

Ocular Rosacea

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ABSTRACT Rosacea is a common skin disease that frequently involves the eye. Although the pathogenesis of the disease remains undefined, recent findings suggest that an altered inflammatory response plays an important role in both cutaneous and ocular rosacea. Ocular manifestations include lid and ocular surface alterations. Chronic inflammation can lead to corneal vascularization, which may compromise vision. Treatment of ocular rosacea is aimed at preventing irritation of the ocular surface (e.g., lubricants, lid hygiene) and controlling inflammation with topical and systemic anti-inflammatory drugs. Systemic tetracyclines are the mainstay of treatment. These drugs act multifactorially by decreasing bacterial flora and the expression of matrix metalloproteinases, altering meibum secretion, inhibiting the production of bacterial lipases, and providing an immunomodulatory effect.

KEY WORDS blepharitis, *Demodex folliculorum*, *Helicobacter pylori*, keratitis, inflammatory disorders, metronidazole, ocular inflammation, ocular rosacea, ocular surface, rosacea, tears, tetracyclines

I. INTRODUCTION

The designation *rosacea* is derived from the Latin word *rosaceus* (*rosy*), describing the facial complexion of most patients with the disease. Although, historically, blushing signified nubile beauty and charm,¹ the frequent blushing of roseatic patients is certainly more a problem than a mark of beauty. Moreover,

facial plethora has long been associated with the stigma of alcohol consumption. In a 1966 review, Cowan² noted that “the writings of the Roman poets tell us that, even in those ancient days, people were accustomed to seeing red noses just as we are today. And even then, there were comments about the relationship to alcoholic well being.”

Rosacea is a chronic cutaneous disorder characterized by persistent erythema, telangiectases, papules, and pustules, primarily of the convexities of the central face (cheeks, chin, nose, and central forehead).³ The disease frequently involves the eye,⁴ manifesting as ocular surface inflammation.

II. DEFINITION

The use of the term *rosacea* instead of *acne rosacea* has been recommended on the basis that the disease is not a disease of the skin follicles, as is *acne vulgaris*.⁵ This recommendation has been adopted in this review.

The designation *rosacea*, and especially *ocular rosacea*, has been applied to patients and research subjects with a diverse set of clinical findings. Considering that the etiology and pathogenesis of rosacea are not well established and that there is no consensus on pathognomonic histologic findings, serology, and clinical features, the National Rosacea Society Expert Committee has developed a standard clinical classification and staging schematic for rosacea.³ The diagnostic criteria are divided into primary features and secondary features, as outlined in Table 1. The presence of one or more of the primary features with a central facial distribution is indicative of rosacea. The secondary features often appear with one or more of the primary features, but they can occur independently.

Four subtypes (erythematotelangiectatic, papulopustular, phymatous, and ocular) and one variant (granulomatous) are described for rosacea, depending on which primary and secondary features are more prominent. Patients may have clinical features consistent with more than one subtype.

The diagnosis of ocular rosacea is particularly challenging in the subgroup of patients who lack the typical facial skin findings. Indeed, up to 90% of patients with ocular rosacea may have neither obvious roseatic skin changes nor a previous diagnosis of rosacea,⁶ and 8-20%^{6,7} may have no skin manifestations at all, especially if they are children.⁸ In patients with signs and symptoms consistent with ocular rosacea, but without cutaneous features, the

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Abbreviations are printed in **boldface** where they first appear with their definitions.

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Table 1. Clinical classification and staging schematic for rosacea (National Rosacea Society Expert Committee)

Primary features

- Flushing (transient erythema)
- Nontransient erythema
- Papules and pustules
- Telangiectasia

Secondary features

- Burning or stinging sensation (especially on malar skin)
- Red plaques
- Dry appearance of facial skin
- Facial skin edema
- Ocular manifestations
- Phymatous changes (most commonly, rhinophyma)

employees, 81(10%) had the disease.¹¹ Despite previous reports with a very low percentage of ocular involvement,¹² it is currently believed that ocular rosacea affects half or more of patients with rosacea,^{13,14} although an incidence as low as 8% has recently been reported.¹⁵

Rosacea affects both men and women, although there is disagreement about the sexual predilection for the disease. Some studies have reported a higher prevalence of cutaneous rosacea among women,^{11,12} but ocular involvement has been reported to affect both sexes similarly.^{12,16} Conversely, Michel and Cabibel¹⁵ found more women to be affected by ocular rosacea, although a similar proportion of men and women had cutaneous rosacea. Other series of patients with cutaneous rosacea have shown an even distribution of sexes.^{17,18} In an evaluation of patients with rosacea seen in dermatology and ophthalmology clinics, Ghanem et al demonstrated that a higher percentage of patients seen in the dermatology clinic were women, whereas there was an even distribution of sexes in the ophthalmology clinic.⁴

The onset of cutaneous rosacea is usually after age 30, and it peaks between ages 40 and 60.^{3,19-21} It occurs rarely in children.^{8,22-24} It has been suggested that ocular rosacea generally occurs at an older age than cutaneous rosacea,⁷ but other studies failed to detect this difference.^{4,25}

Rosacea has an inverse relationship with skin pigmentation. It is most common in fair-skinned people^{3,26} of northern and European ancestry¹ and less common in Asians or Africans. The prevalence is so high in the Northern European ethnic groups that rosacea has been referred to as the “curse of the Celts.”²⁷ For a long time, rosacea was thought not to occur in patients with dark pigmentation.²⁸ However, that concept was probably related to the fact that most reports were derived from institutions serving fair-skinned populations⁷ and to the masking of early skin signs by dark pigment.²⁹ Although the widespread impression of a racial predilection persists, there is no population-based study to substantiate such assumptions.

diagnosis of ocular rosacea should be considered in the clinical differential diagnosis. Nevertheless, considering the lack of specificity of the ocular signs and symptoms (see Section IV.B), the term *ocular rosacea* should probably not be applied to those patients in scientific reports and trials, unless typical skin findings are also detected.

III. INCIDENCE/PREVALENCE

It is estimated that approximately 13 million Americans have rosacea.^{9,10} In a Swedish study of 809 office

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