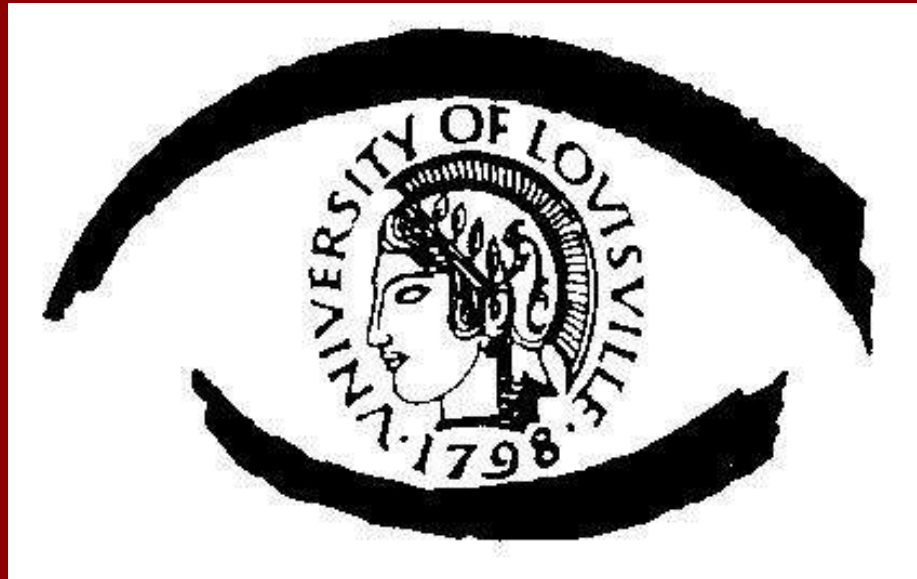


# Clinical Rounds



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8/13/10

# Patient Presentation

CC: “Evaluation of ocular tumor of left eye”

HPI: 28 yo male medical student is referred to Retina Clinic for evaluation of possible tumor in left eye. He has noticed gradual blurriness OS for 1 month.

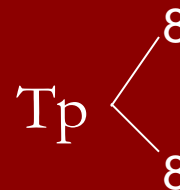
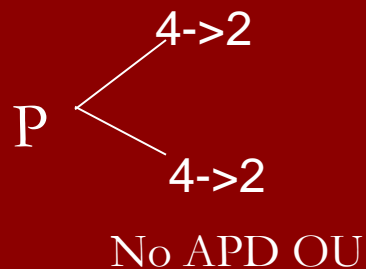
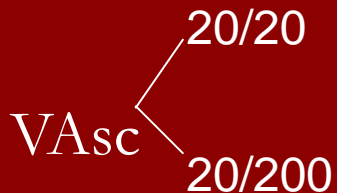
POH: (-)

PMH: (-)

ROS: (-)

Meds: Multivitamins

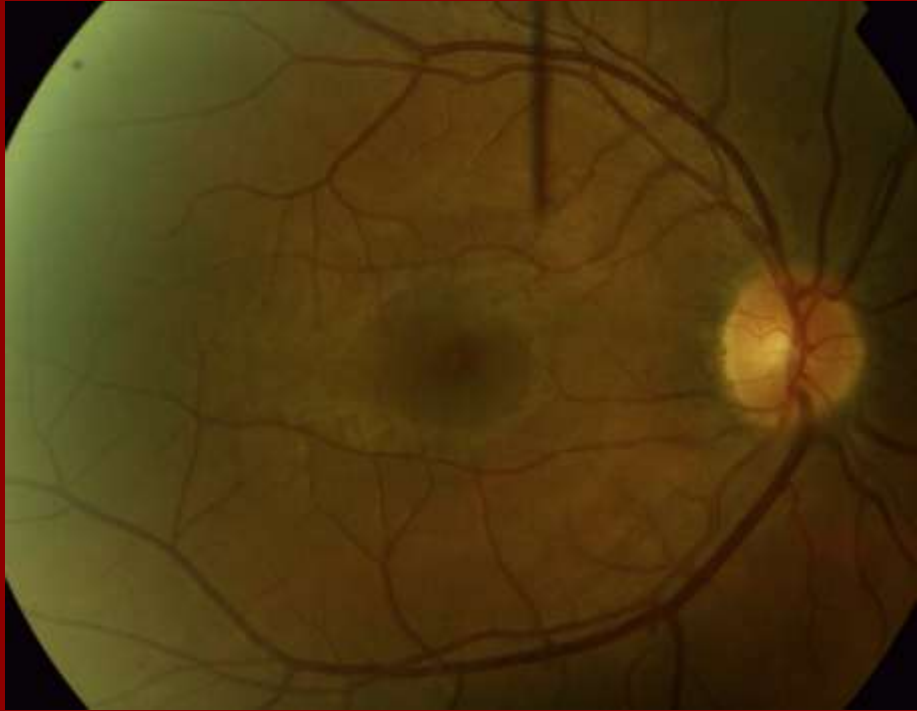
# Physical Exam



## SLE

	<u>OD</u>	<u>OS</u>
Ext	normal OU	
C/S	clear OU	
K	clear OU	
AC	deep and quiet OU	
I/L	normal OU	

