

# Red Flag or Red Herring

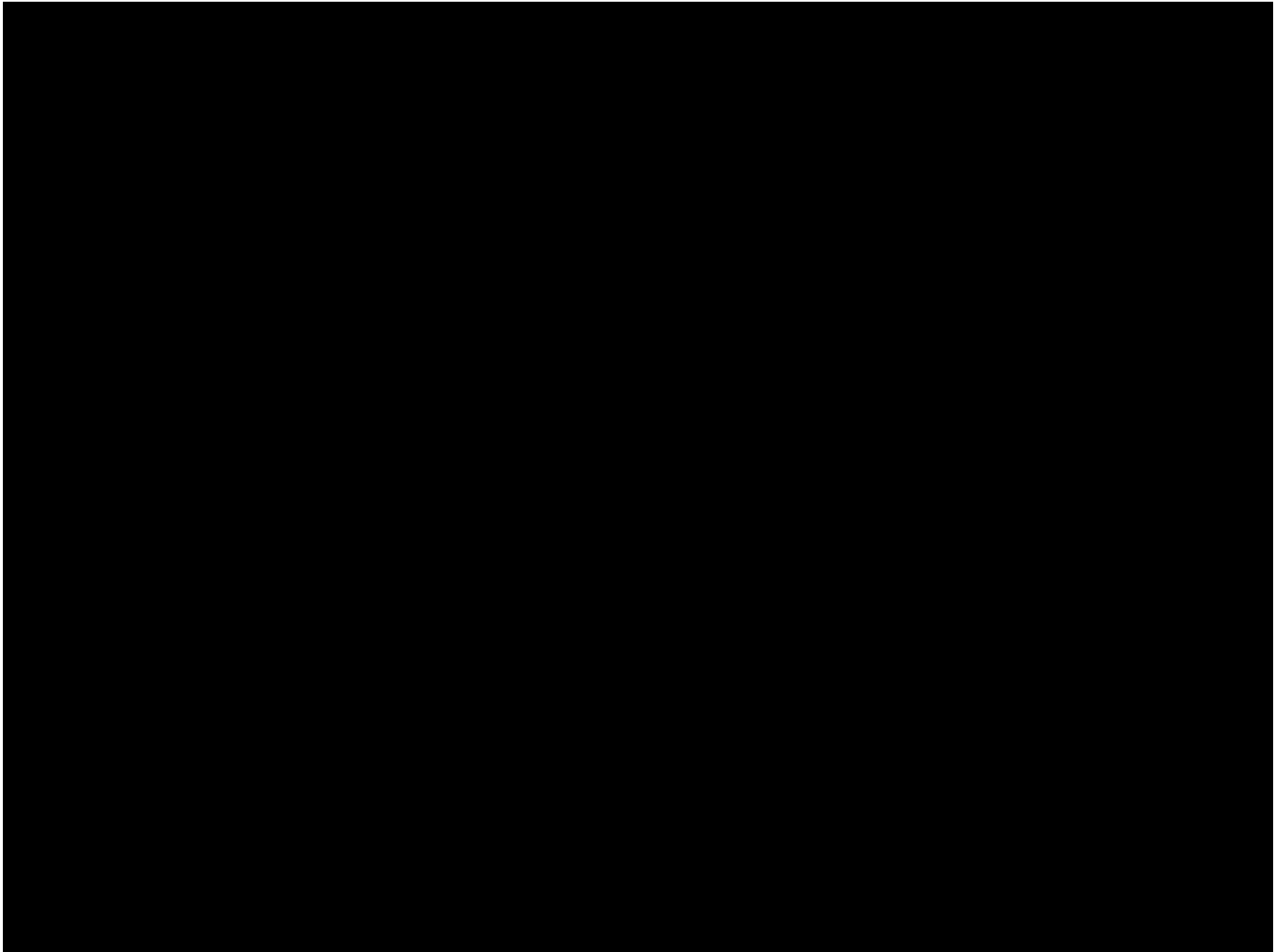
- **Andrew G. Lee, MD**
- Herb and Jean Lyman Professor of Ophthalmology, Neurology and Neurosurgery, Weill Cornell Medical College and Chair, Blanton Eye Institute
- Chair, Department of Ophthalmology, Houston Methodist Hospital, Houston, TX
- Adjunct Professor, University of Iowa Hospitals & Clinics, Iowa City, Iowa, Baylor COM, UTMB, UTMDACC

