



Ocular rosacea, psoriasis, and lichen planus



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Abstract Although the number of dermatologic conditions with ocular manifestations is relatively limited, these entities have a high prevalence and represent a large proportion of clinic visits to both dermatologic and ophthalmic practices. This contribution will review oculocutaneous diseases that are not part of the allergic or autoantibody-mediated spectrum.

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Ocular rosacea

Rosacea is a highly prevalent dermatologic condition that may have ocular manifestations. In patients with ocular involvement, resulting meibomian gland dysfunction (MGD) can result in significant morbidity and sight-threatening complications. (See [Figs. 1–3.](#)) (See [Table 1.](#))

Etiology

As with cutaneous rosacea, the etiology of ocular rosacea is uncertain. That the severity of cutaneous and ocular rosacea differs within the same patient may imply that the causative factors differ. Conversely, the response of both forms of the disease to similar therapy, such as oral tetracycline derivatives, and the similarity in clinical signs may imply that both have a common underlying pathogenesis.

The tear film is comprised of three layers: an outer lipid layer, aqueous middle layer, and a mucin-rich layer directly

in contact with the corneal epithelium. A well-known characteristic of ocular rosacea is tear film instability and resultant evaporative dry eye syndrome.^{1–3} Fluorescein staining of the ocular surface in such patients may reveal areas of decreased fluorescence where premature evaporation of the precorneal tear film has occurred, resulting in exposure of underlying corneal epithelium. The amount of time required for such exposed areas to appear is termed the tear film break-up time (TBUT). The break-up time is inversely proportional to the severity of ocular rosacea. This appears to stem in most cases from both quantitative and qualitative alterations in meibomian gland function rather than a decrease in aqueous tear production, although both may be affected.^{2–8} Meibum contributes to the outer lipid layer of the tear film, which protects against tear evaporation. A consequence of this defective tear film may be corneal damage.⁵ Corneal thickness is decreased in patients with ocular rosacea and has a positive correlation with diminished TBUT.⁹ Secretions are decreased due to terminal duct keratinization and obstruction of the gland, which is presumed to be a result of the inflammatory processes of rosacea.⁵ Interestingly, minocycline therapy has been found to alter the fatty acid composition of meibum.¹⁰ The significance of this is uncertain. In another report, the anti-inflammatory cytokine,

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Fig. 1 Ocular rosacea. Bilateral blepharitis with chalazion and telangiectasia.

interleukin 10, was found to be present in inverse proportion to the degree of ocular disease and decrease in TBUT.¹¹

The initial pathophysiologic event in ocular rosacea is as uncertain as the cause of facial rosacea. It has recently been reported that the microbicidal peptide cathelicidin is cleaved abnormally by a protease and deposited in the skin of rosacea patients.^{12,13} These peptides appear to be inflammatory, and their production is inhibited by doxycycline.¹⁴ Studies of tear composition reveal elevated levels of matrix metalloproteinases and decreased tissue inhibitors of metalloproteinases in untreated ocular rosacea, which normalize after therapy with oral doxycycline.¹⁵ It is difficult to ascertain if the elevated matrix metalloproteinase is causal to the ocular disease or merely an epiphenomenon, but it is tempting to speculate that the matrix metalloproteinases might cleave cathelicidin to initiate the ocular process.

The role of *Demodex folliculorum* mite infestation in the pathogenesis of rosacea is also in question. One group¹⁶ has found that patients with rosacea are more reactive to *Bacillus oleronius* antigens, a bacterium that has been isolated from *Demodex* mites. These mites have been reported to be present in increased numbers in lash follicles in ocular rosacea patients, and this may be correlated with immuno-



Fig. 2 Ocular rosacea. Stye on lower lid.



Fig. 3 Ocular rosacea. Meibomian inspissation visible as pale streaks perpendicular to the lid margin, telangiectasia on bulbar conjunctiva and lid margin.

reactivity to the *Bacillus* antigens.¹⁷ The exact mechanism in which *Demodex* infestation, bacterial immune responses, and ocular rosacea are related is unclear. It is possible that the mite-related bacterium is the primary triggering event in the

Table 1 Signs and symptoms of ocular disease seen in association with skin diseases

Signs and Symptoms	Description
<i>Blepharitis</i>	Foreign body sensation, burning, lid edema and hyperemia, conjunctival injection
<i>Conjunctivitis</i>	Redness, tearing, conjunctival hyperemia and edema
<i>Dry eye syndrome</i>	Foreign body sensation, burning, redness, photophobia, blurred vision, diminished tear film and tear film breakup time, fluorescein staining of the cornea and conjunctiva
<i>Anterior uveitis</i>	Pain, photophobia, redness, anterior chamber inflammatory cells on slit-lamp examination
<i>Chronic cicatrizing conjunctivitis</i>	Redness, foreign body sensation, foreshortening of the conjunctival fornix, adhesions between palpebral and bulbar conjunctiva (symblepharon), trichiasis (misdirection of eyelashes), entropion (inversion of the eyelids due to palpebral conjunctival fibrosis)

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