# Fundus Photo



Right eye: normal fundus



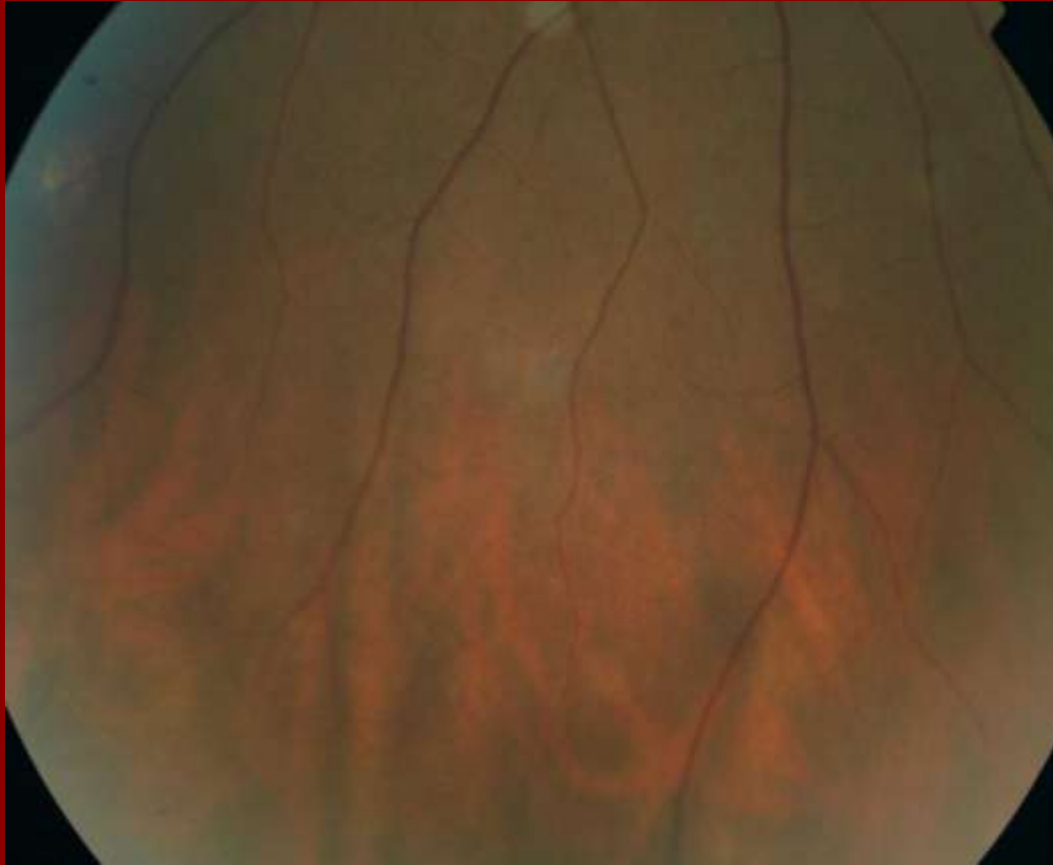
Left eye: peripapillary elevated lesion with subretinal fluid and membrane; 2DD flat homogeneous choroidal nevus along superotemporal arcade

# Mosaic Photo OS



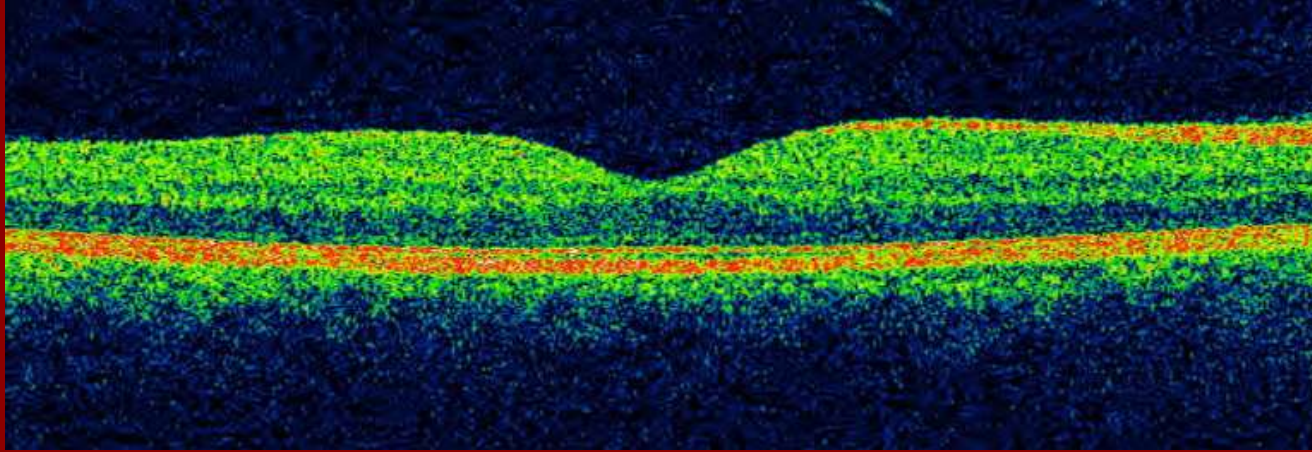
Peripapillary elevation; small chorioretinal scar superotemporally; 2 DD choroidal nevus

