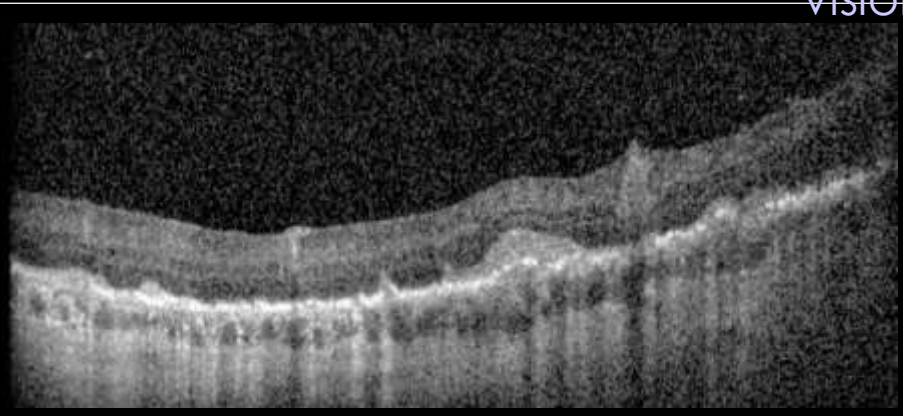
Chorioretinal biopsy-surgical technique

Amani Fawzi, MD

Cyrus Tang and Lee Jampol Professor of Ophthalmology
Northwestern University

No relevant financial disclosures

39 yo Caucasian Female, decreased vision OS



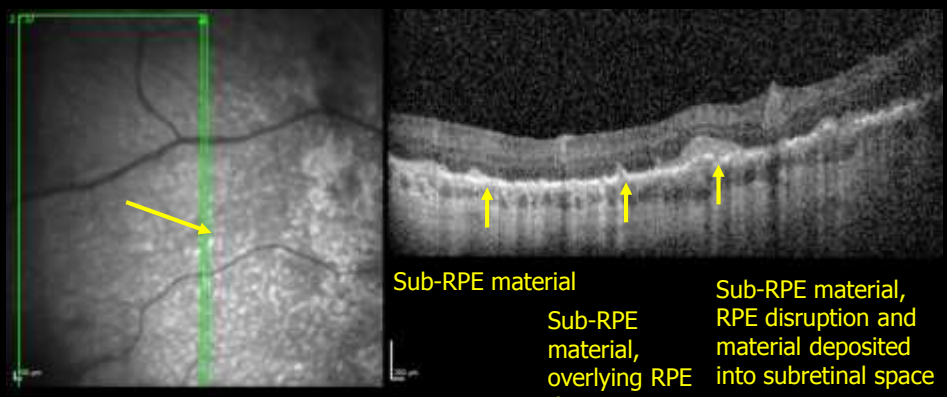
VA 20/20 OD, HM OS. active AC and ant vit cell OU

History

- 10/2017: 1 wk h/o cloudy vision and floater OS.
  - OD 20/20, OS 20/80 : ant vit cell and white dots in periphery OS>>OD
  - Received oral pred 60 mg with some improvement, but quick recurrence when tapered off. Received oral pred 60 mg again. TB, quantiferon, ACE, FTA-ABS, CXR.
- 3/2018: VA OS decreased to CF with new 2+ APD 3 weeks after tapering off oral steroid.
  - Restarted oral pred 60. Saw rheum, started Azathioprine.
- 6/2018: nerve OS acutely inflamed again while on pred 40 mg and azathioprine.
  - On 6/27/18 underwent PPV with biopsy OS
  - Vitreous negative for lymphoma, toxo, EBV, HSV, VZV, CMV.
  - Vitreous fluid, flow cytometry: Few lymphocytes present are mainly polytypic T-cells, no B-cell population seen, no evidence of B-cell lymphoma.
- 7/2018: +New major headaches.
  - Restarted PO pred 60 mg.

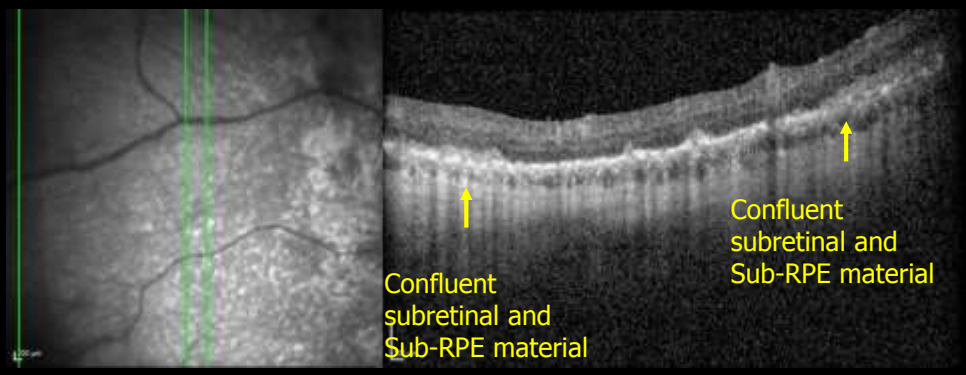
OS-Nasal

Diagnosis?

