Title:  
Glaucoma and Myopia: a Diagnostic Challenge

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Disclosure statement: nothing to disclose

Abstract:  
Population-based studies have found an association between glaucoma and myopia. Clinical assessment of the myopic disc for glaucoma is challenging because of myopia-related structural abnormalities of the optic nerve.

Learning objectives:  
1. Discuss the clinical challenges of diagnosing glaucoma in myopic eyes.  
2. Review population-based studies linking/correlating high myopia with glaucoma.  
3. Review anatomy of myopic and glaucomatous disc.  
4. Discuss the clinical findings in optical coherence tomography, visual field, corneal biomechanics, and intraocular pressure in both conditions.  
5. Discuss the importance of longitudinal observations

Course Outline:  
I. Cases  
a. Subjective/history  
b. Objective/exam findings/fundus photos  
c. Auxiliary testing/ optical coherence tomography  
   /visual fields

II. Epidemiology of glaucoma and myopia  
a. Blue Mountain Eye Study  
b. Beijing Eye Study  
c. Los Angeles Latino Eye Study  
d. Singapore Malay Eye Study

III. Anatomy of a myopia  
a. Myopia  
   i. Longer axial length  
   ii. Thinner sclera
iii. Thinner lamina cribosa
b. Myopic disc characteristics
   i. Optic nerve head
      1. Cup-to-disc ratio
      2. Oblique insertion
      3. Tilted disc
   ii. Staphyloma
   iii. Vascular supply
   iv. Peripapillary atrophy
      1. Gamma/Beta/Delta zones
   v. Peripapillary schisis
   vi. Peripapillary detachment
   vii. Corneal biomechanics
      1. Corneal hysteresis
      2. Corneal resistance factor

IV. Glaucomatous exam findings
   a. Optic nerve head
   b. Peripapillary atrophy
   c. Lamina cribosa/biomechanics

V. Clinical Presentation: myopia vs glaucoma
   a. Funduscopic appearance
   b. Optical coherence tomography
      i. Measurement errors/segmentation errors
      ii. Interpretation of disc and cup
         1. Tilted disc
         2. Peripapillary atrophy
         3. Peripapillary schisis/detachment
      iii. Retinal nerve fiber layer
         1. Myopia patterns
         2. Glaucoma patterns
      iv. Ganglion cell analysis/ganglion cell complex
      v. Line scans
         1. Bruch’s membrane opening
         2. Border tissue of Elschnig
      vi. Normative database
      vii. Enhanced depth imaging
         1. Visualization of lamina cribosa
   c. Visual fields
      i. Myopic visual field defects
         1. Tilted disc
         2. Enlarged blind spot
         3. Progression
      ii. Glaucomatous visual field defects
   d. Intraocular pressure
VI. Conclusion
   a. Emphasis on longitudinal observations
      i. Photos
      ii. Visual fields
      iii. Retinal nerve fiber thickness
      iv. Ganglion cell analysis
   b. Risk/benefit ratio

VII. References


