

Advanced Dry Eye Diagnosis and Management Strategies (2 hour)

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Summary

Diagnostic and therapeutic strategies for dry eye has advanced tremendously over the last several years. This course will overview new contemporary strategies for dry eye management emphasizing its clinical utilization.

Learning Objectives

- 1) Understand the pathophysiology of the ocular surface in the dry eye patient
- 2) Discussion of the diagnostic tests available to help in diagnosing and monitoring treatment success including effective creation of diagnostic protocols
- 3) Understanding appropriate identification of underlying cause of dry eye
- 4) Discuss the treatment options available
- 5) Understand logical incorporation of treatments to optimize patient outcomes
- 6) Demonstrate the concepts discussed using clinical presentation

Course Outline

- 1) Understanding the Pathophysiology (0-15min)
 - a. Tear Film & Ocular Surface
 - i. Dry eye workshop II
 1. Understand the importance of homeostasis
 2. Loss of homeostasis appears to be a key to pathophysiology
 - b. Understanding the causes:
 - i. Poor aqueous production
 - ii. Deficient mucin layer
 - iii. Deficient lipid layer
 - c. Understanding the creation of a hyperosmotic tear film
 - i. The creation of a pro-inflammatory environment
 - d. Understand the inflammatory consequences
 - e. Discuss potential effects on the conjunctiva and cornea
- 2) Diagnosis (16-50 min)
 - a. Case History
 - i. Current medications
 - ii. Concurrent medical conditions
 - iii. Standardized questionnaires
 1. OSDI
 2. SPEED
 3. SANDE

- b. Diagnostic work up
 - i. Anterior segment examination
 - 1. Eyelashes – observe for debris and / or collarettes
 - a. Volcano sign – earliest sign of inflammation at base of cilia
 - b. Differentiate types of blepharitis
 - i. Bacterial
 - ii. Demodex
 - 2. Eyelid Margins
 - a. Differentiate normal from abnormal (tylosis)
 - b. Hyperemic lid margins
 - 3. Meibomian glands
 - a. Assess the surface of the glands – assess presence or absence of capping
 - b. Assess the function of the glands
 - i. Meibomian gland dysfunction (MGD)
 - 1. Obvious MGD
 - 2. Non-obvious MGD
 - ii. Gentle pressure along lid margin
 - iii. Meibomian gland evaluator (MGE) – standardized way to assess gland function
 - 1. Understand meibum fluidity
 - c. Assessing the structure of the meibomian glands
 - i. View with no magnification
 - ii. View at the slit lamp
 - iii. Eyelid transillumination
 - 1. Performed at slit lamp
 - 2. Transilluminator placed on outside of lower lid and shone through lid
 - iv. Infrared (IR) imaging of the glands
 - 1. IR is captured from meibomian glands
 - 2. MG's are more metabolically active than surrounding tissue and will activate IR
 - 3. Transillumination allows visualization of the MG as dark
 - ii. Fluorescein assessment
 - 1. Assess the anterior segment
 - a. Tear film break up time (TBUT)
 - 1. Visual fluctuation / instability
 - 2. Relationship with corneal staining
 - b. Symptomatic Non-Invasive TBUT (SNIBUT)
 - c. Corneal staining
 - d. Conjunctival staining
 - e. Lid wiper epitheliopathy / Upper lid margin staining

- f. Tear meniscus
 - iii. Rose Bengal / Lissamine Green assessment
 - 1. Stain dead or devitalized cells
 - 2. Conjunctival staining
 - 3. Corneal staining
 - iv. Phenol Red Thread Test / Schirmer test
 - v. Point of Care tests
 - 1. Tear Osmolarity
 - a. Measures osmolarity of the tearfilm
 - 2. Inflammadry
 - a. Measure's MMP-9
 - b. Is positive if MMP-9 is greater than 40 ng/mL
 - c. Understand contemporary grading scales
- 3) Treatment (51-85min)
 - a. Supplements
 - i. Carboxymethylcellulose
 - ii. Glycerin
 - iii. Trehalose
 - iv. Hyaluronate
 - b. Prescription Treatment
 - i. Oral antibiotics
 - 1. Tetracyclines
 - ii. Topical corticosteroids
 - 1. Fluorometholone
 - a. Acetate
 - b. Alcohol
 - 2. Loteprednol
 - a. Loteprednol etabonate 0.25%
 - b. FDA approved corticosteroid for the treatment of dry eye
 - iii. Cyclosporine 0.09%
 - 1. immunomodulator
 - iv. Lifitegrast 5%
 - 1. LFA-1 antagonist
 - v. Cyclosporine 0.05%
 - 1. Immunomodulator
 - 2. Available as a generic
 - c. Meibomian gland function
 - i. Heat and lid massage
 - 1. Daily thermal therapy
 - 2. Lipiflow
 - a. Thermal pulsation
 - b. Simultaneous heat on the posterior lid margin with pressure along the anterior lid
 - 3. TearCare
 - a. Warmth along the outer portions of the lid

- b. Sequential expression of the glands after applied heat
 - 4. iLux
 - a. Heat along anterior lid margin with simultaneous pressure along the lid
 - b. Can visualize meibum as being expressed
 - ii. Topical therapy
 - 1. Anti-inflammatory agents, antibiotics
 - iii. Essential fatty acids
- d. Autologous serum
 - i. Understand it's importance in dry eye management
 - ii. Discussion of accessing autologous serum
- e. Albumin
 - i. Critical protein for patients ocular surface health
 - ii. Need to be compounded
- f. Regener-Eyes
 - i. Biological eye drops
 - ii. Anti-inflammatory cytokines and growth factors
 - iii. Provides regenerative properties to the eyes
 - 1. Discuss role in scleral lenses
- g. Amniotic membrane
 - i. Provides regenerative properties of amniotic tissue
 - ii. Needs to be in contact with ocular surface
 - iii. Surface is often times very compromised
 - iv. Patient cannot see through membrane
- h. Scleral lenses
 - i. Provides moisture chamber behind the lens
 - ii. Understand basic principles
 - 1. Central corneal clearance
 - 2. Limbal clearance
 - 3. Landing zone
- i. Punctal plugs
 - i. Discuss importance in management of dry eye
 - ii. Understand intracanalicular versus silicone plug
 - 1. Silicone
 - a. Permanent
 - b. Visible at slit lamp
 - 2. Intracanalicular
 - a. Dissolvable
 - b. Short term
 - i. 7 to 14 days
 - c. Long term
 - i. 3 to 6 months
 - iii. Discuss importance of monitoring inflammation levels
 - 1. Importance of inflammadry results

2. Grading level of inflammation to guide when plugs are appropriate
- 4) Follow-up visits (86-90min)
 - a. Monitor therapy
 - b. Identify those measurable markers including: case history (standardized questionnaire), physical exam and monitoring compliance with therapy
 - c. Keys to succeeding with therapeutic regimens
- 5) Importance of managing condition (91-93min)
 - a. Discuss the disconnect that is sometimes noticed between the signs and symptoms of dry eyes
 - i. Review current literature to describe this further
 - b. Develop a standard protocol
 - c. Understanding the logic behind actively managing dry eyes
- 6) Case Presentations Illustrating concepts discussed to guide the attendee through the whole process and implement confidently into their practices (94-100min)