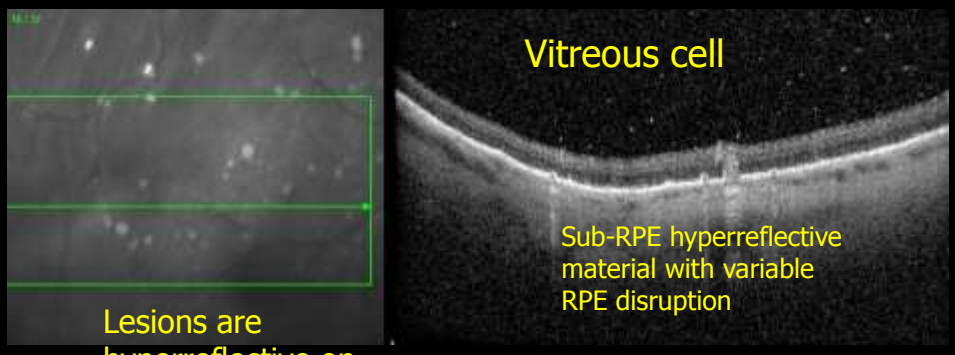


OS-Nasal

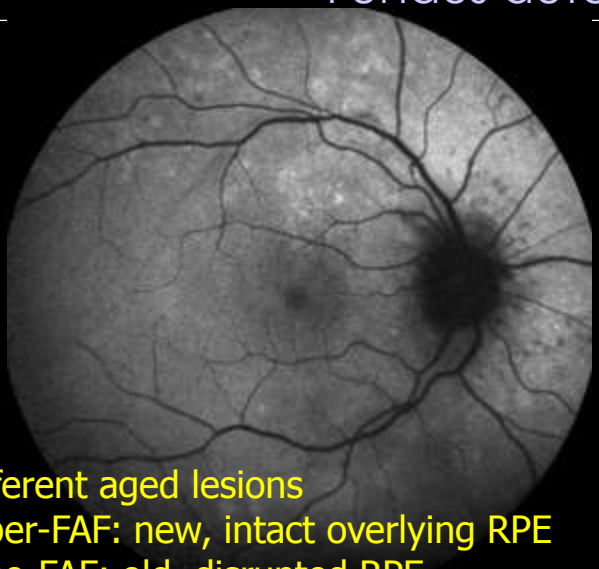
Diagnosis?



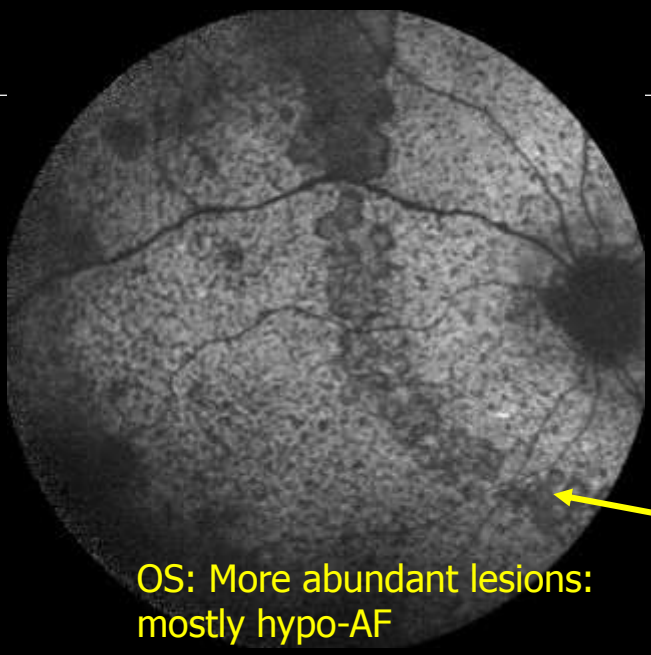
OD ---Diagnosis?



Fundus autofluorescence



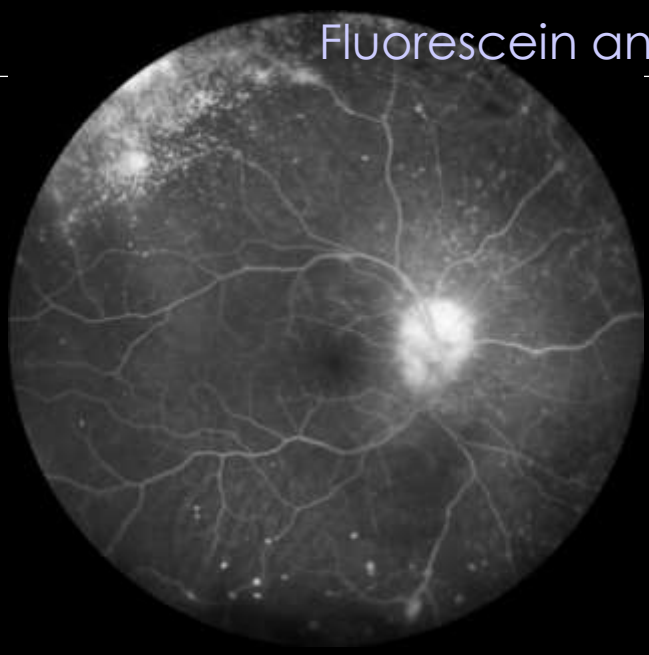
Different aged lesions
hyper-FAF: new, intact overlying RPE
hypo-FAF: old, disrupted RPE

