

## Lacrimal System Dysfunction

1. Keratoconjunctivitis Sicca
2. Illacrimation

### Keratoconjunctivitis Sicca

#### Definition

Noninfectious keratopathy characterized by reduced moistening of the conjunctiva and cornea (dry eyes).

- **Epidemiology:** Keratoconjunctivitis sicca as a result of dry eyes is one of the most common eye problems between the ages of 40 and 50.
- As a result of hormonal changes in menopause, *women are far more frequently affected (86%) than men.*
- There are also indications that keratoconjunctivitis sicca is more prevalent in regions with higher levels of environmental pollution.

**Etiology:** Keratoconjunctivitis sicca results from dry eyes, which may be due to one of two causes:

1. **Reduced tear production** associated with certain systemic disorders (such as Sjögren's syndrome and rheumatoid arthritis) or as a result of atrophy or destruction of the lacrimal gland.
  2. **Altered composition of the tear film.** The composition of the tear film can alter due to:
    - A. Vitamin A deficiency,
    - B. Medications (such as oral contraceptives and retinoids),
    - C. Certain environmental influences (such as nicotine, smog, or air conditioning).
    - D. The tear film breaks up too quickly and causes corneal drying.
- **Dry eyes can represent a disorder in and of itself.**
  - ✓ Smog is fog combined with smoke and other atmospheric pollutants.

### Symptoms:

- Burning,
- Reddened eyes,
- Excessive lacrimation (reflex lacrimation) from only slight environmental causes such as wind, cold, low humidity, or reading for an extended period of time.
- A foreign body sensation is also present.
- There may be an accompanied intense pain.
- Eyesight is usually minimally compromised if at all.

### Diagnostic considerations:

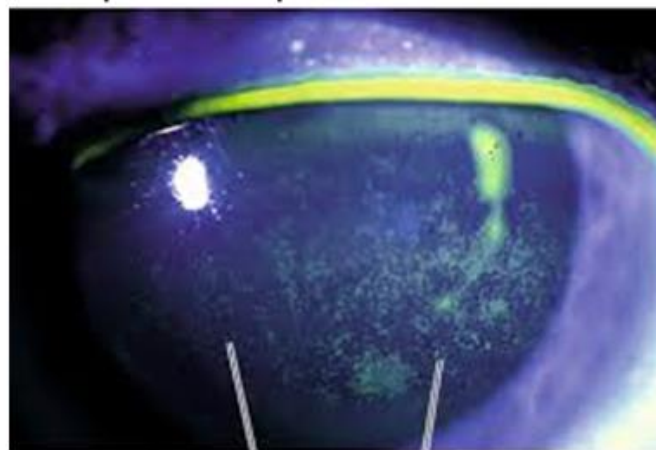
- Often there is a discrepancy between the *minimal clinical findings* that the ophthalmologist can establish and the *intense symptoms reported by the patient*.
- Results from **Schirmer tear testing** usually show reductions of the watery component of tears, and the **tear break-up time** (which provides information about the mucin content of the tear film which is important for its stability) is reduced. Values of at least 10 seconds are normal; the tear break-up time in keratoconjunctivitis sicca is less than 5 seconds.
- **Slit lamp examination** will reveal dilated conjunctival vessels and minimal pericorneal injection.
- A tear film meniscus cannot be demonstrated on the lower eyelid margin, and the lower eyelid will push the conjunctiva along in folds in front of it.
- In *severe cases* the eye will be reddened, and the tear film will contain thick mucus and small filaments that proceed from a superficial epithelial lesion (filamentary keratitis). The corneal lesion can be demonstrated with **fluorescein dye**.

## Filamentary keratitis



- In less severe cases the eye will only be reddened, although application of fluorescein dye will reveal corneal lesions (superficial punctate keratitis). The **rose bengal test** and **impression cytology** are additional diagnostic tests that are useful in evaluating persistent cases.

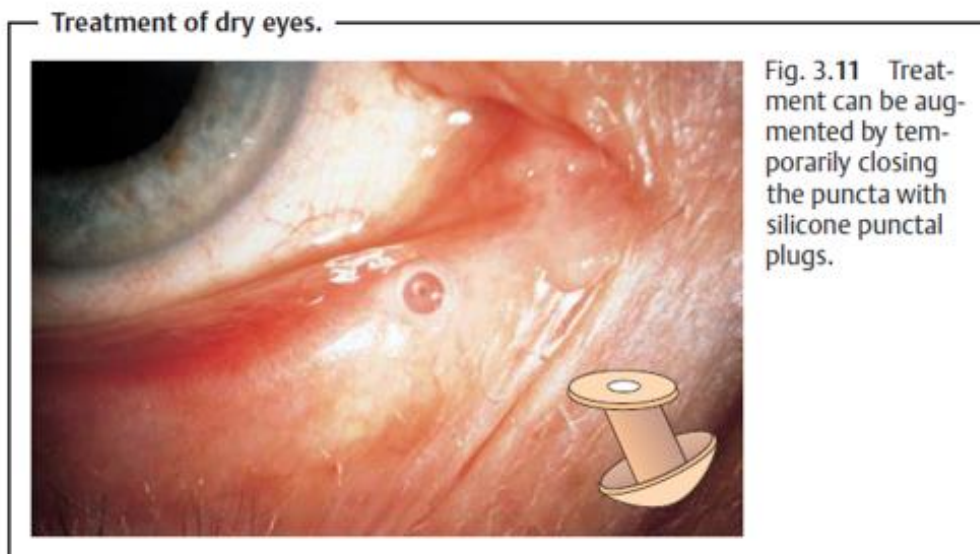
## superficial punctate keratitis



Superficial punctate keratitis

**Treatment:**

- Depending on the severity of findings, **artificial tear solutions** in varying viscosities are prescribed.
- These range from eyedrops to high-viscosity long-acting gels that may be applied every hour or every half hour, depending on the severity of the disorder.
- **In persistent cases**, the puncta can be temporarily closed with silicone **punctal plugs** to at least retain the few tears that are still produced.
- **Surgical obliteration of the puncta** may be indicated in severe cases.
- Patients should also be informed about the possibility of installing an **air humidifier** in the home and redirecting blowers in automobiles to avoid further drying of the eyes. Dry eyes in women may also be due to hormonal changes, and a **gynecologist should be consulted** regarding the patient's hormonal status.
- **Prognosis:** The prognosis is good for those treatments discussed here. However, the disorder cannot be completely healed.



## Illacrimation

- Illacrimation or epiphora may be due to *hypersecretion from the lacrimal gland*. However, it is more often caused by *obstructed drainage through the lower lacrimal system*.

### Causes of hypersecretion:

1. *Emotional distress* (crying).
2. *Increased irritation of the eyes* (by smoke, dust, foreign bodies, injury, or intraocular inflammation) leads to excessive lacrimation in the context of the defensive triad of blepharospasm, photosensitivity, and epiphora.

### Causes of obstructed drainage:

1. Stricture or stenosis in the lower lacrimal system.
2. Eyelid deformity (eversion of the punctum lacrimale, ectropion, or entropion).

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