# Peripheral Fundus Photo

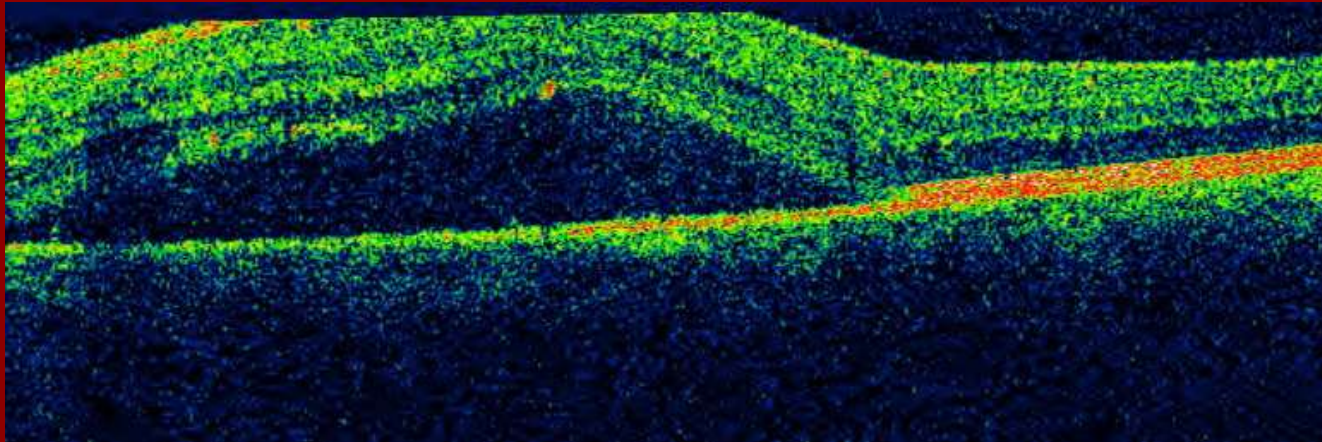


Demonstrating a small chorioretinal scar in periphery

# OCT

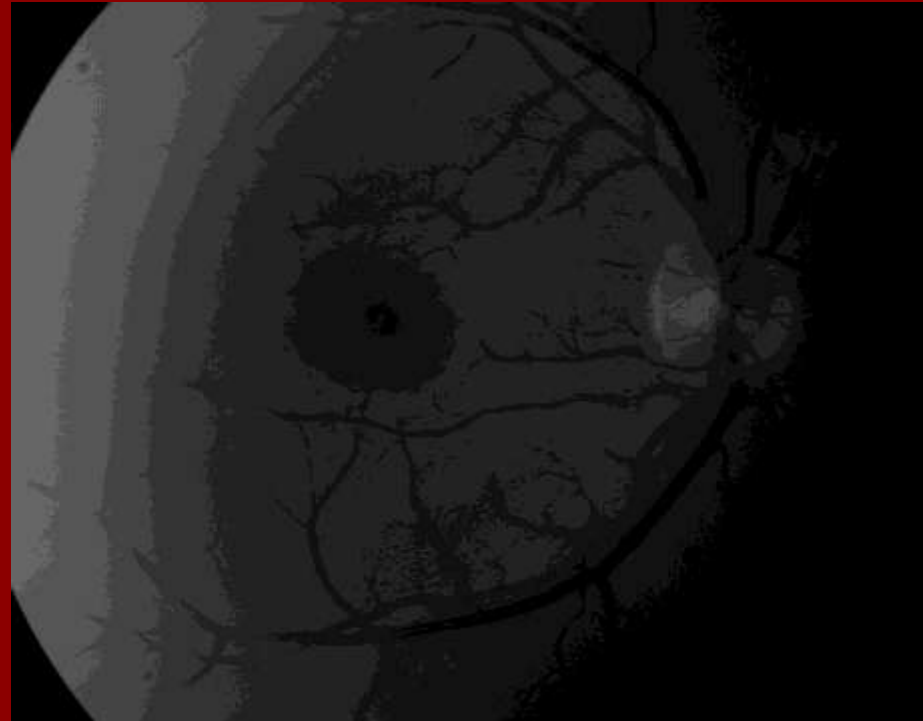
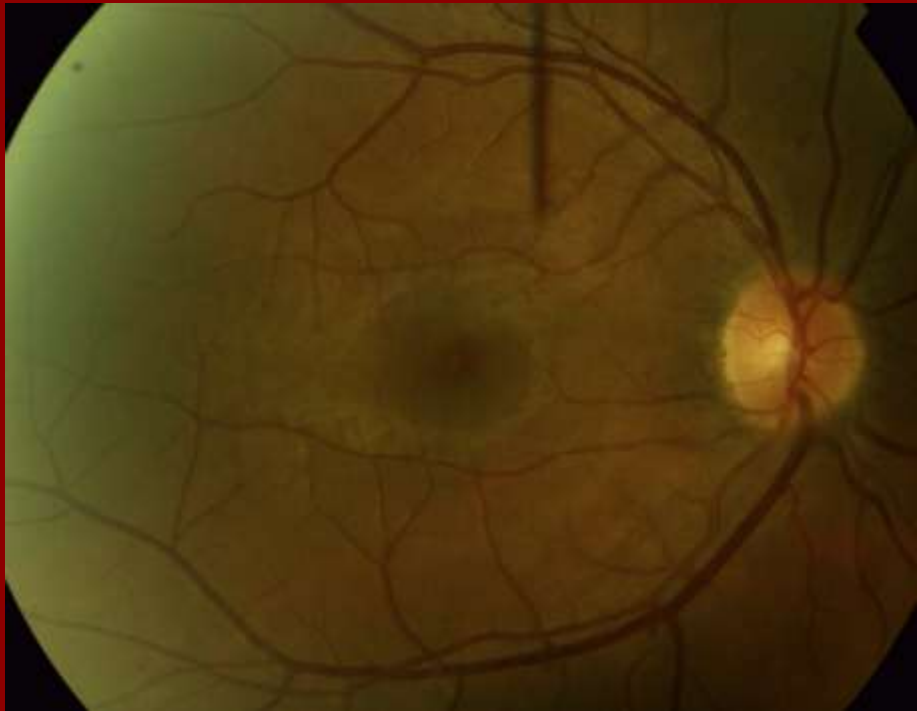


OCT of right eye:  
normal



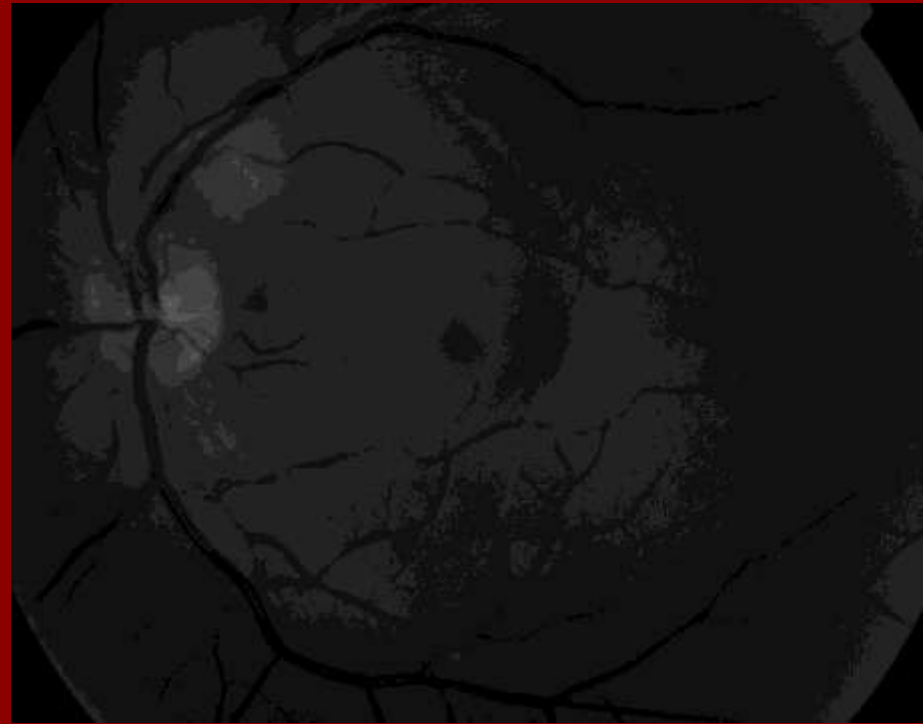
OCT of left eye:  
Subretinal fluid and  
neurosensory retinal  
detachment