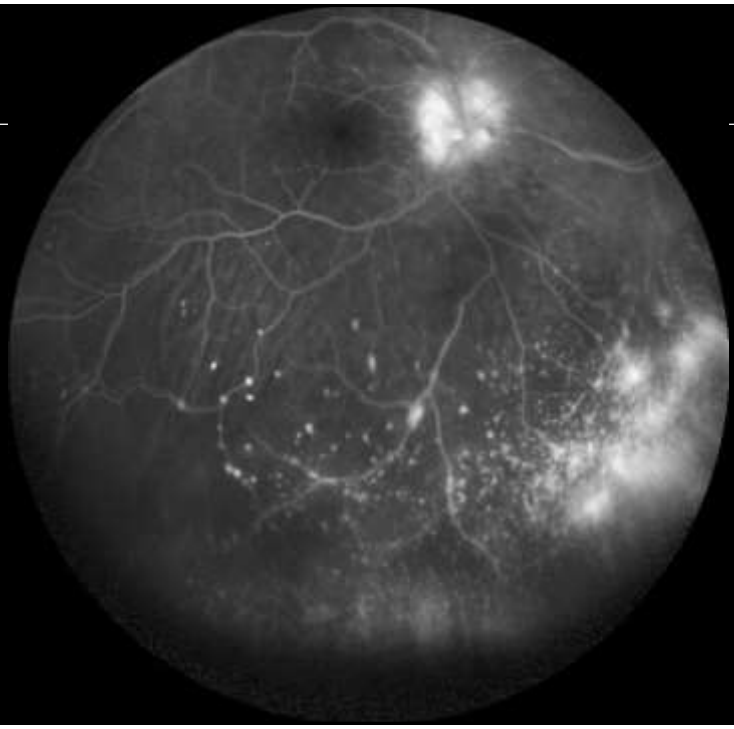


OS: More abundant lesions: mostly hypo-AF

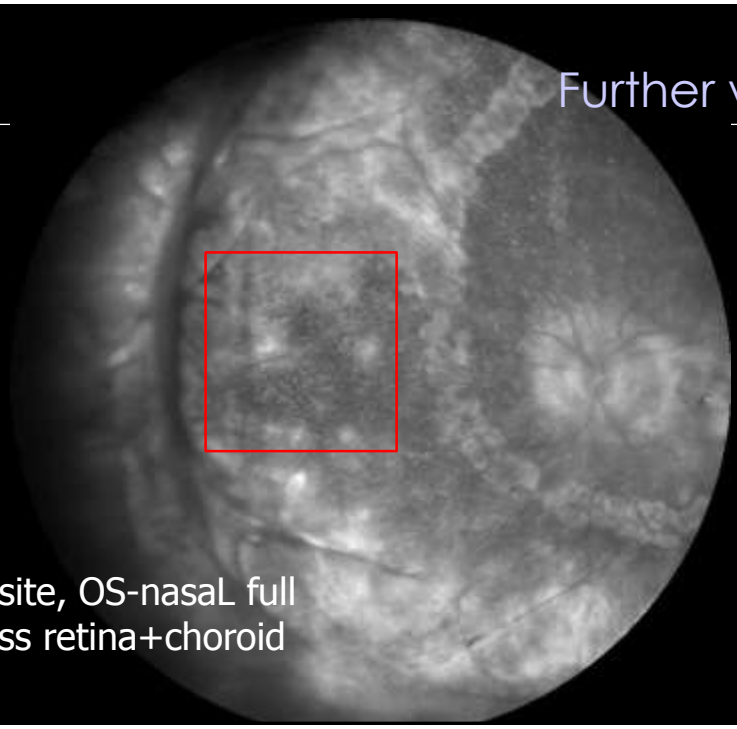
OS-Nasal: laser demarcatn, prior PPV