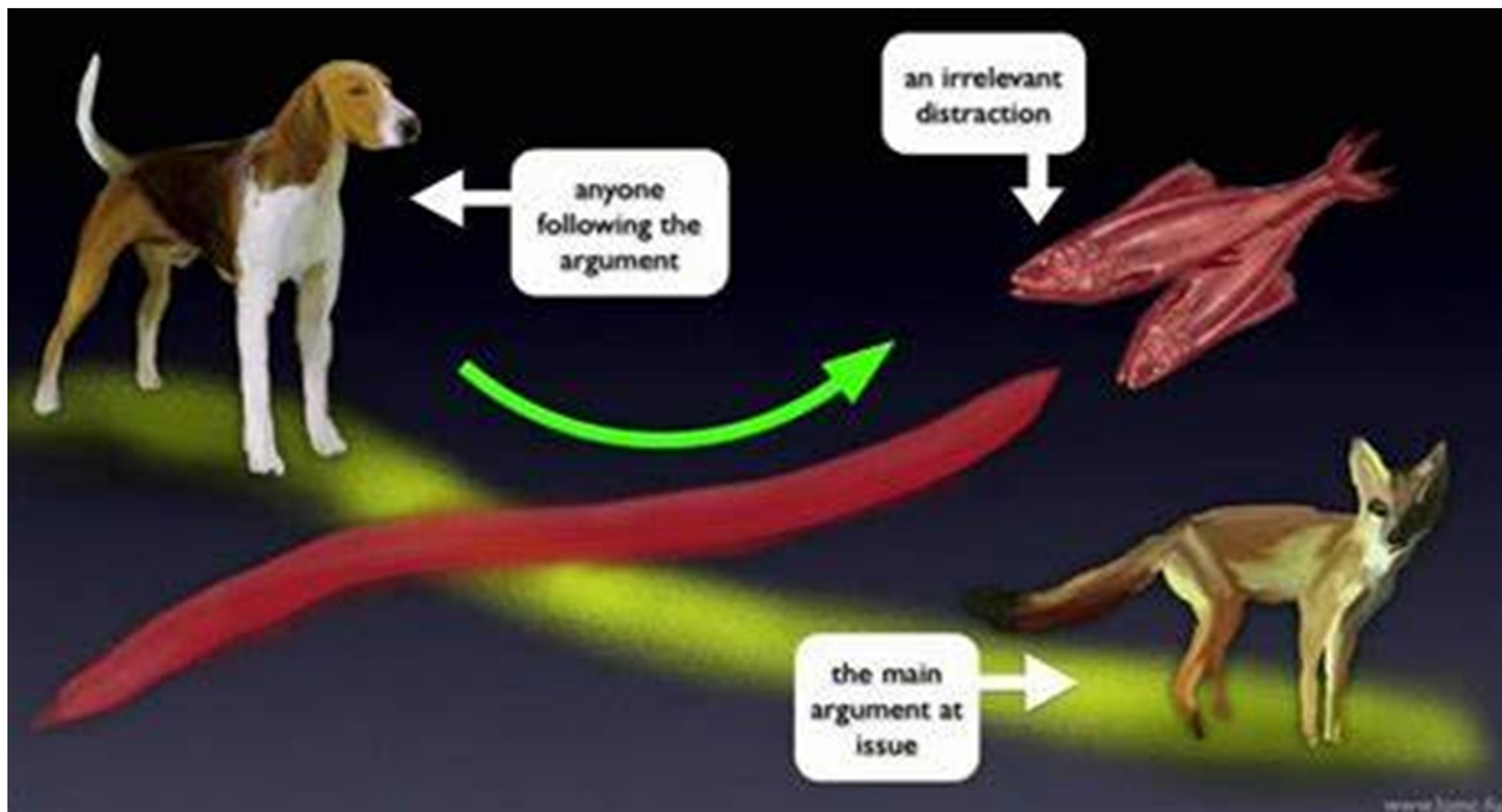


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Practice audience participation (you will know your part when you hear it)





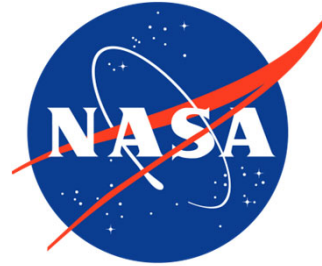


# Red Flag Idiom

—  
Signs of Danger!

