The Ocular Manifestations of Rosacea

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The ocular manifestations of rosacea are commonly nonspecific and variable. The etiology of the inflammation is unknown and there is no diagnostic test for the disease. Ocular rosacea is often underdiagnosed, despite the potential for serious sight-threatening sequelae. When evaluating patients with rosacea, dermatologists should obtain a careful history of eye complaints and examine the eyelid margins thoroughly. Treatment is aimed at controlling symptoms and is multifaceted. The foundation of treatment is good lid hygiene and oral tetracyclines. Those patients with moderate-to-severe ocular findings will benefit from a multidisciplinary approach, including evaluation by an ophthalmologist.

Rosacea is a chronic progressive condition of unknown etiology affecting the skin and eye.[1] It is a common dermatosis that affects up to 10% of the population, particularly fair-skinned people of northern European descent.[2] Cutaneous rosacea is characterized by inflammatory papules and pustules, flushing and persistent erythema mainly involving the cheeks, nose, forehead, chin, and "V" portion of the neck. Rhinophyma caused by sebaceous gland hypertrophy is a typical feature of advanced disease. Cutaneous rosacea occurs most commonly in women between the ages of 40 and 50 years. In contrast, ocular rosacea affects men and women equally and presents slightly later in life.[3,4]

Ocular Findings

Ocular rosacea is reported in up to 58% of patients with cutaneous lesions.[5] The severity of ocular findings range from mild to severe. Blepharitis, conjunctivitis, tearing, chalazia, chronic periorbital lymphedema, corneal vascularization and scarring, corneal perforation, episcleritis, and iritis have been reported in association with rosacea.[1,3,6-10] The most common symptom is a dry or burning, foreign-body sensation that is frequently out of proportion to the clinical findings.[1,5,11,12] The most common ocular signs are telangiectasia, meibomian gland dysfunction, and blepharitis.[5,11]

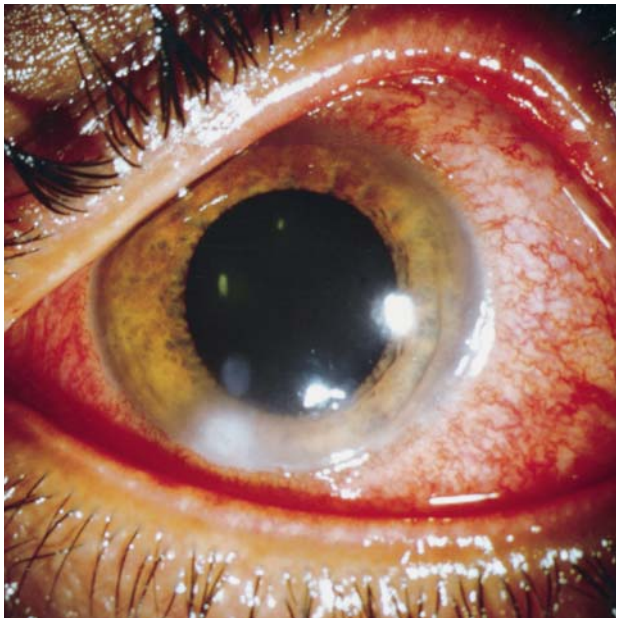

Figure 1. Left eye with inferior corneal ulcer and severe nonpurulent conjunctivitis.

Corneal involvement with ocular rosacea has an unfavorable prognosis and may lead to loss of vision. Akpek et al[11] found 41% of 131 patients with a diagnosis of ocular rosacea had corneal involvement of varying degrees. The most frequent corneal finding is an inferior superficial punctate keratitis. However, corneal vascularization, thinning, scarring, and perforation have been described (Figure 1).[1,5,11]

The Problem of Underdiagnosis

Despite potentially serious sequelae, the ocular component of rosacea often remains undiagnosed. Dermatologists may fail to inquire about ocular symptoms or to examine the eyelid margin for signs of rosacea. Skin lesions that would enable an ophthalmologist to confirm the diagnosis of rosacea need not be severe; therefore, the diagnosis may be overlooked (Figure 2). Up to 20% of patients develop ocular findings before cutaneous signs of

