PACHYCHOROID DISEASE

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COURSE DESCRIPTION

• This course will provide an introduction into pachychoroid disease and what conditions fall under this category
• Pachychoroid conditions was first described in 2013 and is still a relatively new topic
• It is currently a hot topic for research and there is still much to discover about this clinical entity
COURSE OBJECTIVE

- To define what pachychoroid means
- To learn about the conditions that are considered pachychoroidal diseases
- To learn how to identify, diagnose, and manage pachychoroidal diseases

INTRODUCTION

- What does pachychoroid mean?
  - Pachy (Greek) – thick

Thickened choroid
INTRODUCTION

Choroid is very important!

Changes in choroid can indicate disease

ENHANCED DEPTH IMAGING OCT

choroidal thickness
INTRODUCTION

- **Layers of the choroid**
  - Bruch Membrane
  - Choriocapillaris
  - Medium blood vessels (Sattler’s layer)
  - Large blood vessels (Haller’s layer)
  - Choroid/sclera transition zone (suprachoroid)

INTRODUCTION

- **Choroidal thickness**

  Thickest
  Thinnest: GLC?
INTRODUCTION

• Choroidal thickness
  • Subfoveal thickness range: 191-350µm
  • >300µm can be pathologic (if other pachychoroid signs are present)
  • Varies based on:
    • Age:
      • ~15micron loss every 10 years
      • >60, 4-5micron loss each year (mean = 197microns)
    • Refractive error/axial length
      • ↓15microns per diopter of myopia
      • ↓32microns for 1mm ↑ axial length
    • Diurnal variation: thickest between 3am-9am
    • Blood pressure
    • Ethnicity

PACHYCHOROID DISEASES

• Conditions with a thickened choroid…
  • Can cause RPE compromise
  • Can cause vision loss
  • Can cause neovascularization

• Other features:
  • Attenuated small and medium vessel layers
  • Dilated large vessel layer
  • ICGA: hyperpermeable choroidal vessels
CASE

DB 42 Y.O. AFRICAN AMERICAN MALE

- New patient
- CC: black spots in vision OD x 1 week
  - Constant, stable
  - Blurred vision
  - Darker color vision
  - Denies headaches, pain, flashes, curtain over vision, floaters
DB 42 Y.O. AFRICAN AMERICAN MALE

- Personal ocular history:
  - Unremarkable
- Personal medical history:
  - Eczema
- Family ocular/medical history:
  - Unremarkable
- BP: 138/96

DB 42 Y.O. AFRICAN AMERICAN MALE

- Medications:
  - Hydrocortisone 1% ointment
- Allergies:
  - NKDA
DB 42 Y.O. AFRICAN AMERICAN MALE

- VA
  - OD: 20/25
  - OS: 20/20+2
- Pupils: PERRL (-)APD OD/OS
- EOMs: SAFE
- CVF: FTFC OD/OS
- CT: Ortho (distance); 2XP (near)
- Red cap: equal between eyes
- Amsler grid: yellow shadow central circle, no metamorphopsia OD

DB 42 Y.O. AFRICAN AMERICAN MALE

- Anterior segment: unremarkable OD/OS
- IOP: 20 OD/ 20 OS GAT
- Posterior segment:
  - OD: 1.0DD central circular edema
  - OS: unremarkable
  - OU: mild arterial attenuation
Assessment:
- Central serous chorioretinopathy OD
  - Pt reports elevated stress for the last few months
  - Pt reports using hydrocortisone for eczema on eyes and regularly gets it into eyes
  - Elevated BP

Plan:
- Pt edu on findings and relation to stress and cortisol use
- Recommended avoiding use of hydrocortisone, especially getting into eyes
- Exam summary letter written to PCP to encourage f/u for elevated BP
- RTC in 1 month for f/u
What does CSC have to do with pachychoroid?

CENTRAL SEROUS

- Central serous is a pachychoroid disease!

