DSEK, his visual acuity was 20/400 OS. Examination revealed enlargement of the epithelial defect, with 50% stromal thinning nasally and inferonasally, without an apparent infiltrate (Figure 2). Corneal culture was positive for Corynebacterium pseudodiptheriticum in the enrichment broth only. A course of fortified antibiotic agents did not improve the clinical findings; there was further thinning of the stroma and impending perforation. The patient was then referred to The Wilmer Eye Institute Ocular Surface Diseases and Dry Eye Clinic. A review of systems was positive for dry mouth and significant joint problems. Serologic testing showed positive antinuclear, anti-Ro, and antiphospholipid antibodies; a low C3 level; and an elevated erythrocyte sedimentation rate. The patient was subsequently diagnosed as having primary SS. He was admitted to the hospital for pulse intravenous corticosteroids and intravenous methylprednisolone. One week later, amniotic membrane grafting was performed, and it was repeated 2 weeks later along with a tarsorrhaphy. After 6 weeks of cyclosporine treatment, his visual acuity was counting fingers at 30 cm with a failed graft, but there was no epithelial defect.

Comment. Sterile corneal melt in patients with primary or secondary SS is well recognized and has been reported after cataract surgery and conductive keratoplasty. To our knowledge, these are the first reported cases of corneal melt after DSEK. Both patients had previously undiagnosed SS. This syndrome is known to be widely underdiagnosed, especially in the male population and when ocular findings are the initial symptoms. The corneal lesions associated with SS are characteristically painless epithelial defects and stromal ulcerations without an apparent infiltrate; they are commonly located in the central or paracentral regions of the cornea. The exact pathogenesis is not fully established and may involve the underlying inflammatory process, aqueous tear deficiency, degeneration of the cornea from surgical trauma, or the use of topically administered medications that cause epithelial toxic effects or delayed healing. Mechanical epithelial scraping alone can cause immediate damage to underlying anterior keratocytes, leading to their degeneration, and may have contributed to the development of corneal melting in both patients.

Although DSEK is known for maintaining corneal surface integrity, sterile corneal melt can occur, especially in patients with chronic dry eye syndrome. Therefore, it is prudent to perform a detailed review of systems and laboratory investigations as needed to uncover possible underlying collagen vascular disorders before any corneal surgery. Scraping of the epithelium should be avoided in patients with significant aqueous tear deficiency. Because systemic and local interventions are necessary in the treatment of these patients, a rheumatology consultation should be obtained promptly for appropriate management.

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Atropine Penalization for “Rescuing” Patching Failures

The prospective, multicenter Amblyopia Treatment Study I, performed under the direction of the Pediatric Eye Disease Investigator Group, demonstrated that atropine penalization of children with moderate amblyopia yielded improvement similar to that obtained with patching. Among 419 children with visual acuities ranging from 20/40 to 20/100, the mean improvement after 6 months of treatment was 3.16 lines for children treated with occlusion, statistically indistinguishable from the 2.84 lines of improvement for children treated with atropine sulfate. Similar results...
were noted in the same patients after 2 years.² Some have raised methodologic concerns and have noted that patching, if enforced consistently, brought even better improvement in other series.³ ⁴ We agree that atropine penalization is unsuccessful in many children. However, we have identified 5 children in whom, despite apparent adherence to treatment, repeated and prolonged attempts at intensive occlusion failed and yet the children subsequently achieved substantial improvement with atropine penalization. Atropine “rescue” of patching failures has not been previously reported, to our knowledge. This study, based exclusively on existing clinical data, was approved by the Albany Medical Center’s institutional review board as an exempt study.

Report of Cases. Case 1. A 5-year-old girl with a left esotropia had a visual acuity of 20/25 OD and 20/60 OS. Patching of the right eye was begun for all but 2 hours daily. After 7 months of occlusion, the visual acuity had improved to 20/40 OS. We substituted 1% atropine penalization of the right eye for the patch, yielding an improvement to 20/25 after 2 months.

Case 2. A 3-year-old boy with Sturge-Weber glaucoma in the right eye developed anisometropic amblyopia in his left eye despite spectacle correction containing his cycloplegic refraction of plano OD and −3.00 OS. He later developed a left esotropia, for which a recession-resection procedure was performed at age 7 years. Half-time occlusion of the right eye was begun at age 3 years, when his visual acuity measured 20/20 OD and 20/80 OS. After 18 months, the visual acuity in the left eye had not improved. We substituted 1% atropine penalization of the right eye for the patch. After 8 months, his visual acuity had improved to 20/30 OS.

Case 3. A 3-year-old girl was noted on routine examination to have an uncorrected visual acuity of 20/25 OD and 4/100 OS, and cycloplegic refraction yielded plano OD and +4.00 OS. Treatment with glasses and half-time occlusion of the right eye was prescribed. After 14 months, her visual acuity measured 20/50 OS. We substituted 1% atropine penalization of the right eye for the patch. After 5 months, her visual acuity had improved to 20/25 OS.

Case 4. A 5-year-old girl with a small, newly diagnosed posterior lenticonus cataract in the left eye had a visual acuity of 20/25 OD and 20/80 OS through a cycloplegic refraction of +1.00 OD and +3.25 OS. Glasses and half-time patching of the right eye yielded improvement only to 20/70 after 6 months. We substituted 1% atropine penalization of the right eye for the patch. After 4 months, her visual acuity had improved to 20/50 OS.

Case 5. A 5-year-old girl who had undergone recession-resection surgery for a partially accommodative left esotropia at age 2 years had a visual acuity of 20/20 OD and 20/70 OS. Half-time occlusion of the right eye for 12 months improved the visual acuity to 20/30 OS. We substituted 1% atropine penalization of the right eye for the patch. After 4 months, visual acuity had improved to 20/20 OS.

Comment. The children we describe had improvement in their amblyopia with daily 1% atropine penalization after patching had been, at best, only partly successful. All parents claimed good adherence to both recommended treatments. None of the children experienced loss of visual acuity in the dominant eye after either occlusion or atropine therapy. Strabismic, anisometropic, and occlusion amblyopia were all included.

Much discussion has focused on the possibility that patching is a superior treatment, probably faster than penalization and more precise in its titration.¹ ⁵ Although we generally prefer patching as initial treatment, we believe that atropine therapy represents a welcome alternative in certain circumstances. It has been demonstrated to be easier for many children to tolerate.¹ It may enhance adherence to hyperopic spectacle correction and may be particularly effective when combined with a decrease in the lens power for the dominant eye.³ We elected to change from patching to atropine in these cases rather than to increase the patching time because patching had become both nonproductive and burdensome for the children despite optical correction, which we refined as clinically indicated at regular intervals. Stewart and associates⁶ demonstrated that prescribing more intensive patching is not likely to bring further improvement.

We measured all visual acuities with standard Snellen lines before and after patching and atropine penalization. We did not note any evidence of age-related improvements in testability. No improvement greater than 1 line was documented in the dominant eye during the period of either patching or atropine penalization.

We recognize that, in this retrospective case series, we have no way to gauge accurately how well the patients had adhered to patching. However, it would appear that some children in whom patching fails may achieve successful amblyopia treatment with penalization. We believe atropine should be considered in selected cases before treatment is abandoned.

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