Fluorescein angiography



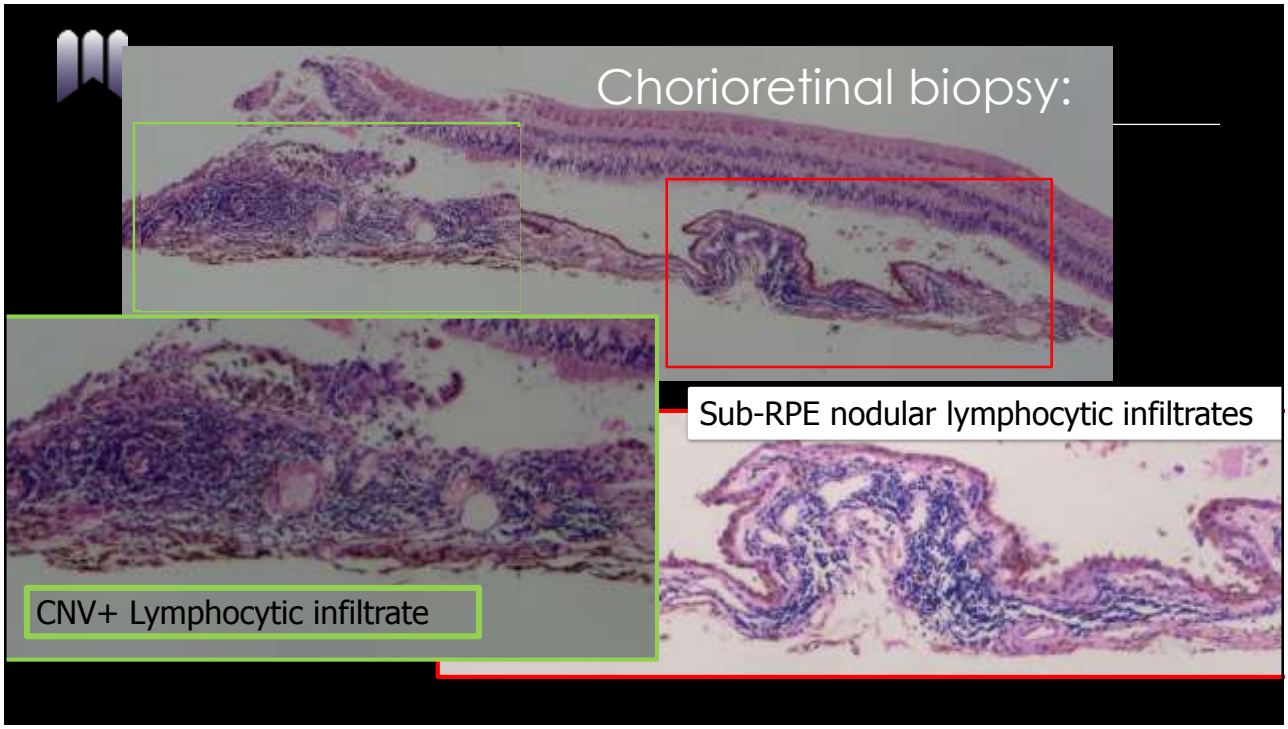


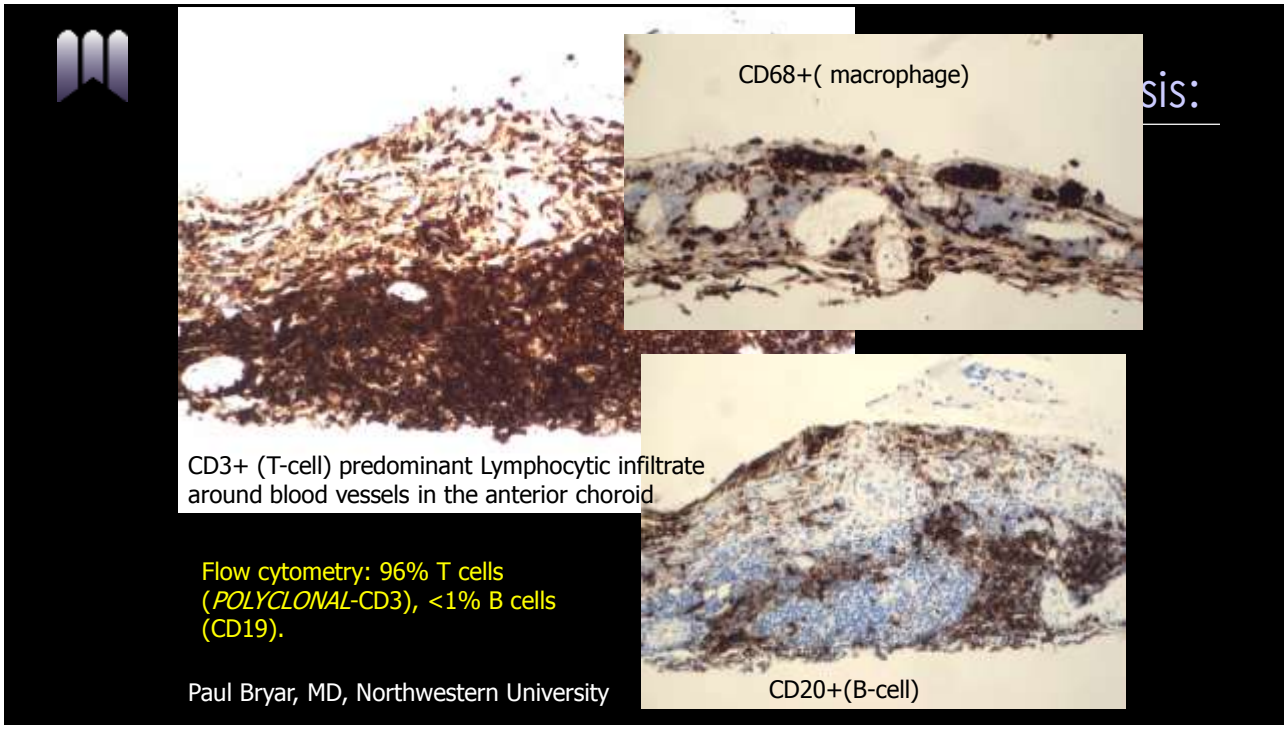
Further work-up?