# Fundus Photo



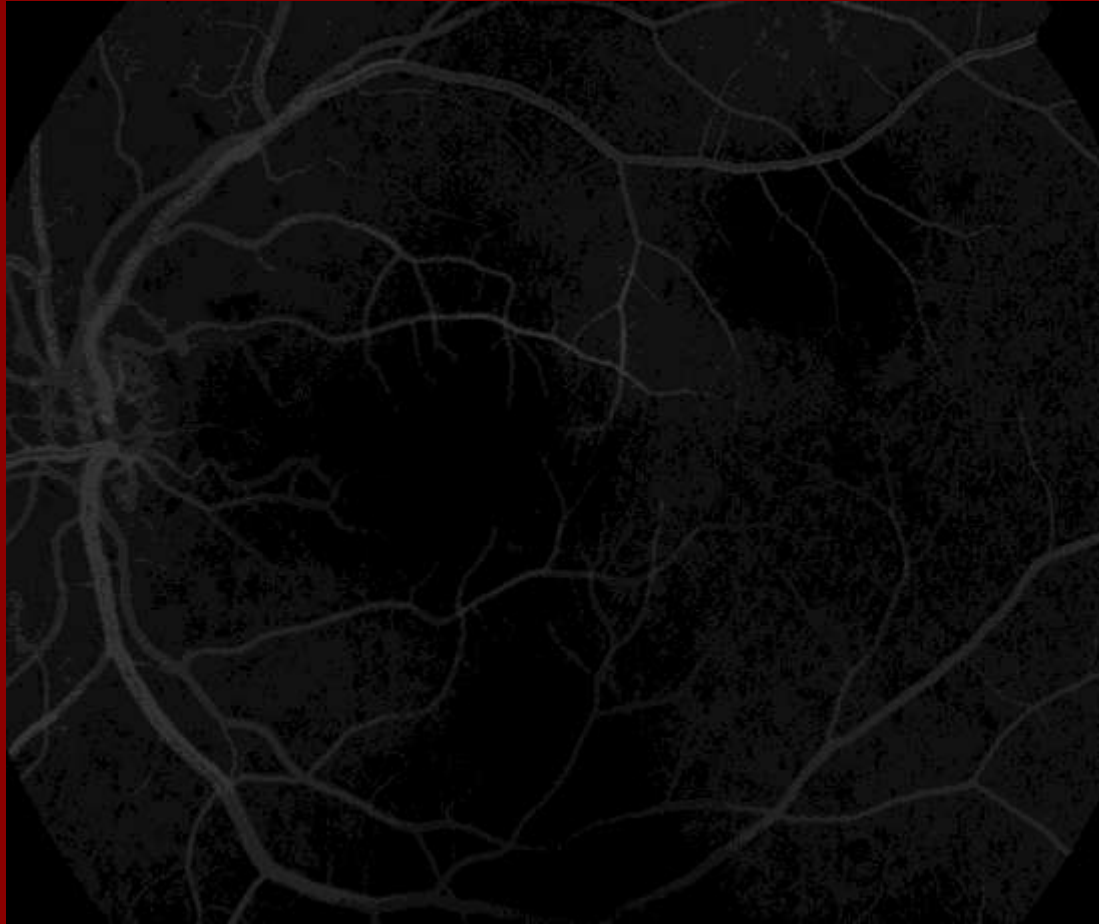
Color fundus and red-free photos of right eye

# Fundus Photo



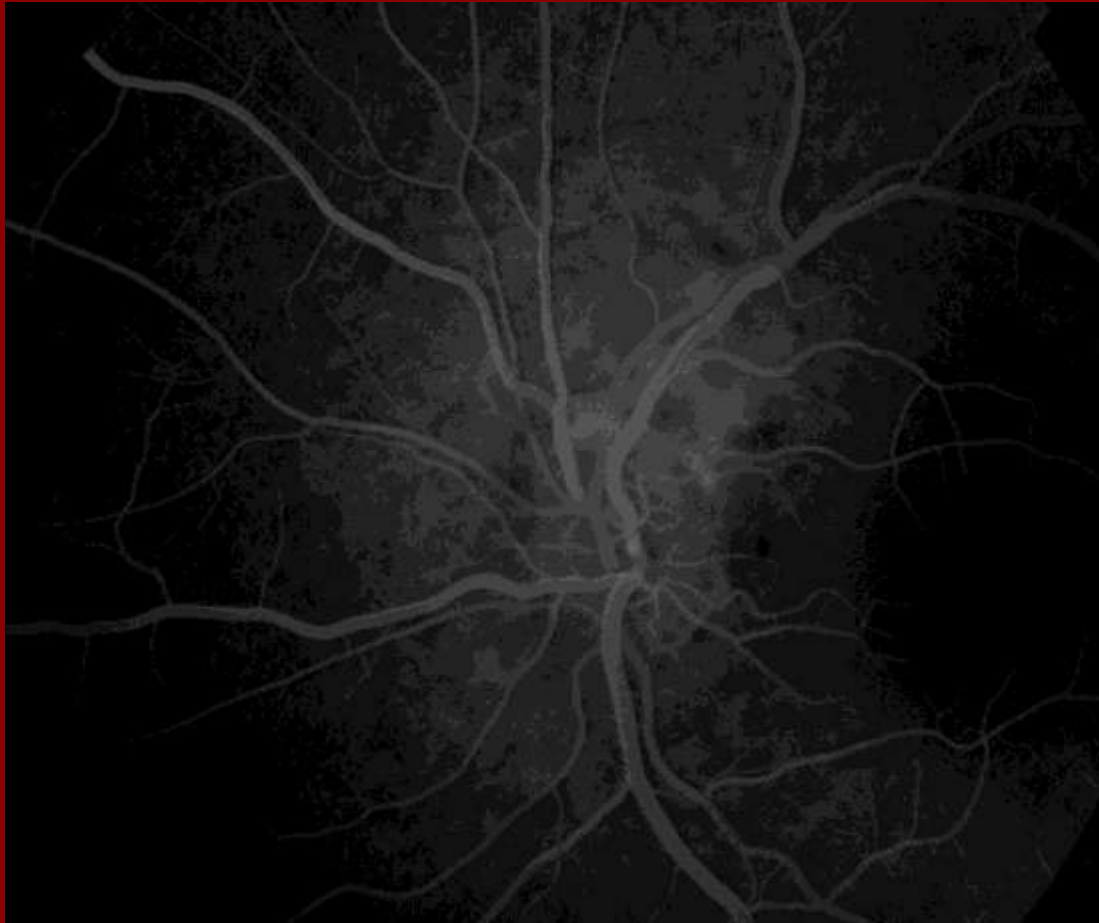
Color fundus and red-free photo of left eye, demonstrating peripapillary elevation approaching the fovea and area of autofluorescence superior to optic nerve