Choroidal changes:
- Dilated large choroidal vessels (increased vascular permeability)
- Attenuated small/medium choroidal vessels
- Results in PACHYCHOROID
PACHYCHOROID DISEASES

- Central serous chorioretinopathy
- Pachychoroid pigment epitheliopathy
- Pachychoroid neovasculopathy
- Polypoidal choroidal vasculopathy
PACHYCHOROID DISEASES

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CENTRAL SEROUS CHORIORETINOPATHY

- M>F
- 30-60 y.o.
- Type A, stress, glucocorticoids
- Subretinal detachment
- Focal PED
- EDI OCT:
  - Dilated outer choroidal vessels
  - Attenuated small/medium vessels
  - FA: ink blot or smoke stack
PACHYCHOROID DISEASES

- Central serous chorioretinopathy
- **Pachychoroid pigment epitheliopathy**
- Pachychoroid neovasculopathy
- Polypoidal choroidal vasculopathy

PACHYCHOROID PIGMENT EPITHELIOPATHY

- “Forme fruste” of central serous chorioretinopathy
- Similar to CSCR but without subretinal fluid
- “Silent disease”
- Maybe bilateral or in fellow eye of CSCR patient

**Characteristics:**
- EDI OCT – Pachychoroid
- Normal VA (asymptomatic)
- Orange-redish fundus
- Fundus tessellation absent
- Non-specific RPE changes
- Sub-RPE drusen like deposits
- Small PEDs
PACHYCHOROID DISEASES

- Central serous chorioretinopathy
- Pachychoroid pigment epitheliopathy
- **Pachychoroid neovasculopathy**
- Polypoidal choroidal vasculopathy

PACHYCHOROID NEOVASCULOPATHY

**EDI OCT – Pachychoroid**

- **Type I CNV**
- Absence of drusen
- Often misdiagnosed as AMD
  - Do not have typical AMD changes (i.e. drusen)
  - Younger vs AMD patients

**Symptoms:**

- Decreased VAs
- Central scotoma
- Metamorphopsia
Type I:

- Vessels originate from the choroid and remain sub-RPE
- Corresponds to hidden CNV

Type II:

- Vessels also originate from the choroid but break through the RPE while remaining sub-retinal
- Corresponds to classic CNV

Type III:

- Vessels originate from the retinal arteries
- Aka: retinal angiomatous proliferation (RAP)

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POLYPOIDAL CHOROIDAL VASCULOPATHY

- First described in 1990s
- No universal definition

- Pachychoroid
- Choroidal vascular abnormalities
- Polyps – aneurysmal dilation
- Type I CNV
POLYPOIDAL CHOROIDAL VASCULOPATHY

Clinical features:
- Orange-red nodules
- Serous subretinal detachment
- Submacular hemorrhage
- Serous or hemorrhagic PEDs

OCT
- PEDs
- Polyps
- Double layer sign
- Pachychoroid

Characteristics:
- Subtype of AMD?
- Less aggressive vs AMD
- Better visual prognosis vs AMD
- >Asian & African American
- M>F (Asian); M=F (Caucasian)#
- Age: 50-65
AMD vs PCV, why does it matter??

- PCV is more resistant to anti-VEGF therapy
  - Responds better to aflibercept
  - PCV responds better to combo therapies: anti-VEGF, PDT, steroids
- Best diagnosed by indocyanine green (ICG) angiography

Diagnosis

- Fundus exam
  - Elevated orange-red nodules
- ICG angiography
  - Polypoidal lesions
- Spectral domain OCT
  - Double-layer hyperreflective lines
  - RPE elevation with moderate reflectivity
# Pachychoroid Disease

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<th>Enhanced depth imaging OCT</th>
<th>CSCR</th>
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**Other features**
- Subretinal detachment PED
- CSCR w/o subretinal fluid
- Non-specific RPE changes
- Type I CNV
- Absence of drusen
- Polyps
- Type I CNV
- >Asian & African American

**Treatment**
- Monitor
- Monitor
- Anti-VEGF
- Combo Tx: Anti-VEGF, PDT, steroids

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**Thank You**

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