Dry Eye Disease – Diagnosis and Treatment Pearls From the Trenches

Mile Brujic, O.D.

Summary

Our understanding of ocular surface disease has increased tremendously over the last several years. This course will discuss diagnosis and treatment pearls and clinical applications of the advancements in dry eye disease.

Learning Objectives

1) Discussion of the diagnostic tests available to help in diagnosing and monitoring treatment success
2) Understand treatment options available and their clinical applicability
3) Discuss contemporary protocols for managing dry eye disease.

Course Outline

1) Diagnosis
    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
                    i. Collarettes
                    ii. Scurf
            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. Association with rosacea
                c. 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

d. 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. Lactoferrin levels
a. Tear film point of care (T-POC) testing
b. Reduced levels indicate poor aqueous production
2. Tear Osmolarity
a. Measures osmolarity of the tearfilm
3. Inflammadry
a. Measure's MMP-9
b. Is positive if MMP-9 is greater than 40 ng/mL
c. Understand contemporary grading scales

2) Treatment
a. Supplemental tears
i. Carboxymethylcellulose

ii. Glycerin
iii. Trehalose
iv. Hyaluronate

b. Prescription Treatment
    i. Lotilaner 0.25%
        1. Treatment for demodex blepharits
    ii. Oral antibiotics
        1. Tetracyclines
    iii. Topical corticosteroids
        1. Fluorometholone
        2. Loteprednol
    iv. Cyclosporine 0.05, 0.09%, 0.1%
        1. immunomodulator
    v. Lifitegrast 5%
        1. LFA-1 antagonist
c. Meibomian gland function
    i. Microblepheroexfoliation
        1. Cleans lid
        2. Potential treatment for chalazion
    ii. Perfluorohexyloctane
        1. 100% active
        2. Prevents evaporation
    iii. 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
    iv. Topical therapy
        1. Anti-inflammatory agents, antibiotics
    v. 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

3) Follow-up visits
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

4) Case Presentations Illustrating concepts discussed to guide the attendee through the whole process and implement confidently into their practices