal decompensation in this patient, we tested in a rabbit model the hypothesis that ethanol may be toxic enough to cause corneal decompensation.

Methods. To test the observation that cotton-tipped applicators held much more anhydrous alcohol than cellulose spears, we made a rough comparison of the delivery capacity of each. A cotton-tipped applicator was dipped into alcohol for 5 seconds and then held against a disc of filter paper (standard qualitative grade 1; Whatman, Ltd, Middlesex, England) for an additional 5 seconds to allow delivery of the alcohol to that surface. The diameter of the alcohol wetting was measured as a rough estimate of delivery capacity. Comparison was made with cellulose spears.

All animal experiments were conducted in accord with the University of Wisconsin Madison Medical School institutional animal care and use committees, with the National Institutes of Health guidelines, and with the Association for Research in Vision and Ophthalmology Statement on the Use of Animals in Oph-thalmic and Vision Research. Specifically, simultaneous contralateral control injections with vehicle solutions presumed to be harmless are approved under this protocol. Three New Zealand white rabbits were anesthetized with intramuscular injections of ketamine hydrochloride (35-45 mg/kg), xylazine hydrochloride (5 mg/kg), and acepromazine maleate (0.75 mg/kg), followed by topical 0.5% proparacaine hydrochloride drops. Intracameral injections of 50 µL of 100% ethanol were made through a corneal paracentesis in 3 eyes, and an identical injection of the same volume of balanced salt solution was made in the contralateral eye to serve as a control. The rabbits received slitlamp examination on days 1, 2, 3, 6, 10, and 14 postinjection and were photographed on days 3 and 6 postinjection. The rabbits were humanely killed on day 14. The eyes were enucleated and fixed in 4% paraformaldehyde. Histological assessment was performed on the 3 treated eyes and 1 control eye.

Results. Cotton-tipped applicators delivered a mean±SEM amount of alcohol to the filter paper discs of 40±35 mm² vs 30±11 mm² for cellulose spears (P<.001, 2-tailed, 2-sample unequal variance t test). This represents an approximately 13-fold increase in delivery of anhydrous alcohol by cotton-tipped applicators over cellulose spears when applied to this absorptive surface.

All 3 eyes injected with ethanol exhibited marked corneal edema, perilimbal injection, and anterior chamber inflammation within 24 hours. By day 3, all 3 of these eyes showed gross corneal thickening and opacity (Figure 2). The control eyes exhibited minimal inflammation and clear corneas. Throughout the experiment, the rabbits were in no obvious discomfort and continued to feed well.

The treated eyes were compared with the untreated fellow eyes, which served as controls. The corneas of the treated eyes showed a marked keratitis with acute and chronic inflammation, proliferation of kerocytes, scarring, and edema (Figure 3). There was severe vascularization, most marked in the superficial stroma. The Descemet membrane contained folds and appeared thickened. The endothelium was sparse and a retrocorneal membrane composed of dense collagenous tissue was present, extending over the angle structures. The anterior iris was adherent to the retrocorneal membrane with broad synechiae formation. The corneal epithelium was intact.

Three hematoxylin-eosin slides and 1 periodic acid–Schiff stained slide of the excised human corneal button were examined. Sections through the specimen showed a reduction and flattening of the endothelial cells (Figure 4). There was a thickening of the Descemet membrane. Stromal scarring and edema were noted. The Bowman layer was unremarkable. The epithelium was absent.

Comment. The results of the rabbit experiments in this study suggest that the presence of even 1 drop of absolute alcohol in the anterior chamber is extremely toxic to the cornea and other anterior segment structures. This finding is consistent with numerous reports of corneal toxicity in humans following exposure to a number of agents, including preservatives, medications, irrigating solutions, and sterilizing agents.5,6 The severity of the reaction is similar to that of mitomycin C.5 It is also consistent with reports of corneal decompensation following inadvertent exposure of the corneal endothelium to alcohol in monkeys during perfusion experiments (oral communication, Paul Kaufman, September 2003). Experiments with corneal epithelium have shown that toxicity occurs in cadaver eyes with exposures of 20% ethanol for 45 seconds6 and in immortalized epithelial cell lines with exposure of 20% ethanol for more than 30 seconds or with 20-second exposures of ethanol concentrations above 25%.7

Exposure of the anterior chamber to this amount of absolute alcohol could occur during bleb revision in which alcohol is applied to a thin avascular bleb with multiple leaking gaps in the epithelium. Notwithstanding the pressure gradient forcing fluid out of the eye, transudation of a significant amount of alcohol may occur across such a thin
bleb, particularly if the eye is hypotonic. This kind of transudation is commonly observed with fluorescein applied to a leaking bleb in Seidel testing.

In the case presented, we used a cotton-tipped applicator soaked in alcohol rather than the polymer surgical spears previously described. More absolute alcohol is absorbed by cotton compared with spears that do not expand when in contact with this anhydrous chemical. This lack of expansion and lack of absorption of the spears may represent the lipophilic, and therefore hydrophobic, nature of anhydrous alcohol in comparison with lower concentrations of alcohol or other aqueous compounds, such as 5-fluorouracil or mitomycin C, that are used in ophthalmic surgery. Measurement of the delivery volume of alcohol in this experiment provides only a rough comparison between 2 methods and cannot be taken to represent the actual delivery amount during surgery, which involves active scraping and potentially multiple applications of alcohol but on a less absorptive conjunctival surface. However, a comparatively large amount of alcohol was probably applied in this case, which may have led to a toxic anterior chamber dose.

The limitations of this study include the lack of information about transudation of chemicals across filtering blebs and the possibility of the existence of other unknown causes of corneal decompensation. Within the limits of this study, it may be concluded that use of a large amount of absolute alcohol during bleb revision may pose a risk to the cornea. If used, alcohol should best be applied sparingly with a nonabsorptive material such as a polymer surgical spear.

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Verteporfin Photodynamic Therapy of Choroidal Neovascularization Secondary to Ocular Toxoplasmosis

Choroidal neovascularization (CNV) can arise secondary to the retinochoroiditis and macular scarring from ocular toxoplasmosis.\(^1,2\) Treatment of CNV due to toxoplasmosis can include corticosteroids, cryotherapy, laser photocoagulation, submacular surgery, and verteporfin photodynamic therapy (PDT).\(^1,4\) We describe 2 cases of CNV secondary to toxoplasmosis treated successfully with PDT.

Report of Cases. Case 1. A 20-year-old man with a diagnosis of congenital ocular toxoplasmosis with bilateral macular scars sought care because of a 9-month history of decreasing vision and metamorphopsia in the right eye. Visual acuity was 1/200 OD. Fundus examination results revealed a subfoveal choroidal scar with surrounding subretinal hemorrhage and exudate (Figure 1A). Fluorescein angiographic images identified central leakage from the CNV with surrounding blocked fluorescence corresponding to the hemorrhage (Figure 1B and C), while indocyanine green angiographic images were able to provide visualization through the hemorrhage. The eye was treated with PDT and the greatest linear dimension of the treatment spot included all of the hemorrhage.

One week posttreatment, visual acuity improved to 20/200 OD. Six weeks posttreatment, a flat scar was present in the central macula with resolution of the hemorrhage and exudate. Six months posttreatment, visual acuity improved to 20/60 OD and has remained stable for more than 2 years (Figure 1D-F).

Case 2. A 15-year-old boy with a diagnosis of bilateral macular scars secondary to congenital ocular toxoplasmosis reported decreasing vision in his left eye. On examination...