# FA



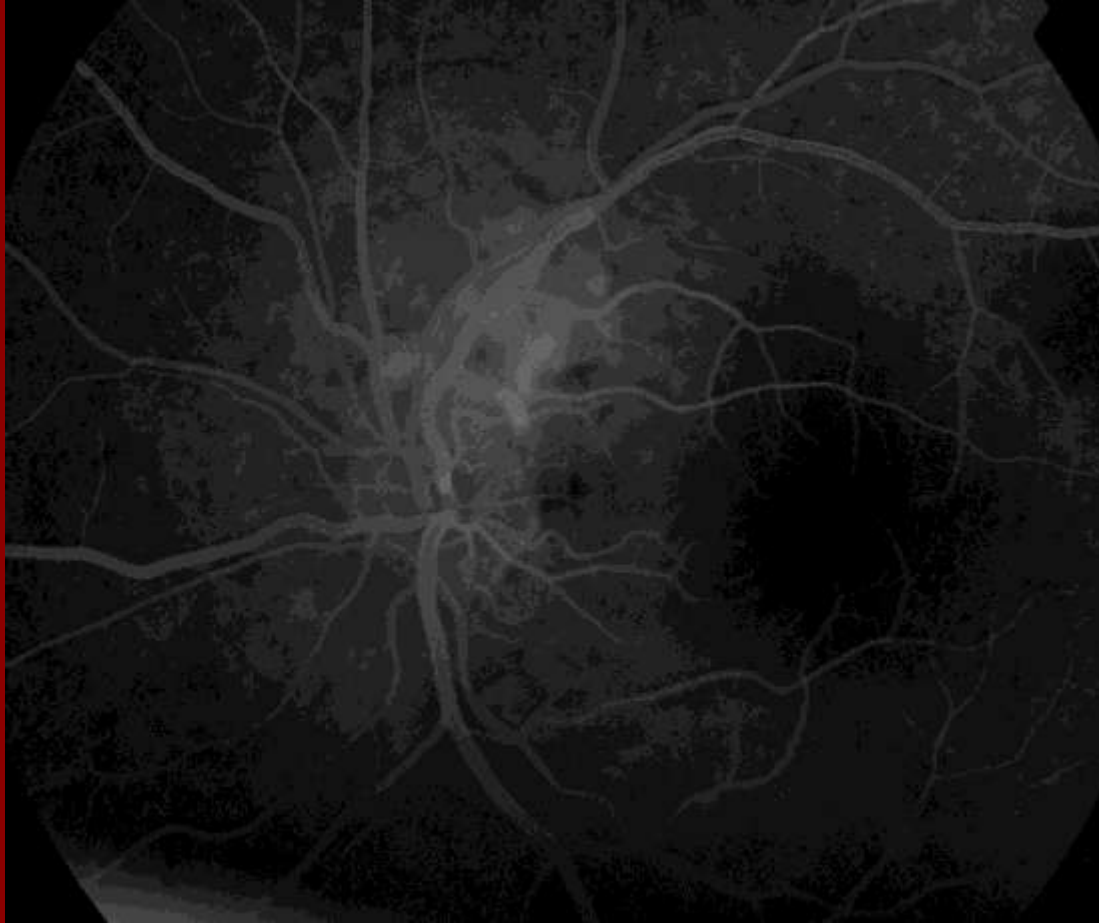
AV phase of left eye with an area of hypofluorescence corresponding to the nevus

# FA



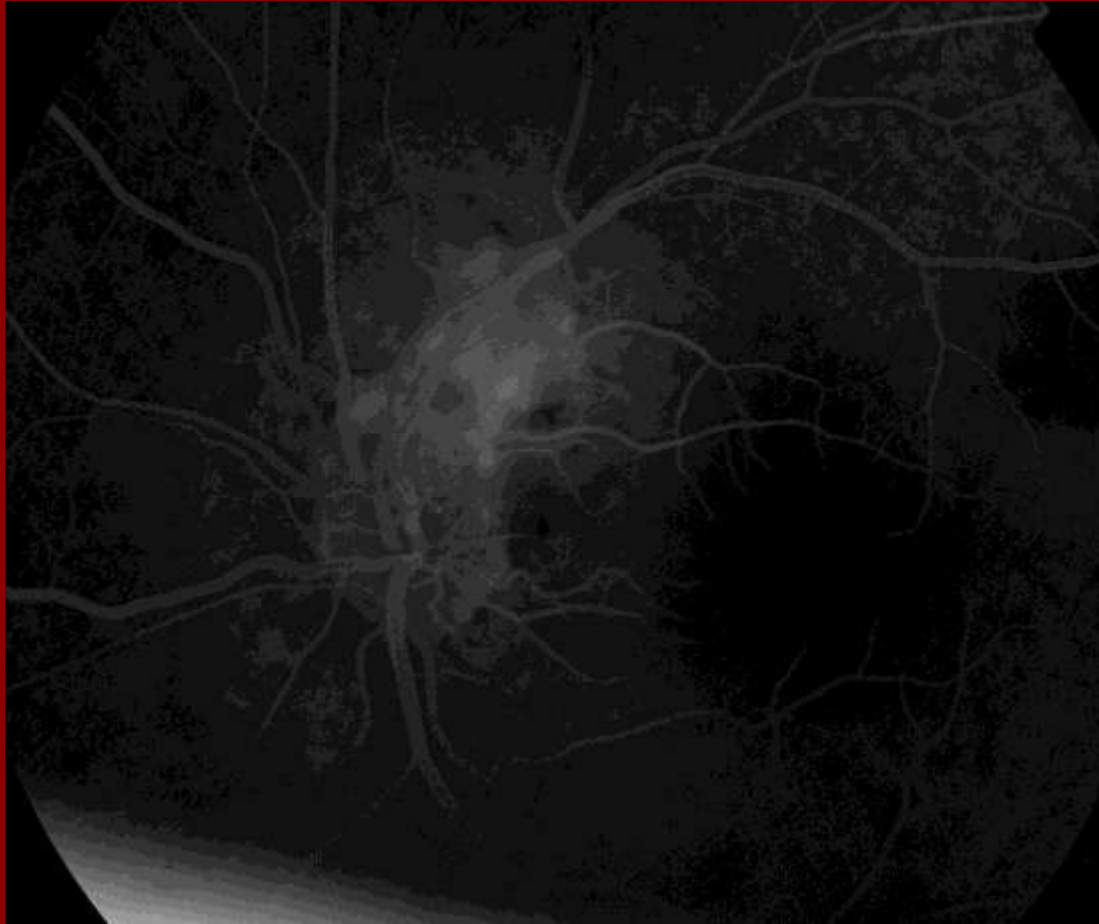
FA of left eye demonstrating peripapillary hyperfluorescent suggestive of choroidal neovascularization