Biopsy site, OS-nasaL full thickness retina+choroid

Full thickness chorioretinal biopsy-video A. Fawzi


Chorioretinal biopsy:
Sub-RPE nodular lymphocytic infiltrates
CNV+ Lymphocytic infiltrate


sis:
CD68+(macrophage)
CD3+ (T-cell) predominant Lymphocytic infiltrate around blood vessels in the anterior choroid
Flow cytometry: 96% T cells (*POLYCLONAL*-CD3), <1% B cells (CD19).
Paul Bryar, MD, Northwestern University
CD20+(B-cell)

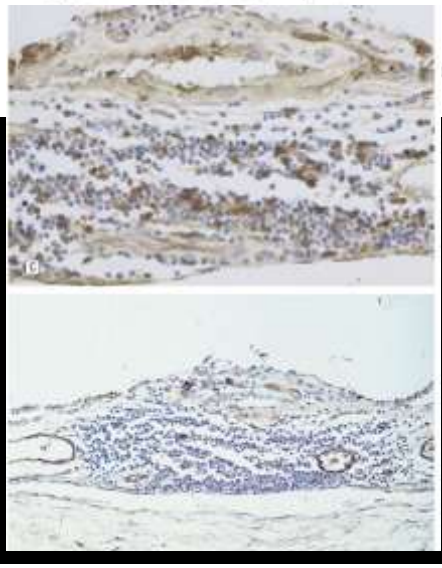
CLINICOPATHOLOGIC REPORT

SECTION EDITOR: W. RICHARD GREEN, MD

Multifocal Choroiditis

ARCH OPHTHALMOL/VOL 116, JUNE 1998
802

Hague, MB; Philip J. Luthert, MB; Susan Lightman, MD



B, Histologic appearance in hematoxylin-eosin–stained sections showing chronic perivascular choroidal inflammation (× 400). Immunostained sections showing T lymphocytes (C) (CD3⁺, × 400), B lymphocytes (D) (CD20⁺, × 200), and capillary endothelium (E) (von Willebrand factor, × 200) within the lesion. There is evidence of new vessel formation beneath the retinal pigment epithelium. F, Immunostained sections of retina showing small numbers of CD3⁺ lymphocytes around an inner retinal capillary (× 400).

CLINICAL INVESTIGATION

Pathological Findings of Multifocal Choroiditis with Panuveitis and Punctate Inner Choroidopathy

Hiroyuki Shimada, Mitsuko Yuzawa, Tokihito Hirose, Hiroyuki Nakashizuka, Takayuki Hattori, and Yoko Kazato

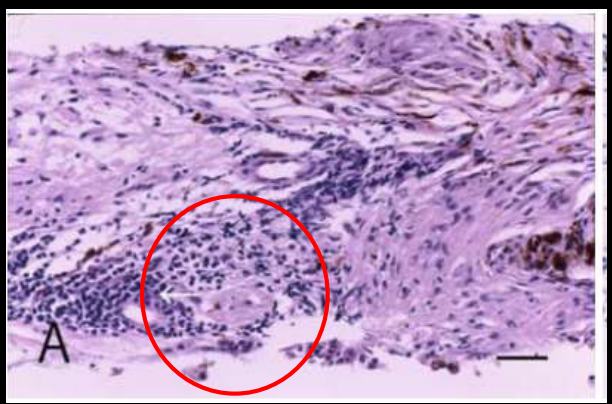
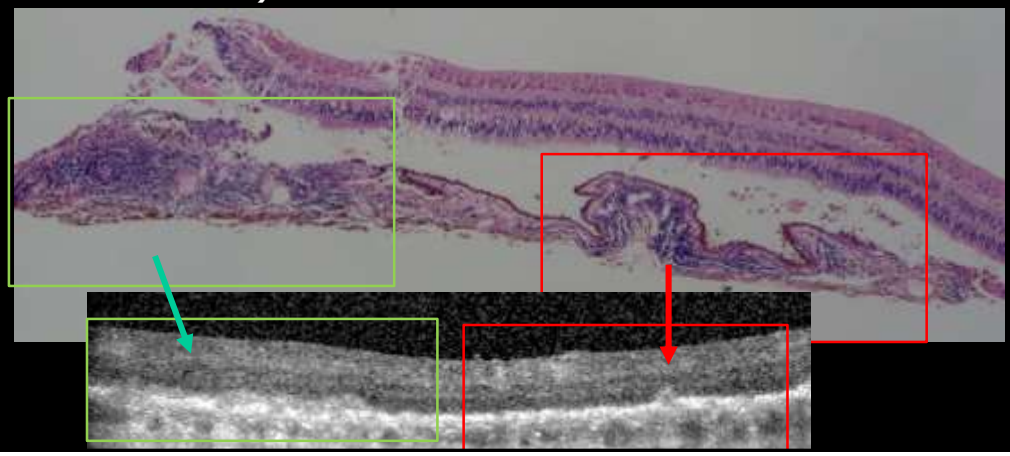


