

Optimizing OCT for Posterior Segment Pathology

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1 hour

Description:

This course will offer a practical approach to the evaluation and application of OCT-based parameters to clinical case examples of patients with vitreoretinal and optic nerve disease. High risk biomarkers for progression of age-related macular degeneration and retinal OCT biomarkers which imply risk of systemic disease will be highlighted.

Objectives:

- 1) Evaluate current uses and modalities of OCT in ophthalmic imaging
- 2) Interpret retinal imaging to diagnose and determine progression of retinal diseases
- 3) Analyzing imaging to aid in diagnosis and determination of progression of optic nerve disease
- 4) Recognize limitations and artifacts of OCT-based imaging

Outline:

- I. The driving force behind OCT development has been retinal and choroidal disease
 - a. OCT background
 - i. Submillimeter resolution of vitreous, retinal, and choroidal tissue
 - ii. Spectral domain, swept source
 - iii. OCT angiography
 1. The only thing that moves in the retina over time are red blood cells
 2. Take the ‘difference’ between multiple B scans at the same location to produce a ‘decorrelation signal’
 3. En face flow formation and cross-sectional structural information
 4. Not a replacement for FA/OCT
 - iv. Challenges in OCTA
 1. Static blood flow information
 2. Small field of view
 3. Motion artifacts are a big deal Think “where”, then think “what”
Retinal vascular response to disease
- II. Diabetic retinopathy
 - a. Microaneurysms
 - i. Weakening of capillary wall
 - b. Diabetic macular edema
 - i. CSME defined by ETDRS
 - ii. Now, center-involved vs. non-center involved DME
 1. Central subfield thickness (CST)-central 1mm
 - c. Macular ischemia

- III. Retinal vein occlusion
 - a. CRVO
 - i. What's the status of the fellow eye?
 - b. SCORE2 5 year data
- IV. Retinal ischemic perivasculature lesions
 - a. Atrial fibrillation
 - b. Hypertension
- V. Macular degeneration
 - a. 3 main types of drusen
 - i. Soft
 - ii. Subretinal drusenoid deposits
 - iii. Cuticular (basal laminar)
 - b. The goal is to identify AMD at highest risk of progression
 - i. Subretinal drusenoid deposits (reticular pseudodrusen)
 - 1. Near infrared reflectance
 - ii. Hyperreflective foci
 - iii. Drusen volume
 - iv. Hyporefective core
 - c. Double layer sign
 - d. cRORA vs. iRORA
- VI. Angle closure spectrum disease
 - a. Plateau iris syndrome
 - i. Management?
 - b. OCT of the anterior chamber
 - i. No inadvertent compression
 - ii. May be performed in complete darkness
 - iii. Most valuable to determine if the angle is open or closed
- VII. Pigmentary glaucoma
 - a. OCT of the anterior chamber
- VIII. Glaucoma diagnosis and detection of progression
 - a. Retinal nerve fiber layer and ganglion cell analysis
 - b. Case-structure and function correlation
 - c. Case-detection of progression
 - i. Is the rate of progression acceptable?
 - d. Do reference databases help us—or hurt us?
 - i. Green disease
 - ii. Red disease
 - iii. High myopia
 - 1. Segmentation error
 - iv. Incorrect image acquisition

IX. OCTA in glaucoma detection and detection of progression

X. Bottom line

- a. No device is better than the human eye and common sense
- b. No device is better than a skilled and experienced clinical
- c. Know the limitations of the technology
- d. Technology is only as good as the clinician using it

XI. Q&A / Discussion