Epiretinal Membrane Update

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Nothing to Disclose

Learning Objectives
1. How is epiretinal membrane (ERM) best diagnosed?
2. How is ERM differentially diagnosed from central serous retinopathy and cystoid macular edema?
3. Which ERM cases can be monitored, and which will need surgical intervention?
4. What are the expected outcomes of macular peel microsurgery for ERM?
5. Which symptoms are expected to remain after successful surgery, and will need optical treatment?

Case Study #1, First Visit:
Macular Cube OCT, 2014

Case Study #1, Second Visit:
Macular Cube OCT 2015
Case Study #1
5-Line Raster OCT 2015

BP 166/84
BMI 23

Case Study #1, Third Visit:
Macular Cube OCT Spring 2016

BCVA 20/60 OD and OS

Case Study #1: Macular Cube OCT Spring 2016

Case Study #1: 5-Line Raster Macular OCT Spring 2016

Case Study #1: Macular Cube OCT Summer 2016

Case Study #1: Corneal Topography and 10-2 Matrix Visual Fields 2016
Case Study #1: Before ERM Peel/Vitrectomy
5-Line Raster OCRT 2017

BCVA 20/70 OD, OS

Case Study #1: Post-Op Peel OS

BCVA 20/50 OD, OS

Case Study #1: Post-Op Peel OS

BCVA 20/50 OD, OS

Case Study #1, Last Visit: 10-2 Matrix Visual Fields and Summary

BP 130/88, BMI 22

Other Causes of ERM:
Adult-Offset Coats’ Disease Pre-Op

- (a) Color fundus photograph of the right eye of a 38-year-old man with epiretinal membrane along super temporal arcade
- (b) Ultra-wide-field color photograph showing exudation and telangiectatic vessels in temporal periphery.
- The patient was 20/25 OD with metamorphopsia OD

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5678313/

Other Causes of ERM: Adult-Offset Coats’ Disease Post-Op (Peel/Vitrectomy)

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5678313/
Other Causes of ERM: Eales Disease

• (a) Fundus photograph and (b) fluorescein angiogram of a 22-year-old male with Eales Disease Stage 3A and best corrected visual acuity 0.1 showing fibrovascular proliferation at the disc.
• (c) Spectral domain optical coherence tomography showed cystoid macular edema.
• (j) Spectral domain optical coherence tomography showed epiretinal membrane and macular edema.

Epiretinal Membrane Differential Diagnoses: Cystoid Macular Edema (52 YOM and 13 YOF)

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ERM DDx: Cystoid Macular Edema (CME) Using NSAIDs Post-Cataract Surgery

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Where ERM Comes From: Latanoprost, CME, and ERM

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Where ERM Comes From: Latanoprost, CME, and ERM
ERM DDx: Does Latanoprost Cause CME? (after cataract surgery OD)


ERM DDx: Microcystic Macular Edema


http://iovs.arvojournals.org/article.aspx?articleid=2190200


ERM DDx: Microcystic Macular Edema (MME)

• An example of a normal retina compared with the retina of a patient with MME.
  • The pseudo-colored surface image is the infrared surface photo; the vertical stacked gray image an OCT B-scan.
  • Microcystic macular edema was located in the temporal upper quadrant of the inner 3-mm EDTRS grid.
  • However, INL thickening extended to the periphery. In addition, hyperreflective spots were observed in all inner retinal layers.

ERM DDx: Microcystic Macular Edema (MME)

• Representative OCT images of patients with MME from the clinical spectrum are shown.
  • The infrared surface photo and OCT image are presented to the left and the manually segmented INL to the right.
  (A) Microcystic macular edema in the right eye of a 70-year-old male patient with a history of proliferative diabetic retinopathy treated with panretinal photocoagulation (VA OD 0.3 or 20/60).
  (B) Optical coherence tomography image showing MME 8 months after excision of the venous temporal superior quadrant OD in a 66-year-old female patient (VA OD 0.7 or 20/30).

ERM DDx: Microcystic Macular Edema

• Microcystic macular edema in a 58-year-old female patient with newly diagnosed diabetic retinopathy with macular edema (VA OD 0.2 or 20/100).
  • Again, there were multiple hyperreflective spots in the inner retinal layers.
  (D) Microcystic macular edema in a 58-year-old female patient with newly diagnosed diabetic retinopathy with macular edema (VA OD 0.2 or 20/100).


ERM DDx: Microcystic Macular Edema

- Microcystic macular edema in a patient with multiple sclerosis and a history of optic neuritis and branch retinal vein occlusion in the right eye
- This 55-year-old female patient was diagnosed with clinical definite MS in 1992
- Magnetic resonance imaging showed multiple periventricular brain lesions, and spinal T2 hyperintense lesions
- In 2001, she experienced one episode of optic neuritis OD; coincidentally, an occlusion of the vena temporalis superior was found (VA 0.4 or 20/50)

ERM DDx: Microcystic Macular Edema

Propensity for the Nasal/Temporal Quadrants

- Most frequently, MME was observed in patients with ARMD (27.1%) followed by patients with preceding ophthalmic surgery (20.3%) or presence of an epiretinal membrane (18.8%)

Last ERM DDx: Case Study #2

- A 62-year-old male first reported to our clinic with a chief concern was a larger image size OS
- The patient had no history of eye surgery of any sort
- There was a history of blunt trauma to the right nasal canthus almost 40 years previously
- The patient reported that he was generally healthy with a history of hay fever

Case Study #2: Optic Nerve Head OCT

Images from Cirrus OCT

Case Study #2: Optic Nerve and RNFL

RNFL Thickness Map

Images from Cirrus OCT

Case Study #2: Optic Nerve Head OCT

Compare OD to OS

Images from Cirrus OCT
Why did we run a frequency-doubling visual field screening?

There are two reasons: both related to cranial nerves

Which two nerves were we checking with his screening field?

Images from Humphrey Matrix

Images from Humphrey Matrix
Case Study #2: Pachymetry with Ant Seg OCT

Case Study #2: Assessment & Initial Plan

Case Study #2, Second Visit: Contact Lens Telescope and New discovery

Case Study #2, Macular OCT OD and OS

Case Study #2, Visit 1: Macular OCT OU

Case Study #2, Second Visit: Macular OCT OD
Case Study #2, Visit 2: Macular OCT OS

Case Study #2: Macular OCT OD and OS

Case Study #2: What’s Your Diagnosis OS?

Case Study #2: Macular OCT 5-Line Raster

Case Study #2: Central Serous Retinopathy (CSR) OS

Case Study #2: Macular OCT OD and OS
Summary: Epiretinal Membrane

- Epiretinal membrane can be concurrent and confused with:
  - Eye disease, like Coats’ and Eales
  - Cystoid and Microcystic Macular Edema
  - Central Serous Retinopathy
  - Systemic hypertension leads to some of these conditions, but not necessarily ERM
  - Aniseikonia is a presenting and residual symptom, uniquely treated by optometry
  - ERM causes macropsia, magnify the fellow eye

Questions? Thank You!

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Additional References

   https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5623383/

   https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3726418/