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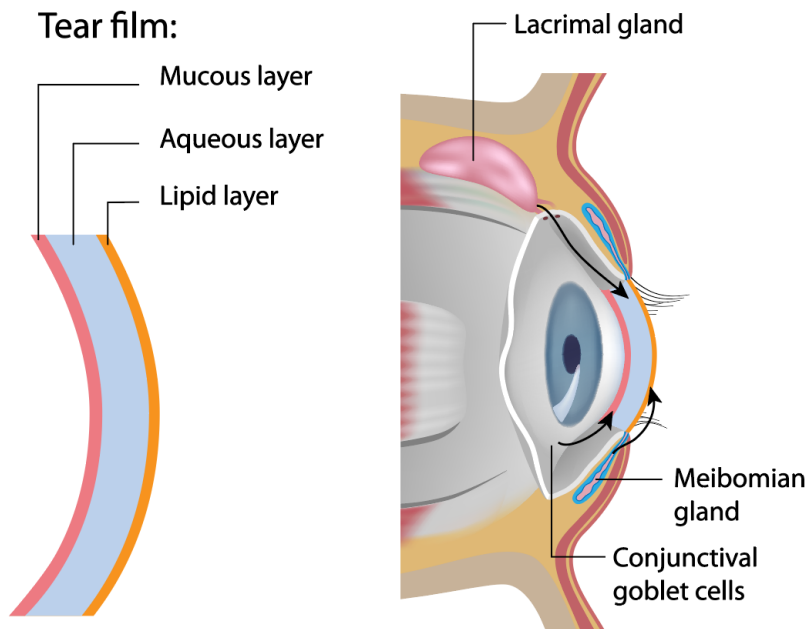
Dry Eye Syndrome

Overview

A quality tear film is essential for good vision and for nourishment of the eye's surface. In dry eye syndrome (DES) there is a decreased quantity or quality of the eye's natural tears that leads to a drying of the ocular surface. It is typically chronic, very common and more prevalent as we get older. Symptoms include a foreign body sensation, scratchiness, redness, watering, and burning. There are numerous causes of dry eye that include systemic diseases, hormone changes, medications, LASIK and the environment. Testing for dry eyes measures the amount of tear the eye secretes and assesses the quality of the tear film. Treatment includes the use of various types of artificial tears, eye ointments/gels, punctal plugs and medicated drops.

Tear Film

The tear film is a critical component of the visual system. It has three components that include the mucous layer secreted by conjunctival goblet cells, meibomian glands secrete the lipid layer and lacrimal glands secrete the aqueous layer. These components are shown in the image below:



An imbalance in any of those layers of the tear film can contribute to dry eye syndrome.

Symptoms & Signs

Symptoms of DES include a foreign body sensation, scratchiness, redness, watering, and burning. The foreign body sensation and scratchiness are caused by a lack of lubrication between the eyelid and the

ocular surface. Redness is a response to the dryness and our eyes water to compensate for the lack of tears. Burning comes from a drying out of the ocular surface when the eye is open.

The first assessment is done by your eye doctor looking at the ocular surface with a biomicroscope. They will see decreased tear production, an unstable tear film, staining with fluorescein dye and punctate keratitis. Newer and more expensive methods of testing include the measure of tear osmolality and the various biochemicals in the tear film.

Causes

There are numerous causes of dry eye. Autoimmune diseases that attack the glands that produce tears like rheumatoid arthritis or lupus cause a decrease in tear production. Birth control and menopause that alter the body's hormone balance are another cause of DES. Numerous medications can cause a decrease in tear secretion like antihistamines and antidepressants. LASIK is a very common cause of dry eye because the surgery damages the nerves that innervate the cornea and regulate the tear film. A dry, dusty, windy and hot climate leads to excessive evaporation of the tear film and causes dry eyes. Contact lenses can alter the structure of the tear film and lead to dry eyes. Dry eye syndrome is one of the most common concerns that patients have when they wear contact lenses.

Treatment

The most common treatment for DES is the use of artificial tears. A preservative-free artificial tear is a better option than one with a preservative. Preservatives in artificial tears when used frequently can cause irritation and discomfort. Thicker gels and ointments can be used at night to protect the ocular surface. Punctal plugs can be placed in the lower and sometimes upper tear duct openings to slow the drainage of tear out of the eye. Medicated drops like Restasis and Xiidra are prescribed by your eye doctor to treat dry eye. Those medications control the inflammatory component of dry eye. Another medication is the nasal spray called Tyrvaya that stimulates your nervous system to secrete more tears.

Websites

All About Vision: <http://www.allaboutvision.com/conditions/dryeye.htm>

American Optometric Association: <https://www.aoa.org/healthy-eyes/eye-and-vision-conditions/dry-eye?sso=y>

National Eye Institute: <https://www.nei.nih.gov/learn-about-eye-health/eye-conditions-and-diseases/dry-eye>