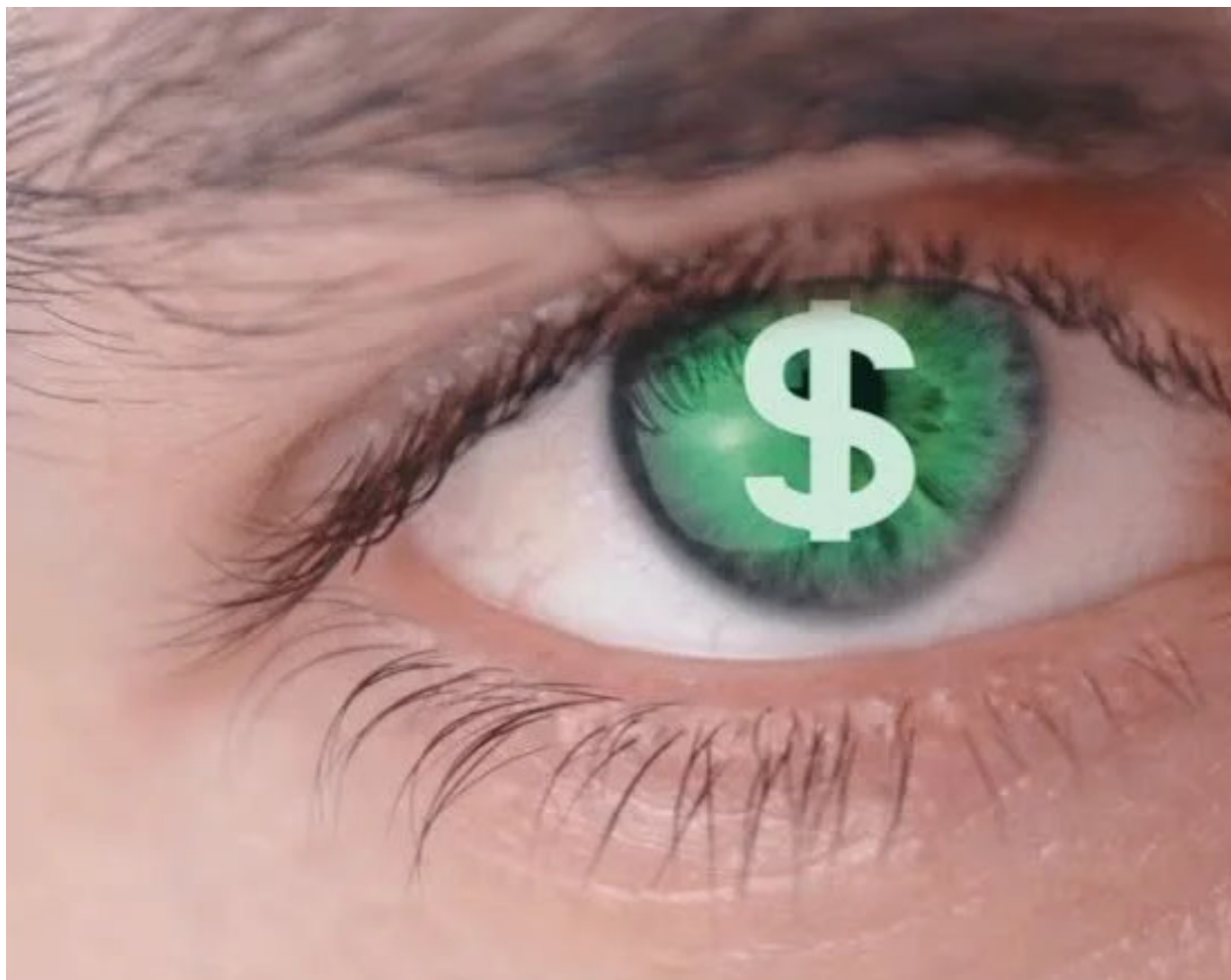
# Hawaiian Eye 2020





\*Dr. Lee (Houston Methodist Hospital) works as a consultant for Horizon, the **United States Department of Justice (DOJ)**, the **National Aeronautics and Space Administration (NASA)**, and the **National Football League (NFL)** but the views expressed here are his own and do not represent those of these organizations or the United States government.

We have no  
other financial  
disclosures  
relevant to this  
presentation



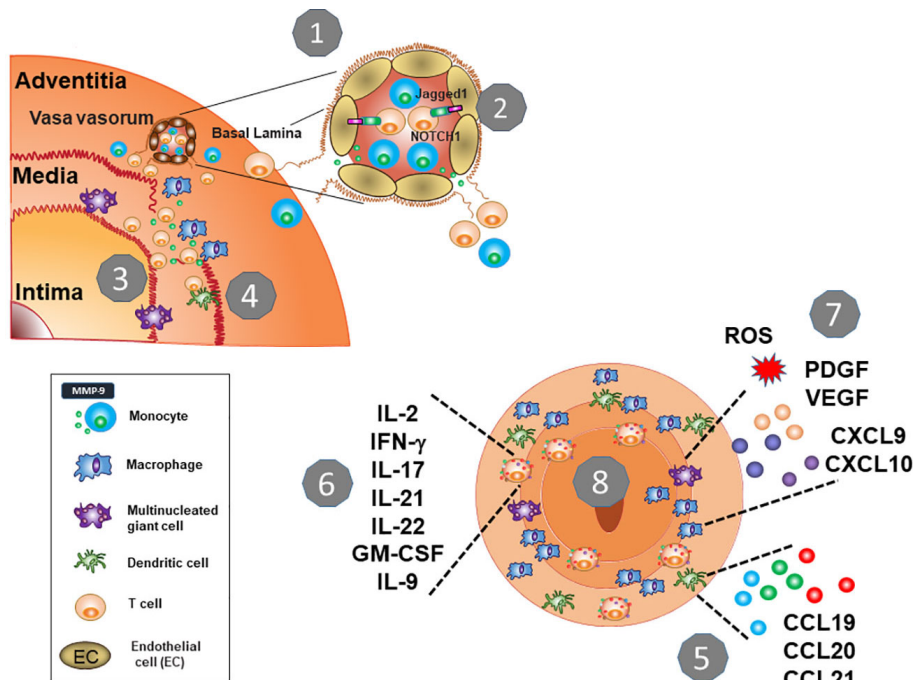
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Other disclosures: Horizon therapeutics