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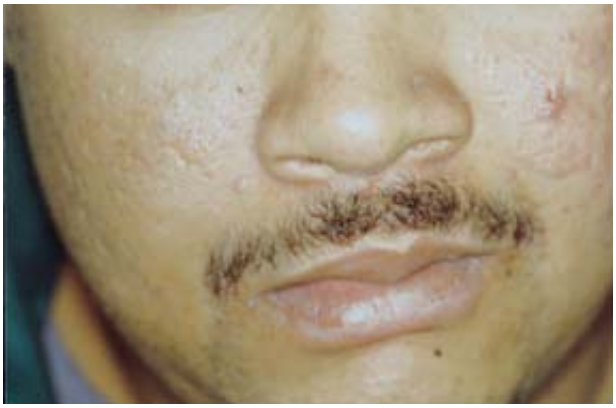

Figure 2. Note the relative paucity of cutaneous lesions in this patient compared with his severe ocular involvement shown in Figure 1.

rosacea.[3] Because the most common ocular manifestations of rosacea are nonspecific, the diagnosis may be difficult to establish in patients whose initial presentation involves the eye. Furthermore, there is no diagnostic test that can reliably distinguish ocular rosacea from other ophthalmic problems causing similar signs and symptoms. Studies of tear film pH and the Schirmer's test for aqueous tear deficiency have not yielded reproducible results.[12-16]

Etiology and Pathology

The etiology of ocular irritation in patients with rosacea is unknown. Possible factors leading to ocular inflammation include hypersensitivity to *Demodex folliculorum* or staphylococci infection, vascular reactivity, or meibomian gland dysfunction.[4,6,17-19] Although ocular rosacea has been associated with the severity of flushing,[6] the primary defect is related to meibomian gland dysfunction.[20] Abnormalities of the meibomian glands lead to instability of the tear film and increased tear evaporation secondary to decreased concentrations of lipid in the tear film.[18,19] Barton et al[21] found reduced tear turnover may lead to an increase of inflammatory cytokines in the tears of patients with ocular rosacea.[21]

Histopathologic studies have failed to elucidate the etiology of ocular rosacea. Common histopathologic findings include perivasculitis and granulomatous inflammation of the conjunctiva, suggesting a type IV hypersensitivity reaction.[22,23] In the most severe cases of ocular rosacea, immunoglobulin and complement component 3 have been demonstrated in the epithelium and basement membrane.[24] Severe ocular involvement such as scleritis, ulcerative keratitis, and corneal neovascularization may develop after exposure to the toxic products released by the chronic inflammation occurring on the surface of the eye.[23]

Treatment

Spontaneous exacerbation of rosacea is common; therefore, control of symptoms is the most realistic objective of therapy. Exposure to factors that may exacerbate flushing, such as sunlight, heat, hot beverages or spicy foods, should be avoided. Because most patients with ocular rosacea have blepharitis and abnormalities of meibomian glands, a regimen of eyelid hygiene is warranted.[20] Warm compresses followed by gentle lid massage to express the stagnant sebum from the meibomian glands are helpful. Patients with dry eyes will benefit from preservative-free artificial tears applied several times a day.[1]

The tetracycline family of antibiotics are useful in treating all forms of rosacea, including the ocular manifestations.[5,11,20,25-31] Rosacea is typically controlled within 4 to 6 weeks of antibiotic therapy. After symptoms are controlled, the dose may be tapered and used only as needed for recurrence. Patients with frequent rosacea flaring will require a prolonged course of treatment.[5,20,29] Topical metronidazole gel has been found to be a helpful adjunct in treating rosacea blepharitis; however, it is not currently available in an ophthalmic preparation.[32]

Topical ophthalmic corticosteroids are effective in treating keratitis, iritis, or scleritis associated with rosacea until oral antibiotics take effect. Patients being treated with topical corticosteroids require close observation by an ophthalmologist because high steroid concentrations may put these patients at increased risk of corneal melting.[33] In cases of acute, severe ocular rosacea, a short course of prednisone may be required to control the inflammation.[29] Patients with persistent ocular involvement resistant to tetracyclines may respond to low-dose isotretinoin.[29]

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