

Rule These Out Before You Diagnose It As Dry Eye (2 hour)

Mile Brujic, OD, FAAO
mile.brujic75@gmail.com
419-261-9161

Summary

Although dry eye can be a debilitating condition for some, it can be virtually asymptomatic for others. Additionally, there are several conditions that can mimic dry eye. This course will discuss those conditions that need to be ruled out before starting a dry eye treatment regimen for patients complaining of dry eye symptoms.

Learning Objectives

- 1) Discuss corneal conditions that can mimic dry eye symptoms
- 2) Understand lid anatomy variations that are important to identify
- 3) Understand systemic conditions that can elicit dry eye symptoms
- 4) Discuss allergic eye disease and its pathophysiology
- 5) Discuss the role of blepharitis in managing ocular surface disease
- 6) Understand patient habits that can cause dry eye symptoms

Course Outline

- 1) Epithelial basement membrane dystrophy
 - a. Aberrant basement membrane adhesion of epithelium to the underlying cornea
 - b. Creates elevated corneal regions
 - c. Map-dot patterns often times present on cornea
 - d. Can cause fluctuations in vision
 - e. Can cause symptoms similar to dry eye
 - f. Can be underlying cause of recurrent corneal erosion
 - i. Acute pain upon awakening
- 2) Floppy eyelid syndrome
 - a. What is it?
 - i. Extensive lid laxity secondary to decreased elastin content in tarsal plate
 - ii. Spontaneous eversion of the lid can occur while sleeping
 - iii. Can lead to chronic irritation of the lid
 - iv. Critical to perform lid eversion on eye examination
 - b. What causes it?
 - i. Low elastin levels and spontaneous eversion
 - ii. Will cause signs/symptoms of ocular discomfort
 - iii. Has a strong association obstructive sleep apnea
 - iv. Also associated with keratoconus, down syndrome
 - c. What do we do when we see it?
 - i. Question about sleep patterns

- ii. Question about sleep apnea or confirm diagnosis
- iii. Refer to physician for appropriate testing
- iv. Monitor optic nerves carefully for risk of glaucoma

3) Thyroid Disease

- a. Normal thyroid function
 - i. Thyroid stimulating hormone (TSH) is produced by the pituitary gland
 - ii. TSH triggers thyroid to produce T3 and T4
 - iii. Iodine is utilized to create T3 and T4
 - iv. Normally, T4 acts on the pituitary gland in a negative feedback loop to control the level of TSH secreted from the gland
- b. Abnormal thyroid function
 - i. Hyperthyroidism
 - 1. Excessive T3/T4 being produced
 - 2. Can be the result of autoimmune condition
 - 3. Grave's disease
 - ii. Hypothyroidism
 - 1. Reduced levels of T3/T4 being produced
- c. Characteristics of thyroid eye disease (TED)
 - i. Immune cells attack orbital tissue
 - ii. Most of the time associated with hyperthyroid, but can be seen with hypothyroid and euthyroid
 - iii. Two phases
 - 1. Active
 - a. Inflammatory phase
 - b. Can last about three years
 - 2. Inactive
 - a. Characterized by fibrosis and lasting sequelae of condition
 - iv. Orbital fibroblasts – specialized cells in the orbit
 - 1. Receptors on cell when activated cause downstream ramifications of TED
 - a. IGF-1R
 - b. TSHR
 - v. Clinical manifestations of TED
 - 1. Eyelid retraction
 - 2. Eye protrusion / exophthalmos
 - 3. Eyelid and conjunctival hyperemia
 - 4. Inflamed extraocular muscles
 - 5. Compression of optic nerve at orbital apex
 - 6. Increase in orbital tissue and fat
 - 7. Gaze evoked orbital pain and diplopia
- d. Treatment options for thyroid eye disease
 - i. Traditional
 - 1. Corticosteroids
 - 2. Orbital decompression

- ii. New treatment
 - 1. Teprotumumab (Tepezza)
 - a. 8 infusions every 3 weeks
 - b. Improved proptosis, diplopia
 - c. Improved orbital swelling
- 4) Kearns's-Sayre Syndrome
 - a. Affects many parts of the body
 - b. Usually appears before 20 years old
 - c. Causes progressive external ophthalmoplegia
 - i. Paralysis of extraocular muscles
 - ii. Ptosis
 - d. Pigmentary retinopathy
 - e. Other systemic findings
 - i. Cardiac conduction defects
 - ii. Ataxia
 - iii. Other muscle weakness
 - iv. Deafness
 - v. Kidney problems
 - f. Occurs because of mitochondrial deficiencies
 - g. Prevalence: 1-3/100,000
- 5) Mucous fishing syndrome
 - a. Cyclical worsening of symptoms
 - b. Patients will "fish" mucous out of their eye usually from some irritant
 - c. Mucous usually in the lower fornix
 - d. Continual attempted removal causes more mucous to be formed
 - e. Treatment often times requires educating patients to stop touching their eyes
- 6) Advancing wavelike epitheliopathy
 - a. Wave like appearance of epithelium that extends from the limbal area into the central cornea
 - b. Is believed to be caused by toxic reaction of the cornea
 - c. Discussion of differential diagnosis
 - i. Superior limbic keratoconjunctivitis
 - ii. Limbal stem cell disease
 - iii. Epithelial basement membrane dystrophy
 - d. Understand current treatment protocols
 - i. Remove those substances believed to be causing the response
 - ii. Silver nitrate application to the limbal area where the irregularity appears to be originating from
 - e. Differentiate condition from superior limbic keratoconjunctivitis
 - f. Differentiate from limbal stem cell deficiency
- 7) Allergic eye disease
 - a. Seasonal and perennial conjunctivitis
 - i. Mast cell is primed with IgE molecules
 - ii. Effects on the ocular tissues

- iii. Allergen binding IgE can cause degranulation of mast cell leading to clinical signs: Conjunctival hyperemia, chemosis, tearing, itching, eyelid swelling
 - b. Giant papillary conjunctivitis (GPC)
 - i. Caused by excessive mechanical irritation
 - c. Vernal keratoconjunctivitis
 - i. Often seen in younger individuals
 - ii. Seen more in males than females
 - iii. Cobblestone papillae often seen
 - iv. Trantas dots
 - d. Atopic keratoconjunctivitis
 - e. Discuss various treatment options
- 8) Trichiasis
 - a. Lashes are misdirected
 - b. Can easily be overlooked
 - c. Important to view the lid margin at a high magnification
 - d. Be aware of corneal staining indicating lash foreign body tracking staining
 - e. Distichiasis
 - i. Important to rule out
 - ii. Can be easily overlooked
- 9) Incomplete lid seal
 - a. Normal dynamics – upper and lower lid seal when the eyes are closed
 - b. Incomplete lid seal causes exposure
 - c. Korb-Blackie light test
 - i. Patient closes eyelid
 - ii. Penlight shone on superior portion of upper lid
 - iii. Assess for presence of light coming through upper and lower lid seal
- 10) Blepharitis
 - a. Inflammation of the lid margin
 - b. Often times secondary to bacterial over population on lid margins
 - i. Biofilm forms on the lid margin and lashes
 - ii. Can affect the lid margins and meibomian gland orifice
 - 1. Can alter lid margin dynamics
 - 2. Can alter quality of meibum secretions
 - 3. May lead to meibomian gland obstruction
 - iii. Excessive exotoxins can alter tear film dynamics
 - 1. Can result in lid margin inflammation
 - c. Demodex may play a large role in blepharitis pathophysiology
 - i. Demodex over population leads to collarettes at the base of the lashes
 - ii. Recent approval of medication to treat demodex blepharitis