# Audience participation: Show of hands. Vote for your topic for today

## #1

Immunologic mechanisms of temporal arteritis



## #2

Rapid fire disc cases: To scan or not to scan that is the question

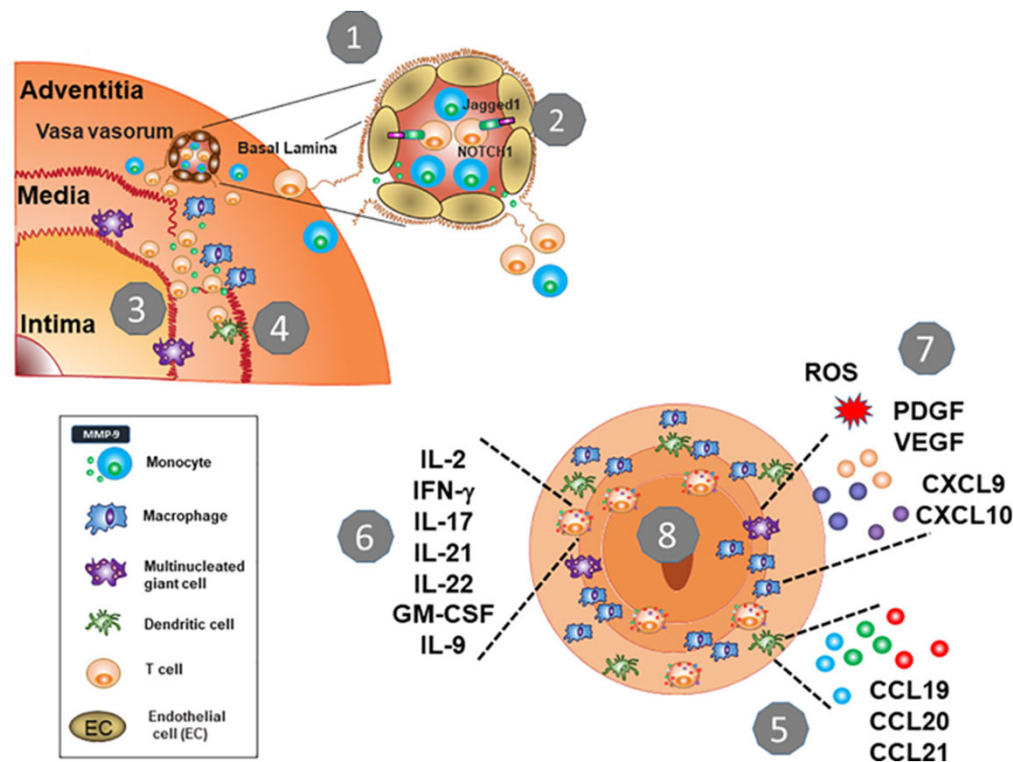
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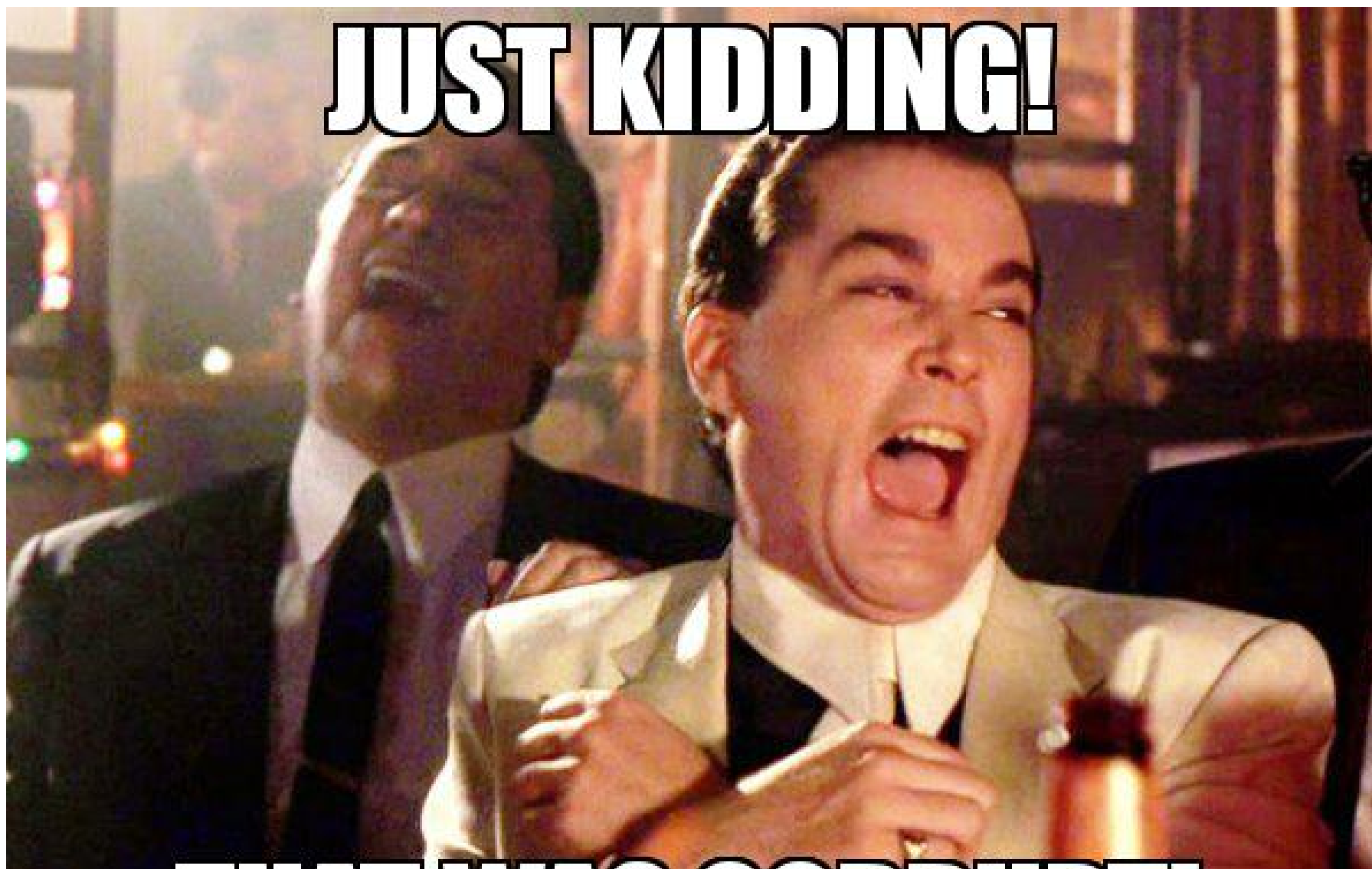