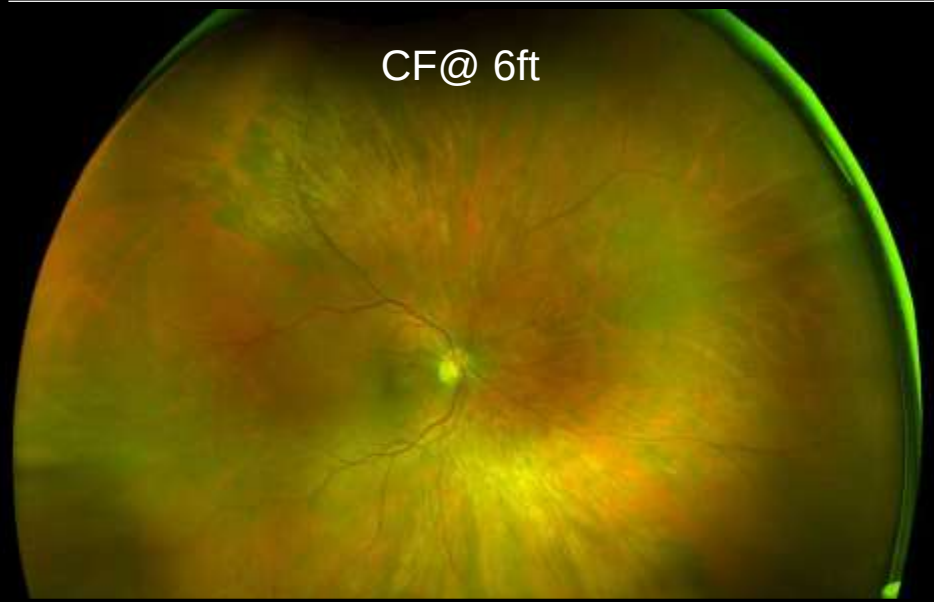
Figure 3A–F. Histological findings of multifocal choroiditis with panuveitis (case 1). **A** H&E staining demonstrates neovascular tissue and profuse lymphocytic infiltration (*arrow*) around the blood vessels. Bar = 20 µm. **B** No immunoreactivity is seen in any of the negative controls. Bar = 20 µm. **C** Vascular endothelial growth factor (VEGF) staining is observed in the endothelial cells of the new vessels (*black arrows*) and fibroblasts (*white arrow*). Bar = 15 µm. **D** CD68-positive macrophages (*arrows*) are recognizable in the region of the neovascularization. Bar = 20 µm. **E** CD3 expression is essentially absent. Bar = 20 µm. **F** CD20 expression (*arrow*) consistent with the sites of profuse lymphocytic infiltration is observed. Bar = 20 µm.

Diagnosis

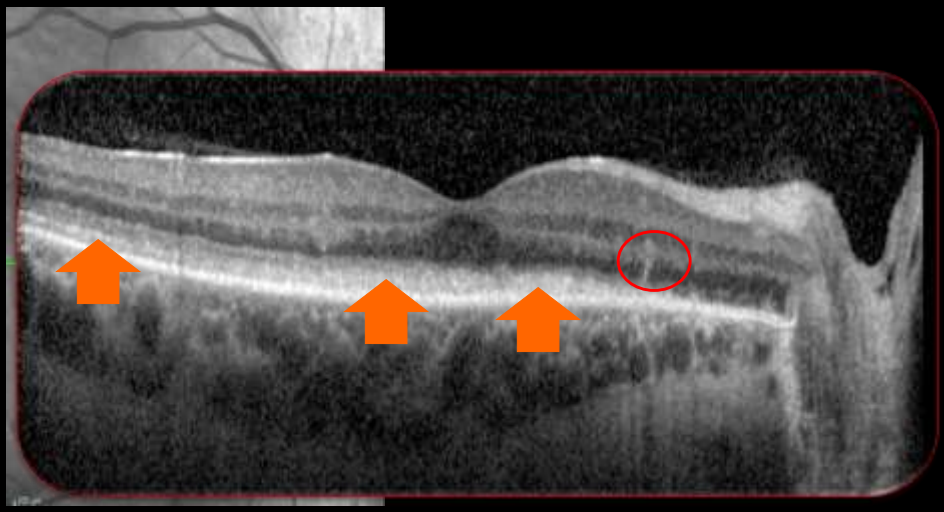
- Multifocal choroiditis (polyclonal T-cell, B-cell and macrophage infiltrate in the anterior choroid) with neovascularization



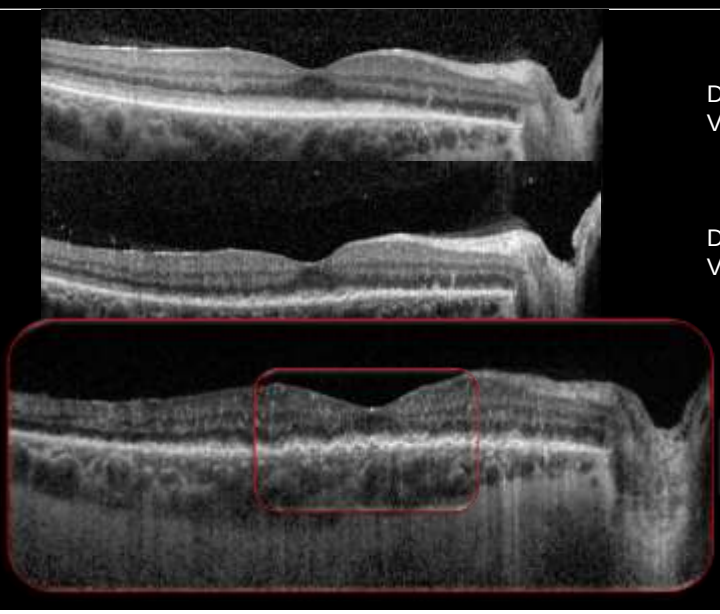
47 year old WM 10-day h/o blurry vision in the right eye