# FA



Venous FA frame of left eye demonstrating increased leakage superior to disc

# FA



Late venous phase of left eye demonstrating increased leakage

# FA



Late phase of FA (left eye) demonstrating increased hyperfluorescence

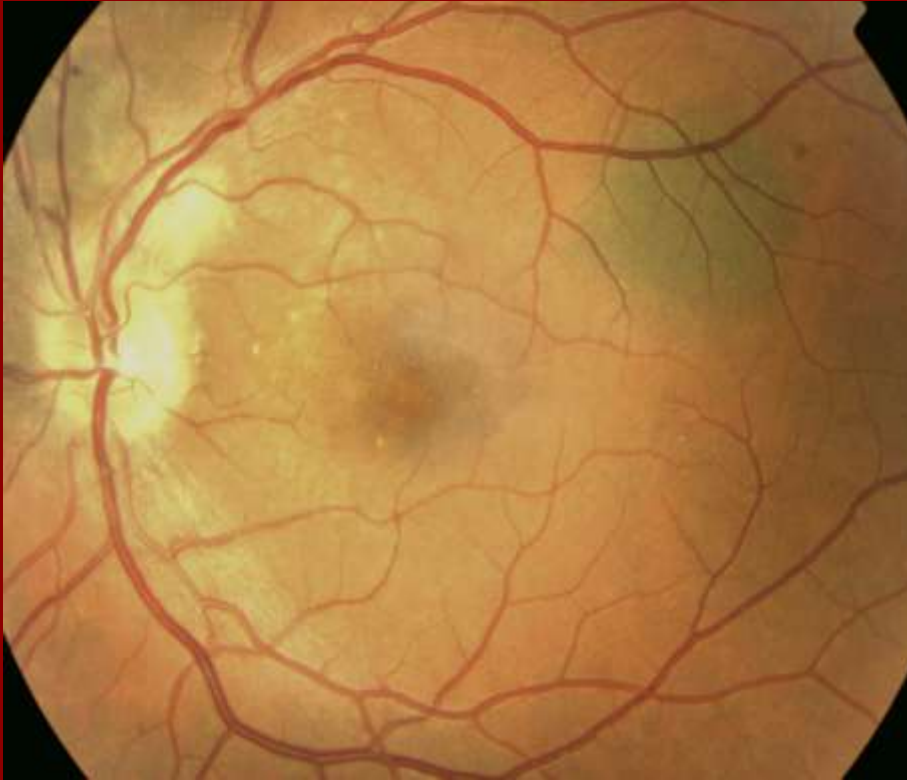
# Impression/DDx

- 29 yo WM with peripapillary CNVM and few small chorioretinal scars in periphery of left eye
- Differential Diagnosis of peripapillary CNVM in a young patient
  - POHS
  - Inflammatory disease
    - Multifocal choroiditis
    - Peripapillary serpiginous choroidopathy
  - Angioid streaks
  - Pathologic myopia

