

2020 South Dakota Optometric Society Fall Meeting

Advances in the Diagnosis and Treatment of Non-Proliferative Age-Related Macular Degeneration

- I. Retinal Anatomy
 - a. Histology
- II. Age-Related Macular Degeneration (AMD) Primer
 - a. Epidemiology
 - b. Differential Diagnoses
 - c. AREDS Criterion
- III. Retinal Findings related to AMD
 - a. RPE Dysfunction
 - b. Microvascular Changes
 - c. Drusen
 - d. Geographic Atrophy
- IV. AMD Studies
 - a. Eye Disease Case Control Study (EDCC)
 - b. Age-Related Eye Disease Study (AREDS)
 - c. Lutein Antioxidant Supplement Trial (LAST)
 - d. Carotenoids in Age-Related Eye Disease Study (CAREDS)
 - e. Lutein Xanthophyll Eye Accumulation (LUXEA)
 - f. Taurine, Omega-3, Zinc, Antioxidant and Lutein (TOZAL)
 - g. Age-Related Eye Disease Study II (AREDS2)
 - h. Carotenoids in Age-Related Eye Disease Study II (CAREDS2)
- V. AMD Supplementation: A Moment of Pause
 - a. Associated Risk Alleles
 - b. Antioxidant and Zinc Limitations
- VI. Clinical Retinal Imaging
 - a. Optical Coherence Tomography Angiography
 - i. Evidence of early microvascular changes in atrophic AMD
 - b. Macular Pigment Optical Density
 - i. Subjective vs Objective
 - c. Adapt Dx – Dark Adaptometry
 - i. Pre-clinical Diagnosis
 - d. Foresee – Preferential Hyperacuity
 - i. Home-monitoring with early diagnosis
- VII. Clinical Treatments Related to Atrophic Age-Related Macular Degeneration
 - a. Systemic Disease Management
 - i. Chronic Inflammation
 - ii. Cardiovascular Co-Morbidities
 - b. Oral Supplementation
 - i. Genetic Upregulation and Downregulation
 - ii. Resveratrol
 - c. Photobiomodulation
 - i. Mitochondrial cytochrome C
 - ii. Drusen Volume
 - iii. Inflammatory biomarkers

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- iv. Cochrane database
- VIII. Hypothesized Roles of Macular Pigment
 - a. Optical Hypothesis
 - b. Protection Hypothesis
 - i. Systematic Review and Meta-analysis
 - ii. 20-year prospective follow-up
 - iii. Modulation of retinal inflammation
 - c. Neural Hypothesis
- IX. Take Home Points
 - a. Primary Influencers
- X. What's now?
 - a. Pre-Clinical Diagnosis
 - b. Co-management of Systemic Conditions
 - c. Oral Supplementation
 - d. Home Monitoring
- XI. What's next?
 - a. Patient-tailored health plans for at-risk populations
 - i. Integrated systemic lipid management / supplementation strategies
 - b. Enhanced bioavailability
 - i. Xanthophyll transport proteins
 - ii. High-density lipoprotein status
 - c. Risk calculator to incorporate:
 - i. Clinical biomarkers + Genetic risk

Course Description: Age-related macular degeneration (AMD) is one of the leading causes of blindness in developed nations. Non-proliferative maculopathy comprises a substantial percentage of total AMD cases and recent advances in detection, diagnosis, treatment and management have placed a spotlight on the crucial role that optometry must play in primary care healthcare delivery. Evolving techniques allow widespread screening techniques that allow subclinical detection of retinal changes and visual performance that can precede conventional AMD diagnosis by 3-5 years. A review of emerging and existing imaging capabilities paired with more recent developments in disease-specific screening will be presented along with an analysis of current medical and oral supplementation.

Cope Category: Retinal Disease

Course Objectives (3/credit hour)-

Objective 1: Identify 4 retinal imaging modalities used in the early detection of age-related maculopathy conditions

Objective 2: Describe the co-management strategies of systemic disease

Objective 3: Discuss the 4 sentinel studies that guide clinical treatment of age-related macular degeneration