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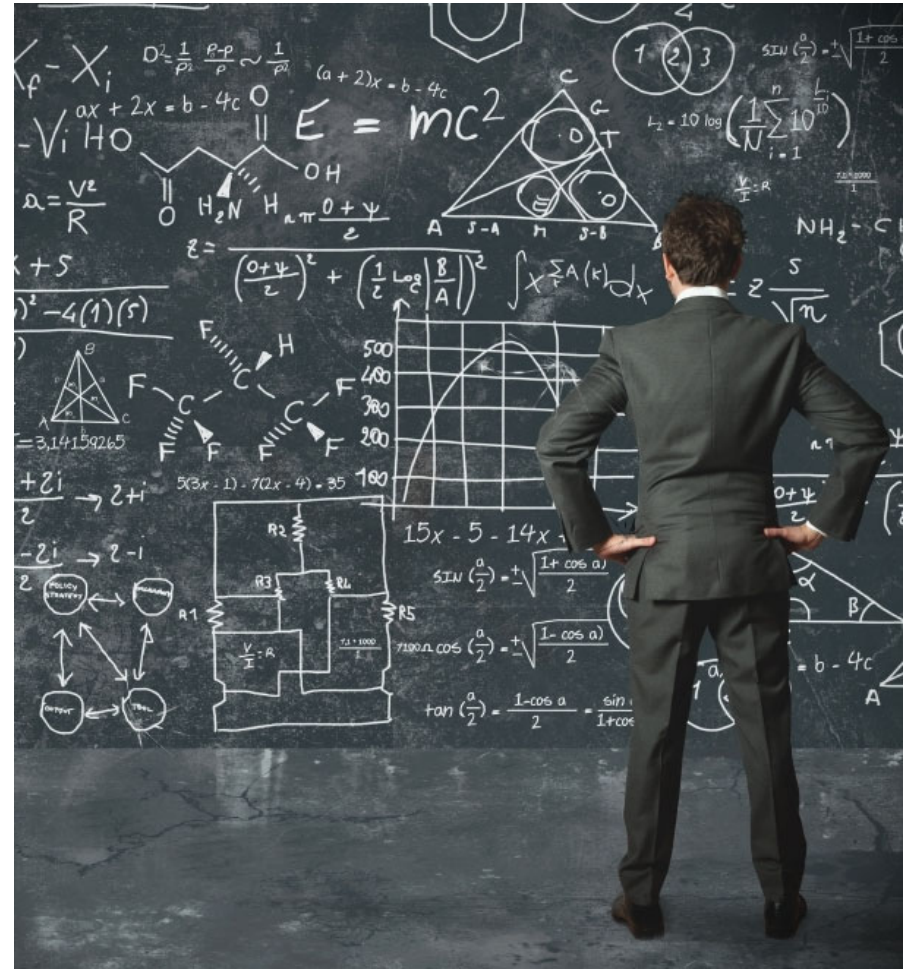
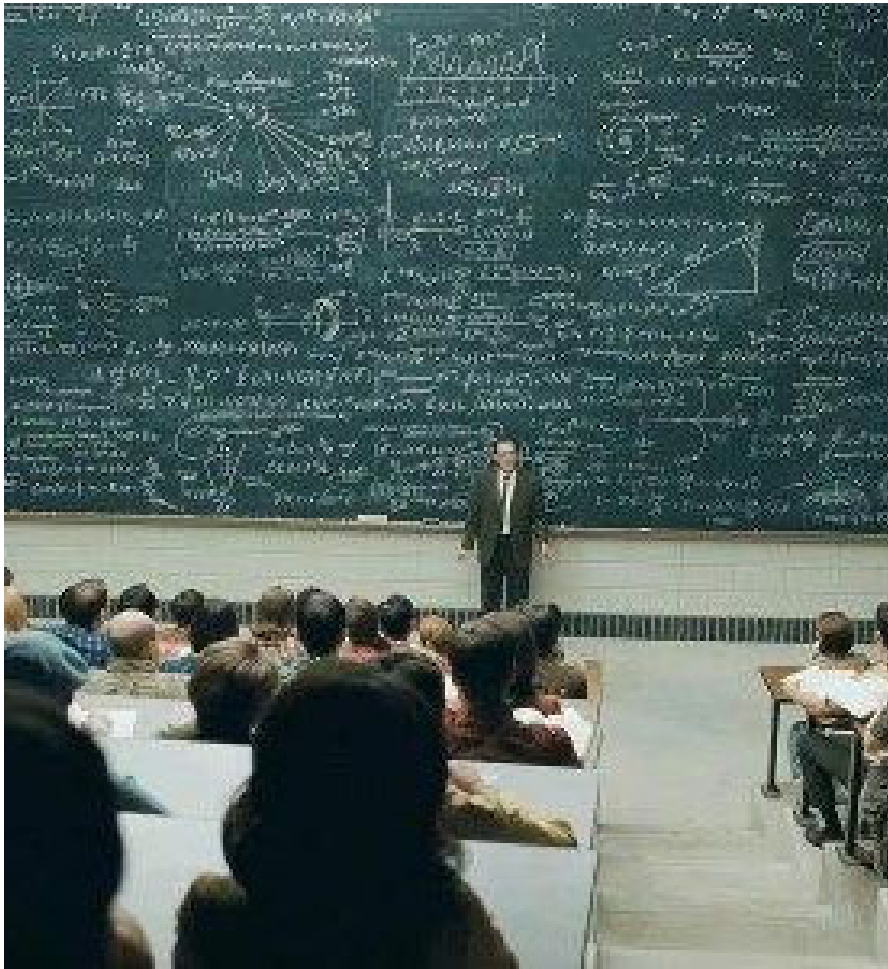


