Title:
OCT Analysis Workshop: Interpretation of OCT printouts

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Abstract:
The utilization of optical coherence tomography for the management and diagnosis of macular diseases and glaucoma has increased significantly in the field of optometry. However, many practicing clinicians still struggle to fully understand how to best utilize the information from an OCT printout or which scans to choose to assess the condition. This workshop will provide clinicians the tools needed to understand what each of the OCT instruments has to offer, how to interpret macular and disc scans, how to identify artifacts, and how to fully utilize the instrument to assess ocular pathology.

Description of workshop: participants will have the opportunity to view images on laptops/computers and to identify location and depth of lesions. A request has been sent to Carl Zeiss and Heidelberg to have a Cirrus OCT and Spectralis OCT available for participants to complete their own scans to increase their experience with the instrument.

Learning objectives:
1. Understand how the OCT instrument obtains and calculates macular thickness and retinal nerve fiber layer thickness.
2. How to obtain reliable OCT scans and identify movement and artifacts.
3. How to interpret retinal nerve fiber layer and macular analysis printouts.
4. How to choose which OCT scans to use for different retinal and optic nerve conditions.

Course Outline:
I. Introduction to each of the commercially available OCT instruments with emphasis on the Cirrus and Spectralis.
   a. Carl Zeiss Cirrus HD-OCT
   b. Heidelberg Spectralis SD-OCT
   c. Optovue RTVue/iVue
   d. Topcon 3D OCT-2000

II. Review of anatomy and SD-OCT scans
   a. Retinal layers
      i. EPIS/COST lines
   b. Optic nerve anatomy
      i. Lamina cribosa
      ii. Retinal nerve fiber layer (RNFL)
III. Demonstration of how to obtain reliable OCT scans and identifying artifacts
   a. Motion artifacts/saccades
      i. Eye-tracking/Tru-track
   b. Disease related artifacts
      i. Posterior vitreous detachment
         1. Vitreous floaters
         2. Vitreopapillary traction
      ii. Asteroid hyalosis
      iii. Epiretinal membrane
      iv. Peripapillary atrophy
      v. Peripapillary schisis
      vi. Cataract

IV. Interpretation of macular scans
   a. Cirrus HD-OCT
      i. Macular cube 512x128 versus 200x200
      ii. HD 5-line raster scans
         1. Orientation
         2. Length – 3mm, 6mm, 9mm
      iii. Enhanced depth imaging (EDI)
      iv. RPE analysis
      v. Macular ganglion cell analysis
   b. Spectralis SD-OCT
      i. Volume scan
      ii. Line scan
      iii. Enhanced depth imaging (EDI)
      iv. Macular thickness symmetry

V. Interpretation of optic disc scans/peripapillary RNFL
   a. Cirrus HD-OCT
      i. Optic disc cube 200x200
      ii. Guided progression analysis (GPA)
      iii. HD 5-line raster scans
         1. Vertical and diagonal orientation to assess RNFL thickness
      iv. Enhanced depth imaging (EDI)
         1. Assessment of optic disc drusen
         2. Assessment of lamina cribosa
      v. Macular cube 512x128 over optic nerve head
         1. Assessment of optic disc edema
   b. Spectralis SD-OCT
      i. Optic disc scan- peripapillary RNFL
      ii. Star scan to assess RNFL thickness
      iii. Enhanced depth imaging (EDI)

VI. Group case discussions on OCT interpretations and artifacts
    a. Case study #1
       i. Glaucoma suspect with thin RNFL and vitreopapillary traction
    b. Case study #2
       i. Early sectoral optic disc edema in ischemic optic neuropathy
          1. Near-infrared fundus photograph
          2. Neuro-retinal rim thickness
3. Macular cube over ONH
4. Line scan oriented over area of edema
c. Case study #3
   i. Optic nerve head drusen
      1. Near-infrared fundus photograph
      2. Macular cube scan over ONH
      3. Line scan with EDI
d. Case study #4
   i. Diabetic macular edema
      1. Intraretinal and subretinal edema
      2. Macular change analysis
e. Case study #5
   i. Central serous chorioretinopathy
      1. Subretinal fluid and sub-RPE fluid
      2. EDI and choroidal thickness
f. Case study #6
   i. Nonexudative age-related macular degeneration
      1. Geographic atrophy
      2. Pseudocysts/outer retinal tubulation
      3. RPE analysis
      4. Macular change analysis
g. Case study #7
   i. Exudative age-related macular degeneration
      1. Choroidal neovascular membrane

VII. Conclusion
   a. Emphasis on understanding OCT printouts
   b. Reliable and unreliable scans
   c. Limitations of OCT

References


Saito H, Tomidokoro A, Tomita G, et al. Optic disc peripapillary morphology in