# Plan

- Intravitreal Avastin injection OS

# 1 month Follow up

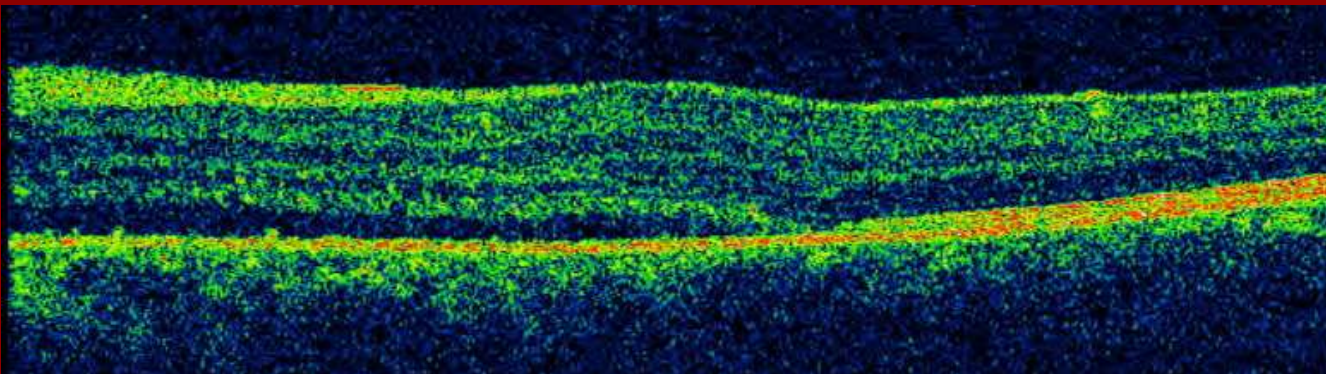


Pt denied any improvement in VA

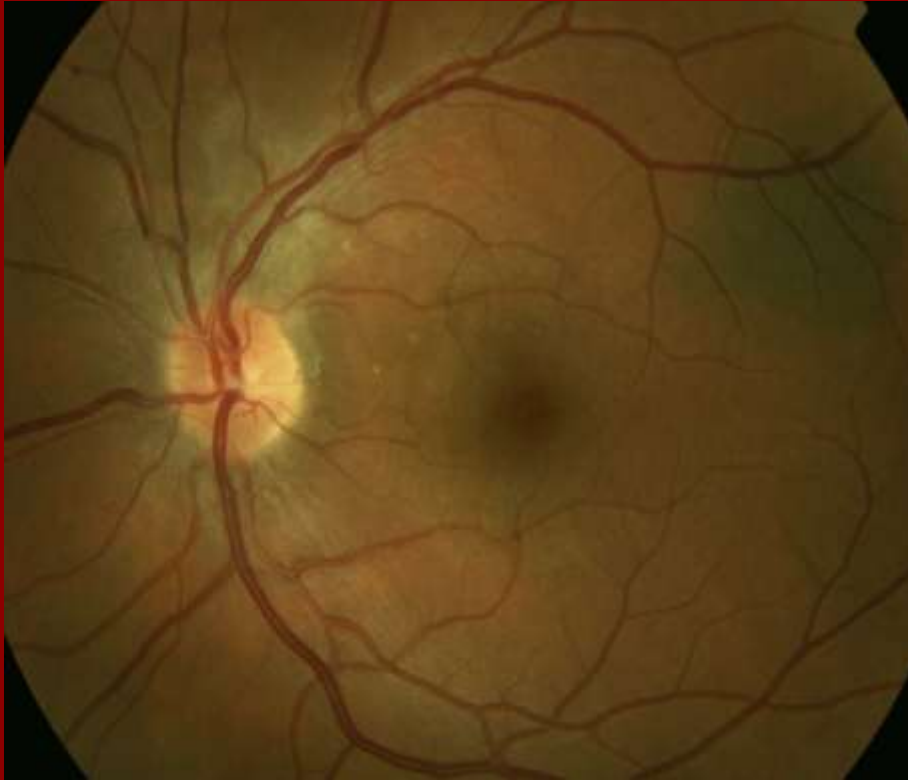
Va OS: 20/60

OCT: decrease in subretinal fluid

Plan: 2<sup>nd</sup> Avastin injection



# 3 month Follow up

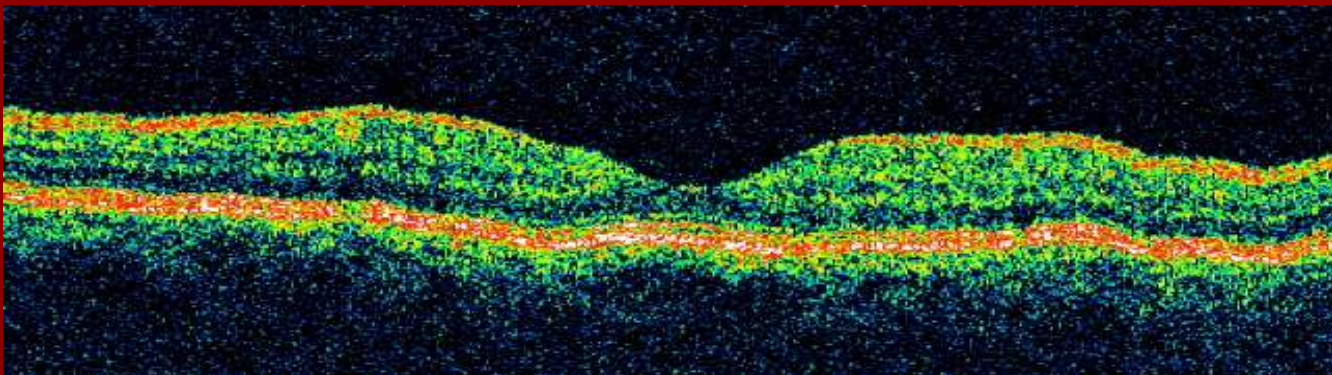


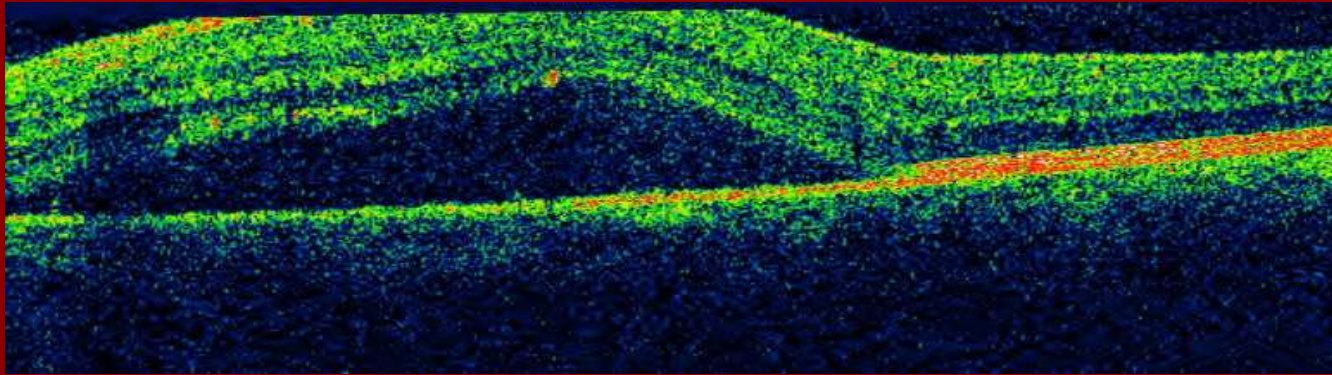
Pt noted improved VA OS

Va OS: 20/20

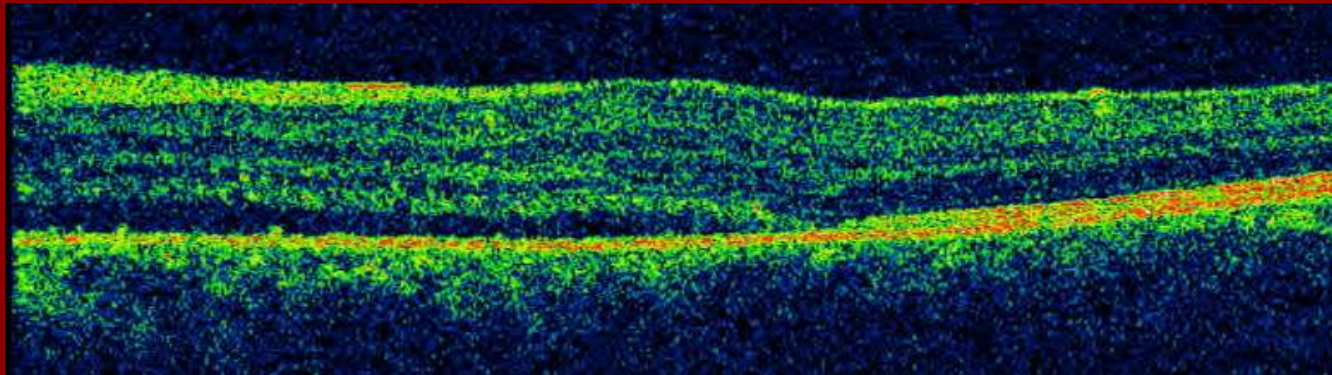
OCT: No subretinal fluid

Plan: Observe

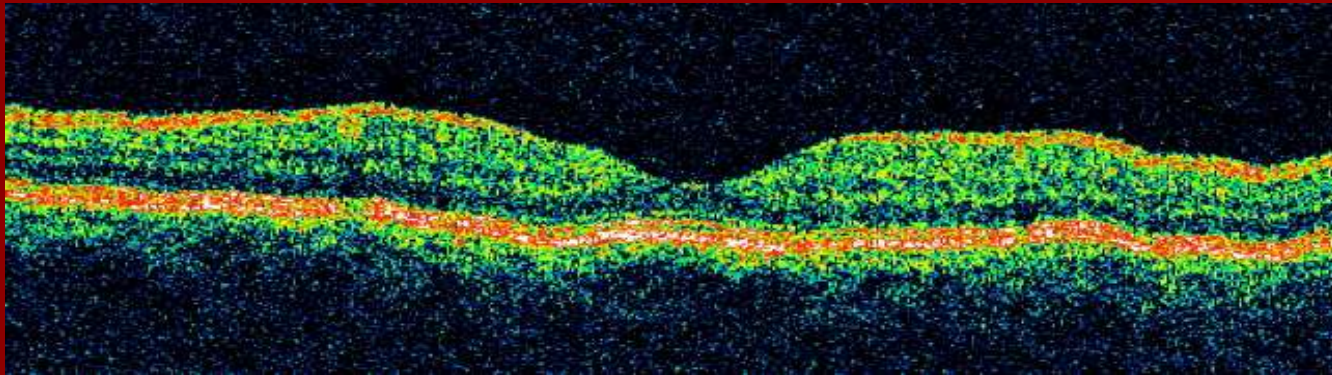




At presentation OS:  
Va 20/200



1 mo f/u  
Va 20/60



3 mo f/u  
Va 20/20

# Presumed Ocular Histoplasmosis Syndrome

- First described in 1942 on basis of ocular findings of a patient dying of acute disseminated histoplasmosis
- Has been associated with systemic infection by *Histoplasma capsulatum*, a dimorphic fungus
- Most common in the Ohio and Mississippi River valleys of US (endemic for H. Capsulatum)
- Male = female; Median age of pts with CNVM 30-40
- Almost all patients with CNVM are Caucasian
  - Although prevalence of histo spots and (+)skin tests are equal in blacks and whites