OCT



OCT-course

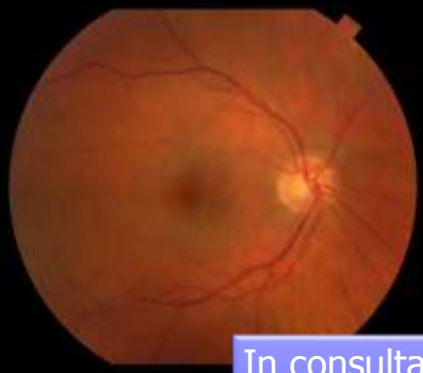


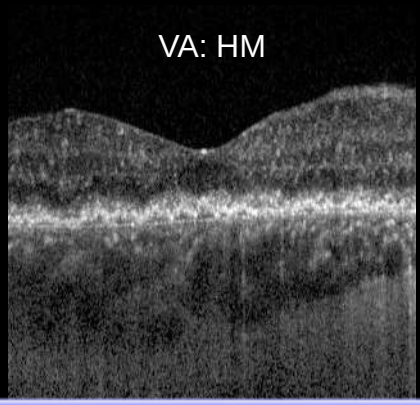
D0
VA: CF @ 6‘

D5 – PSTK
VA: CF @ 6’

D19
VA: CF @ 3’

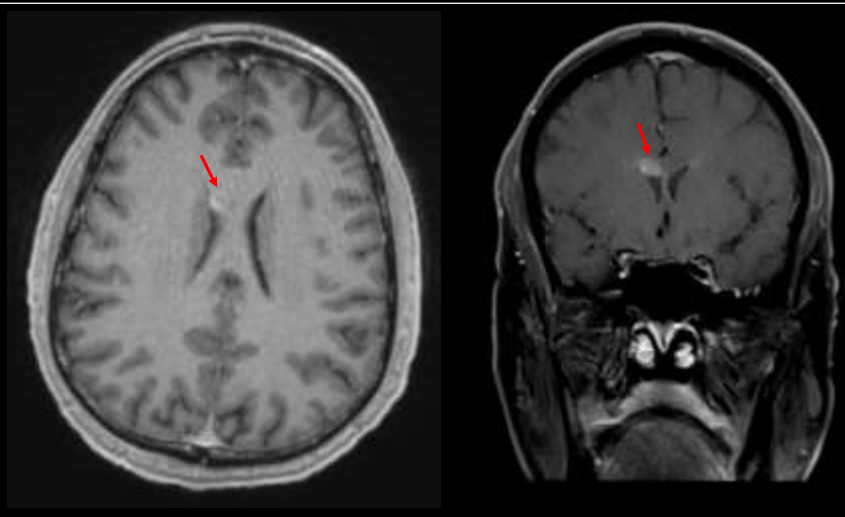
Management?





In consultation with oncology, chorioretinal bx and repeat MRI recommended given unusual presentation

MRI(11/19/2016)



new lesion (8x7x6.3 mm) in corpus callosum

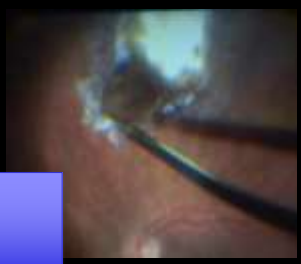
11/22/16:Chorioretinal Biopsy

Pars plana vitrectomy (& biopsy of undiluted vitreous), chorioretinal biopsy, silicone oil, intravitreal methotrexate