# OK, great so “Immunologic mechanisms underlying targeted molecular therapy in temporal arteritis”



**JUST KIDDING!**





# Rapid fire disc cases: To scan or not to scan that is the question

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# Red flag vs. Red herring

## To scan or not to scan that is the question

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Don't forget to....



- Fill out your evaluation forms
- Vote for Speaker of the Day
- Join me for the Banyan Tree session

# Death by Powerpoint



Every day we battle the  
reaper....your superpower is  
keeping him at bay

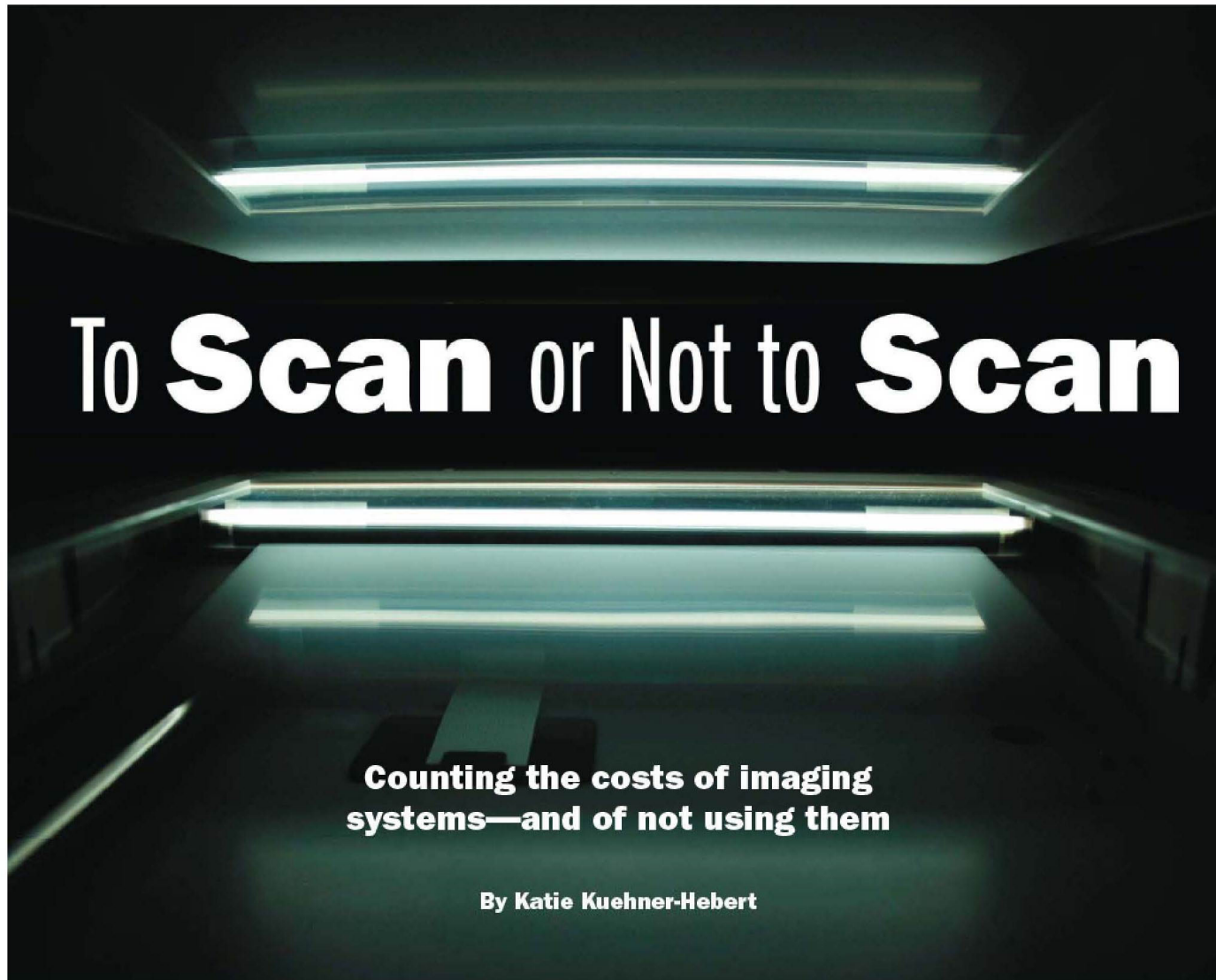


# Overview

## Funny blood vessels on disc

- Identify key clinical findings (sign)
- Define important history (symptoms)
- List differential diagnosis
- Describe imaging indications
- Define distinctive radiographic finding

To scan or not to scan....that is the question...