# Clinical Features

## Signs of POHS:

- Small “Punched out” chorioretinal scars in macula or periphery
- Peripapillary atrophy
- No vitritis or AC inflammation
- Choroidal neovascularization (“active disciform lesions”)
  - Or fibrovascular scar (“inactive disciform lesion”)



# Causal or coincidental relationship?

- Observations that support a causal relationship between *Histoplasma capsulatum* and POHS:
  - Almost all lived some or all of their lives in an endemic area in US
  - (+) histoplasmin skin testing in most patients
  - *H. capsulatum* DNA has been isolated from the enucleated eye of a man with bilateral POHS and (+) skin test

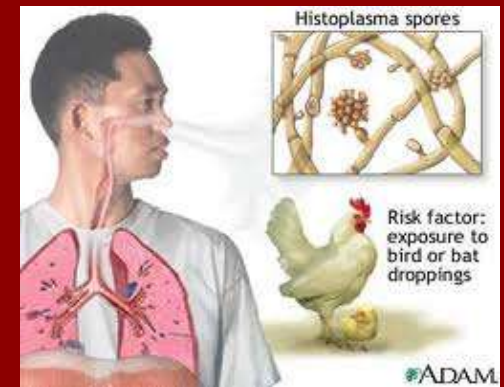
# Causal or coincidental relationship?

- Arguments refuting the relationship:
  - Same clinical findings in UK and other European countries among people who never visited or lived in endemic areas
    - Possible infection with other organisms endemic in these areas

# Why don't all infected patients develop POHS?

- Prevalence of histocompatibility antigen among POHS cases suggest genetic predisposition
  - HLA-B7 and HLA-DRw2 more common in POHS patients than control
  - POHS in black patients shows no HLA-B7 association but strong correlation with DRw2

# Pathogenesis



- Number of theories proposed
- Begins with benign systemic infection with *H. capsulatum*
  - Upper respiratory symptoms
- Ocular findings apparent 10-30 yrs later
- Process begins with focal infection of choroid at the time of initial benign systemic infection
  - If resolves → atrophic scar that disrupts Bruch's → CNV → disciform scar
  - If infection affects RPE and choriocapillaris → serous and hemorrhagic retinal detachment → fibrovascular disciform scar

# Treatment

- Macular Photocoagulation Study (MPS) group has shown that photocoagulation of extrafoveal CNV reduces 5 yr risk of severe vision loss from 44% to 9%
  - Even if CNV is peripapillary, nasal to fovea or in papillomacular bundle
- Submacular surgery possibly beneficial
  - High rate of recurrence
- PDT

# Treatment

- Systemic or injected corticosteroids
- Anti-VEGF agents

# Intravitreal Bevacizumab is Superior to Laser Photocoagulation in the Treatment of Juxtafoveal Choroidal Neovascularization Secondary to POHS

**Objective:** To compare the functional and anatomical outcomes of intravitreal bevacizumab with laser photocoagulation in the treatment of juxtafoveal CNV in POHS

**Method:** Clinical, OCT and FA data of 22 eyes of 22 patients who underwent either intravitreal injection of bevacizumab (n=14) or laser photocoagulation (n=8) for treatment of juxtafoveal CNV secondary to POHS were reviewed. Patients were followed every six weeks up to 24 weeks.

# **Intravitreal Bevacizumab is Superior to Laser Photocoagulation in the Treatment of Juxtafoveal Choroidal Neovascularization Secondary to POHS**

The two outcome measures were:

- (1) BCVA
- (2) standardized retinal volumetric change indices (SRVCI)

# Intravitreal Bevacizumab is Superior to Laser Photocoagulation in the Treatment of Juxtafoveal Choroidal Neovascularization Secondary to POHS

Results: There was no statistically difference between the two groups in terms of gender, age, pre-op visual acuity, duration of the visual symptoms and follow-up period ( $p > 0.05$ ).

At 24-weeks patients treated with intravitreal bevacizumab achieved a significantly higher VA. Similarly, they exhibited significantly higher standardized retinal volumetric decrease at every observation point ( $p < 0.05$ ).

$1.6 \pm 0.7$  intravitreal injections of bevacizumab were required to stabilize the patients

# Prognosis

- If one eye has POHS with CNV or disciform scarring, risk of vision loss in fellow eye is related to presence of macular histo spots:
  - If no histo spots in fellow eye: risk is 1%
  - If peripapillary atrophy: risk is 4%
  - If macular histo spots are presents risk rises to 25%

# References

Browning, David J., and Christina M. Fraser. "Ocular conditions associated with peripapillary subretinal neovascularization, their relative frequencies, and associated outcomes." *Ophthalmology* 112.6 (2005):1054-1061.

Ehrlich, Rita, et al. "Intravitreal bevacizumab for choroidal neovascularization secondary to presumed ocular histoplasmosis syndrome." *Retina* 29.10 (2009):1418-1423.

Kramer, Michal, et al. "Bevacizumab for choroidal neovascularization related to inflammatory diseases." *Retina* 30.6 (2010):938-944.

Schaal, Shlomit, Tongalp H. Tezel and Henry J. Kaplan. "Intravitreal Bevacizumab is Superior to Laser Photocoagulation in the Treatment of Juxtafoveal Choroidal Neovascularization Secondary to POHS". Scientific paper presented at NY 2009 retina congress

Prasad, Anita G., and Russell N. Van Gelder. "Presumed ocular histoplasmosis syndrome." *Current opinion in ophthalmology* 16.6 (2005):364-368.

Mansour, Ahmad M., et al. "Long-term visual outcomes of intravitreal bevacizumab in inflammatory ocular neovascularization." *American journal of ophthalmology* 148.2 (2009):310-316.e2.

Thank You!