Suspected epithelial ingrowth caused by recurrent corneal and associated keratitis

Abstract
A 42-year-old male presents with a painful acute red eye. After evaluation with sodium fluorescein, slit lamp exam and past ocular history, a diagnosis of keratitis with suspected epithelial ingrowth is confirmed.

I. Case History
Patient demographics - 42-year-old Caucasian male
Chief complaint- painful left red eye, c/o of burning, fbs, mucus discharge, redness, blurry vision, tearing.
Ocular, medical history- LASIK OU ~10 years ago and Corneal "abrasion" OS ~ 5 months ago
Medication- Lisinopril 10mg, Crestor 20mg, Claritin-D12 5-120mg, Omeprazole 10 mg, Ofloxacin 0.3% eye drops, Tobramycin 0.3% eye drops, Erythromycin 5mg/gram ointment -eye medications given in emergency room. (Been 2 days since that visit)

II. Pertinent findings
Clinical
Visual acuity: OD- DVA: 20/20-1, NVA: J1 // OS- DVA: 20/200, NVA: J16
Pupils were equal round and reactive to light OU, no APD
Confrontations were full to finger counting OD and OS
Anterior segment: OS:
Eye lids: erythematous, swollen upper and lower lids with yellow discharge Conjunctiva/sclera: 2-3+ diffuse injection
Cornea: epithelial defect 2.9mmx2.7mm with 3 + edema, haze and endothelial folds. possible epithelial ingrowth.
Iris: flat, hazy view

III. Differential diagnosis
Recurrent corneal erosion, Infectious keratitis, bacterial conjunctivitis, Epithelial basement membrane dystrophy

IV. Diagnosis and discussion
Recurrent corneal erosions are usually seen in patients with a weakened or defective hemidesmosomal attachment of the epithelium to the basement membrane. Some predisposing factors cause a weakened attachment include past corneal abrasions/truma, anterior and/or stromal basement membrane dystrophies, corneal degenerations, keratorefractive surgeries, corneal transplants and diabetes. Symptoms include acute pain upon waking up, tearing, foreign body sensation, blurry vision, and photophobia. Typically, diagnosis is made based on sodium fluorescein staining, symptoms and pertinent ocular history suggesting increased likelihood of having RCE. Corneal epithelium provides a barrier function against pathogens such as bacteria. With injury to this layer, there is an increased risk for infection by providing adherence sites for bacteria to make its way in, towards the stroma. If not treated vigorously and early, additional complications such as uveitis and corneal infiltrates can further delay resolution.

Epithelial ingrowth is a post LASIK complication where the epithelial cells start to grow underneath the corneal flap that is made during the surgical procedure. This usually occurs a few weeks after surgery and most of the time does not cause pain or discomfort. With the location of the flap being away from line of axis these cells usually do not cause a decrease in acuity and are self-limiting. Epithelial ingrowth is more common in flap-lift enhancements rather than from primary LASIK. In this case, recurrent corneal erosion may have induced epithelial proliferation and access to the flap edge leading to epithelial ingrowth. Subsequently, vision may be affected, as it was in this case, due to epithelial defect being closer to the line of sight.

V. Treatment, management
Treatment for RCE- Medical vs. Surgical
Medical: With any chronic condition, it is important to have a hierarchy of treatment protocols. For initial mild corneal erosion lubrication with artificial tears and ointment is indicated. With history of mild but chronic RCE, a hypertonic solution such as Muro 128 is recommended. Next, for moderate and chronic cases, antibiotics and pain relievers are added on. This can include, erythromycin ointment at bedtime and oral ibuprofen. For severe or large RCE patients, a bandage soft contact lens (BSCL) in addition to topical antibiotic drop. In place of BSCL, another
option includes oral antibiotics and topical corticosteroids with topical lubrication. This can be done to treat underlying cause of RCE such as Meibomian gland dysfunction, inflammatory dry eye and rosacea.

Surgical: When medical treatments fail, surgical options may be considered. Two common procedures are used to treat RCE when medical intervention fails. First being, debridement of the loose epithelium and superficial keratectomy that goes to the level of Bowman’s layer. After this procedure, a BSCL is placed on the eye with topical antibiotics. The second surgical being phototherapeutic keratectomy (PTK). Usually, this option is reserved with traumatic RCEs or when all other options have failed. An excimer laser ablates 5-10micros of Bowman’s layer with debridement of corneal epithelium. The corneal epithelium should re-epithelialize with stronger adhesions to the basement membrane.

Treatment for Epithelial ingrowth

Treatment is indicated for epithelial ingrowth when one of the following takes place: progression of epithelial ingrowth, visual function gets affected, or causes flap melting. In mild/non-progressive, no treatment is required. There are two ways to treat this surgically. usually consists of lifting the flap to scrape the epithelial cells of the underlying bed and on the underside of the epithelium. The second technique requires the use of a YAG laser to create air bubbles that work to eliminate the ingrowth. More aggressive options include use of fibrin tissue glue to seal the flap, sutures and PRK.

Treatment and management with this patient-

Fortified Vancomycin QID, Tobramycin QID with tears/ gel. Pred FORTE QID taper to 1gtt/day.

Vision improved from 20/200 to 20/20 BCVA. Epithelial defect resolved.

VI. Conclusion

In acute cases of red eye, it is important to evaluate every aspect of the patients’ history and not overlook the complications that may arise. In this case, the recurrent corneal erosion created a flap leading to suspected epithelial ingrowth and keratitis. It is vital to aggressively treat such a large area of compromised epithelium to prevent a series of other complications and further risk visual outcome.

References