Endodiathermy through retina & choroid

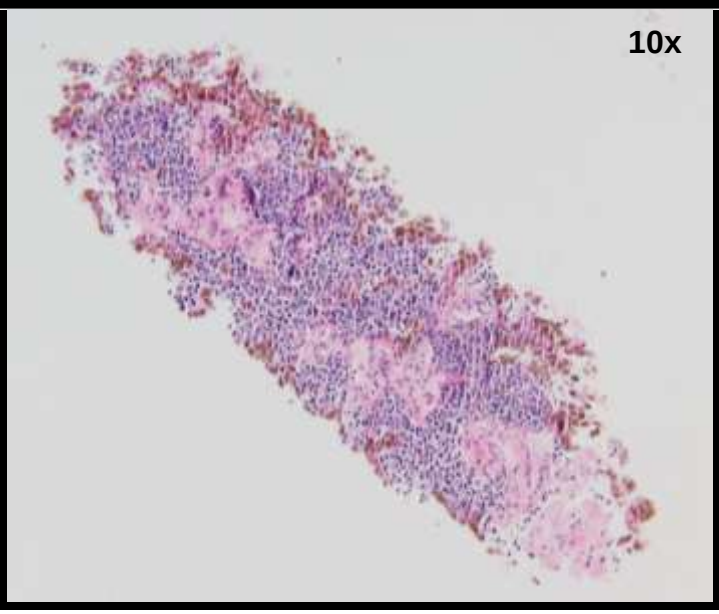
Silicone oil and intravitx MTX#1

barricade

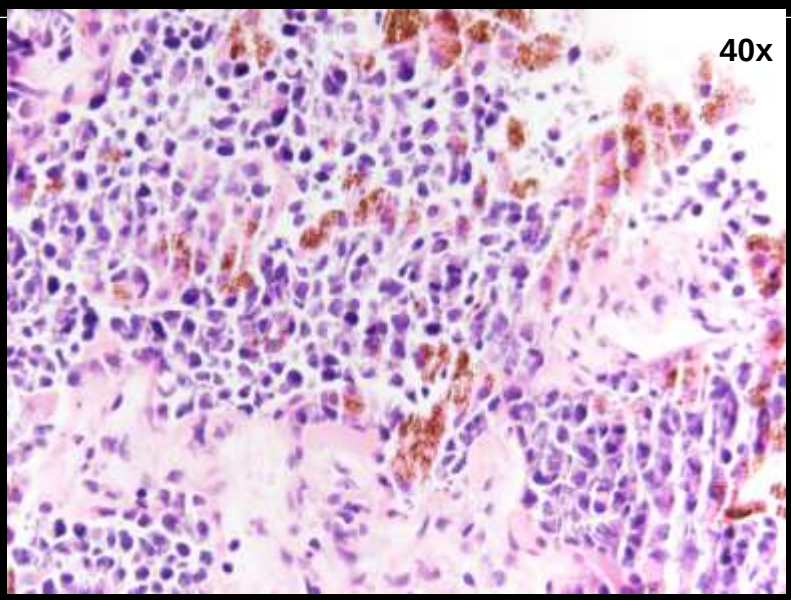


En bloc resection of choroid and retina using automated vertical scissors

Pathology

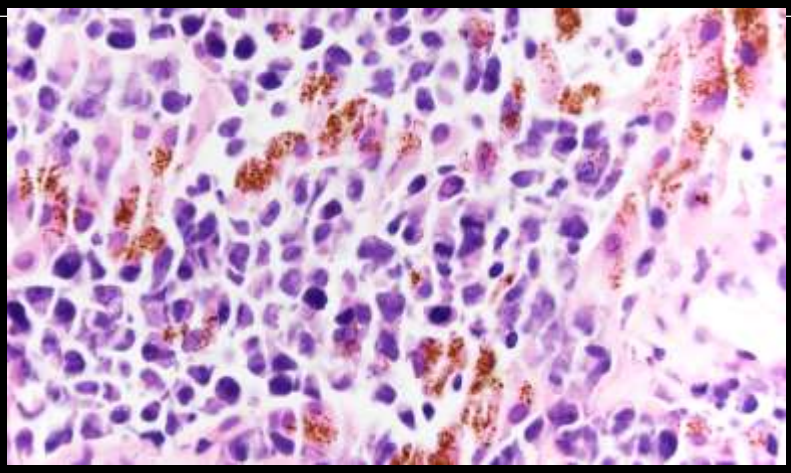


Pathology



40x

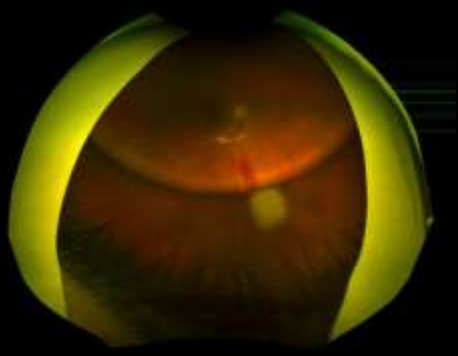
Pathology

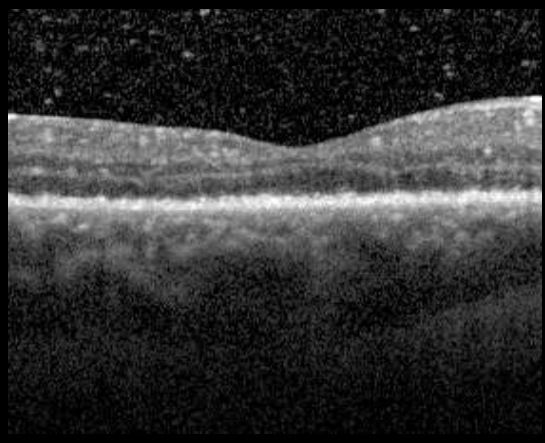


60x

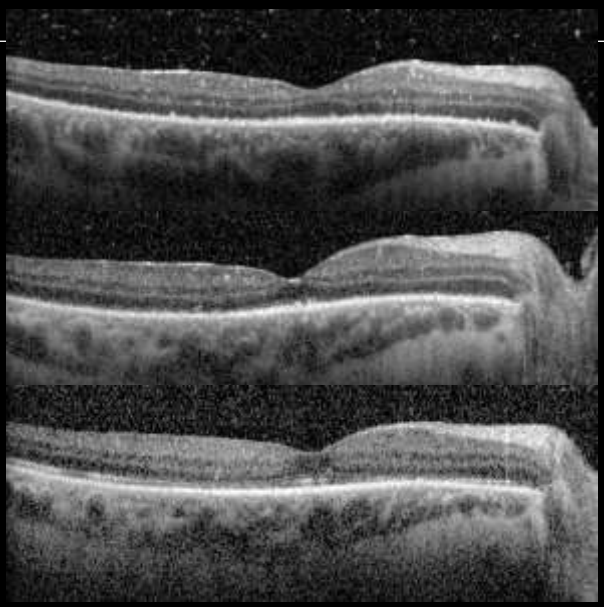
"…sheets of atypical intermediate to large size cells… a cluster of B cells [CD20] positive, consistent with large B cell lymphoma"

POD 8





Surgical FU



POD 7

VA: CF

POD 14

VA: CF @ 4’

POD 29

VA: 20/150

Summary

- Work-up in conjunction with oncology
- MRI brain, lumbar puncture for cell (less likely)
- Especially in CNS lymphoma, retinal biopsy may be more informative, and less invasive than CNS bx
- If vitreous does not show dense infiltrate, then retinal, or more complete chorioretinal bx can be very informative
- Coordinate with pathology, so that sample can be processed in a timely fashion!!