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Dry-Eye Syndrome

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Fig. 3.—Lesions of the skin and mucous membrane including eye involvement as found in Stevens-Johnson syndrome.

Fig. 1.—Dry spots on the cornea associated with a deficiency of mucus.

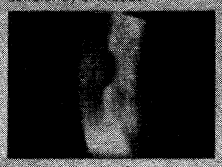

Fig. 2.—Superficial epithelial erosions of the cornea due to persistent dryness.

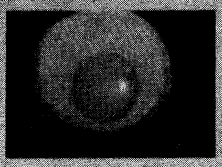

Fig. 4.—Stevens-Johnson syndrome with symblepharon.

The dry-eye syndrome may be caused by an abnormality of any component of the normal tear film or by some irregularity in the position or anatomy of the eyelid. Keratoconjunctivitis sicca—which refers to the involvement of both the conjunctiva and cornea—is generally caused by the inadequate moistening of the corneal surface due to a decreased flow of tears. It may occur as a strictly localized ocular condition, but more frequently it accompanies systemic disease.

Diagnostic procedures used to define the cause of dry-eye syndrome include Schirmer's test, cytologic examination of tissue scrapings or biopsy, and electrophoretic or microbiologic assay of tears.

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The normal eye is well lubricated by a film of tears comprised of three layers: mucoid, watery, and oily, respectively. If any one of these physiologic lubricants becomes deficient, the individual develops a "dry-eye syndrome" or *keratoconjunctivitis sicca*. Although it may be primary (localized to the eye), this syndrome not infrequently accompanies systemic disease.

In a patient suffering from a dry-eye syndrome, the anterior surface of the eye loses its usual glistening appearance and may appear dry. The patient usually complains of irritation, burning or discomfort, but often the eye "feels moist"; rarely is dryness a subjective complaint. Visual function will ultimately be impaired if the corneal surface develops irregularities as a consequence of persistent dryness.

Composition of Tear Film Layer

Of the three components that normally comprise the tear film, the innermost is 1) a *mucoid* layer elaborated by conjunctival goblet cells. This layer coats the epithelium of the conjunctiva and cornea. Spread over the mucoid layer is 2) a middle *watery* layer composed of lacrimal fluid secreted by the major and accessory lacrimal glands. Floating on the watery layer is 3) a lipid monolayer derived from meibomian-gland secretion. This outer *oily* layer helps to prevent tears from evaporating or spilling over the boundary of the eyelids. Abnormality of any tear-film component, irregularity of eyelid position, or other anatomic disturbance can induce the dry-eye syndrome.

What Causes an Abnormal Tear Film?

Mucous deficiency. A deficiency of mucus in tears will produce dry spots on the cornea because of the hydrophobic nature of the exposed epithelium (Fig. 1). If dryness