

Figures 8 and 9 courtesy of Ernest J. Otero, MD

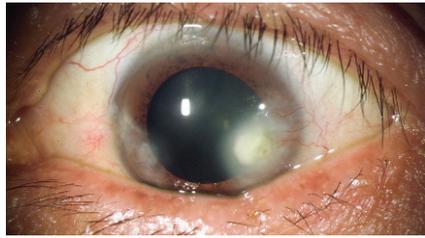


Figure 8. Typical interstitial keratitis in a patient with rosacea.

antibiotic have similar spectrums of action against gram-negative bacteria, fourth-generation fluoroquinolones are more effective against gram-positive and atypical bacteria. I believe the feathery edges of the infiltrate are related to DLK.

Rosacea is a known cause of evaporative dry eye disease and severe ocular surface disease. Although the presentation in this case is atypical of ocular rosacea, the erosion and the ulceration that led to the secondary bacterial infection and corneal melt might have been elicited by dryness associated with rosacea. In my corneal referral practice, I frequently encounter patients with ocular rosacea. The presentation is characterized by dense peripheral (near the limbus) intrastromal corneal infiltrates associated with stromal vascularization (Figures 8 and 9). Rosacea presents as an interstitial keratitis. Exacerbation of rosacea by hot and cold environments has been documented, as has aggravation from alcohol consumption, stress, the ingestion of hot or spicy foods, and sun exposure.⁴

Although rare, noninfectious causes of corneal melt include drug toxicity (ie, proparacaine eye drops, diclofenac eye drops), stage 4 DLK, and decreased corneal sensitivity.

Long-term management can be challenging in this situation. Flap amputation causes a hyperopic shift. The patient has a residual corneal scar (haze) produced by the keratitis. Irregular astigmatism is evident on corneal Scheimpflug tomography, with up to 5.00 D of difference between the steepest and flattest points in the central cornea. Steroid therapy (loteprednol) should be continued until the cornea clears, after which the drug may be tapered. OCT of the cornea should be performed to assess the true thickness and depth of the residual leukoma.

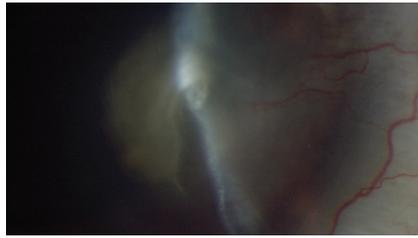


Figure 9. Corneal ulceration in a patient with rosacea.

A contact lens fitting (preferably a soft lens) may be scheduled if the patient's visual acuity is good enough. If vision is poor, a scleral contact lens is an option. If visual acuity is poor and the scar is deep (not how it appears in the figures), a deep anterior lamellar keratoplasty may be considered. If scarring is superficial, a femtosecond laser-assisted anterior lamellar keratoplasty may be preferable because the visual recovery tends to be faster than after deep anterior lamellar keratoplasty or penetrating keratoplasty.⁵



WHAT I DID: ALAN N. CARLSON, MD

Acute inflammation involving the cornea raises the question: Is this an infection? This is answered by addressing the following questions:

- Is the epithelium intact?
- What is the stromal response (infiltrative or suppurative necrosis)?
- What is the location relative to the limbus, and is the lesion singular or multifocal?
- Is there discharge such as tearing, mucous, or mucopurulent discharge?
- Is there anterior chamber inflammation or hypopyon?

By every criterion, this patient qualified for a culture and Gram stain and for treatment as though she were infected. Despite repeatedly negative cultures, her condition continued to worsen on treatment, which led to therapeutic amputation of the LASIK flap. Pathology was notable for inflammation without infection, and her condition began to improve on steroids.

Spontaneous, noninfectious keratitis raises the issue of autoimmune diseases or, in this case, the patient's rosacea and pronounced nickel allergy. One of the lesser-known triggers of rosacea, a change in temperature, may be why I see so many cases in North Carolina, where it is not uncommon for the temperature to vary by as much as 50 °F within a single week. If a patient with chronic red eye has seen multiple other physicians and has not responded to antiinfectious regimens, I recommend ruling out the following conditions: rosacea/meibomian gland dysfunction, floppy eyelid syndrome, superior limbic keratoconjunctivitis of Theodore, mucus fishing syndrome, molluscum contagiosum, medicamentosa, and anesthetic abuse.

Rosacea, particularly ocular rosacea, is often a missed or delayed diagnosis, and it continues to challenge clinicians' understanding in terms of basic pathogenesis. ■

1. Cifci N. Nickel sensitivity in rosacea patients: a prospective case control study. *Endocr Metab Immune Disord Drug Targets*. 2019;19(3):367-372.
2. Browning DJ, Proia AD. Ocular rosacea. *Surv Ophthalmol*. 1986;31(3):145-158.
3. Gonzalez-Cantero, Arias-Santiago S, Buendia-Eisman A, et al. Do dermatologic diagnosis change in hot vs. cold periods of the year? A sub-analysis of the DIADERM National Sample (Spain 2016). *Actas Dermosifiliogr*. 2019;110(9):734-743.
4. Jameson JL, Fauci AS, Kasper DL, Hauser SL, Longo DL, Loscalzo J. *Harrison's Principles of Internal Medicine*. 20th ed. McGraw-Hill Education; 2018:338.
5. Shetty R, Nagaraja H, Veluri H, et al. Sutureless femtosecond anterior lamellar keratoplasty: a 1-year follow-up study. *Indian J Ophthalmol*. 2014;62(9):923-926.

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