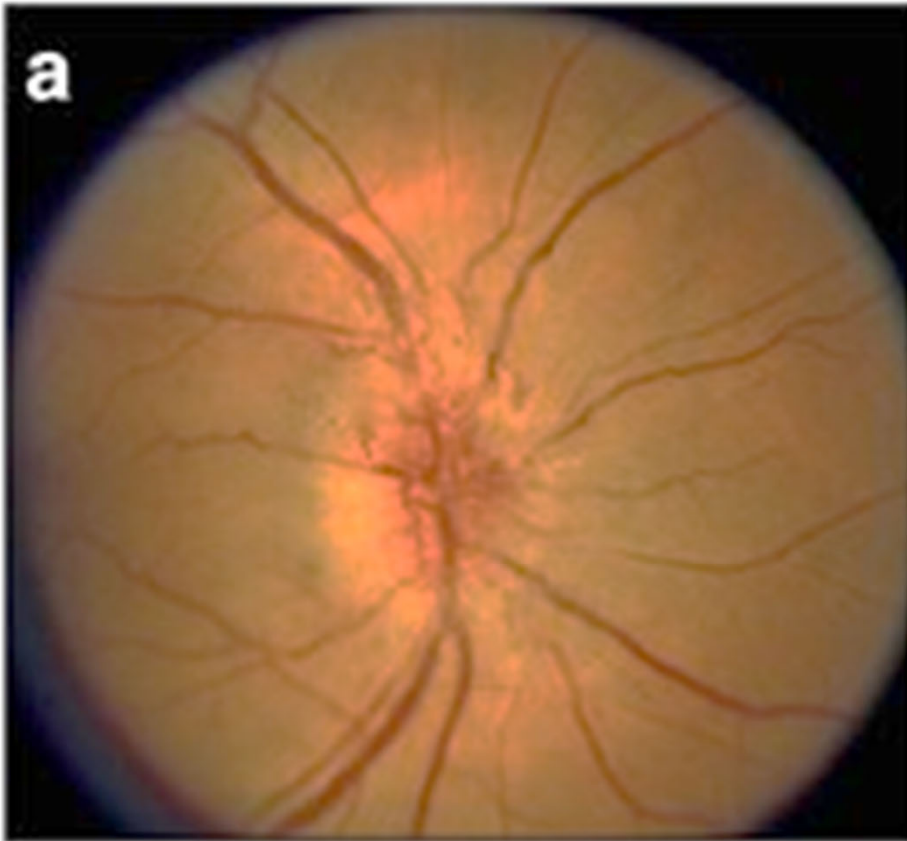
# Scan this, not that

- Scan this: Bilateral “neuroretinitis” can be mimicked by papilledema or malignant hypertensive optic neuropathy
- Not that: Unilateral neuroretinitis is more likely to be infectious cat scratch disease

# To scan or not to scan

- Is it unilateral and NAION?
- If not then scan
- What scan?
- MRI head and orbit, gadolinium and fat sat

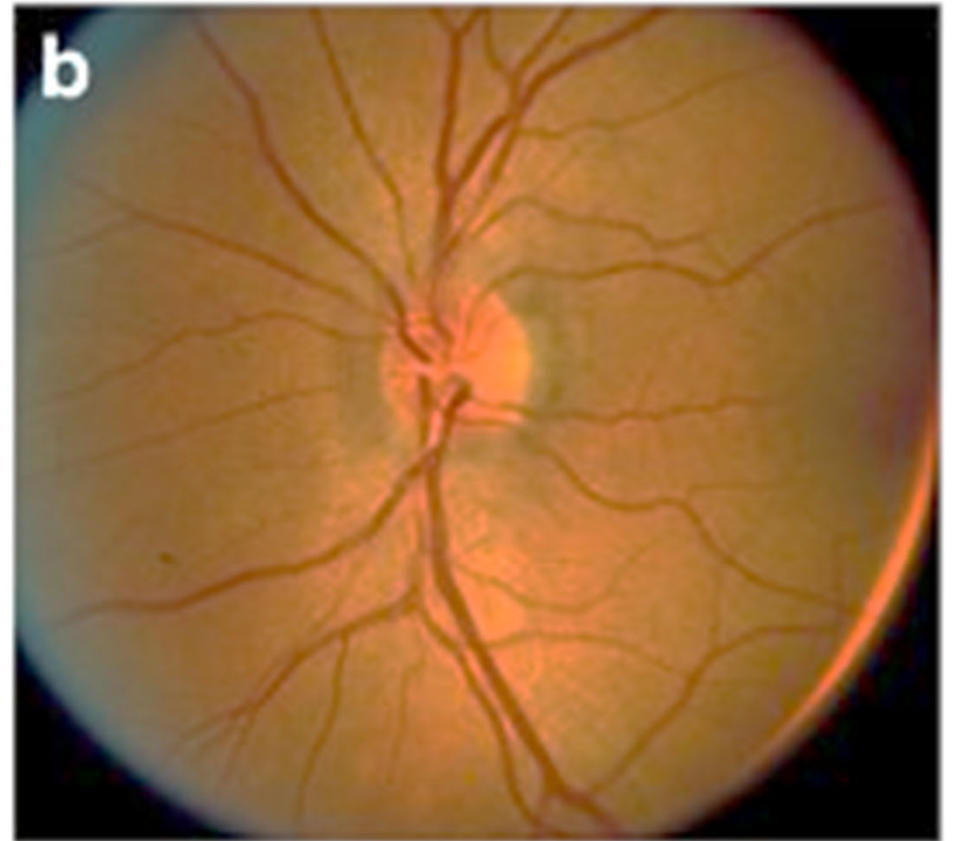
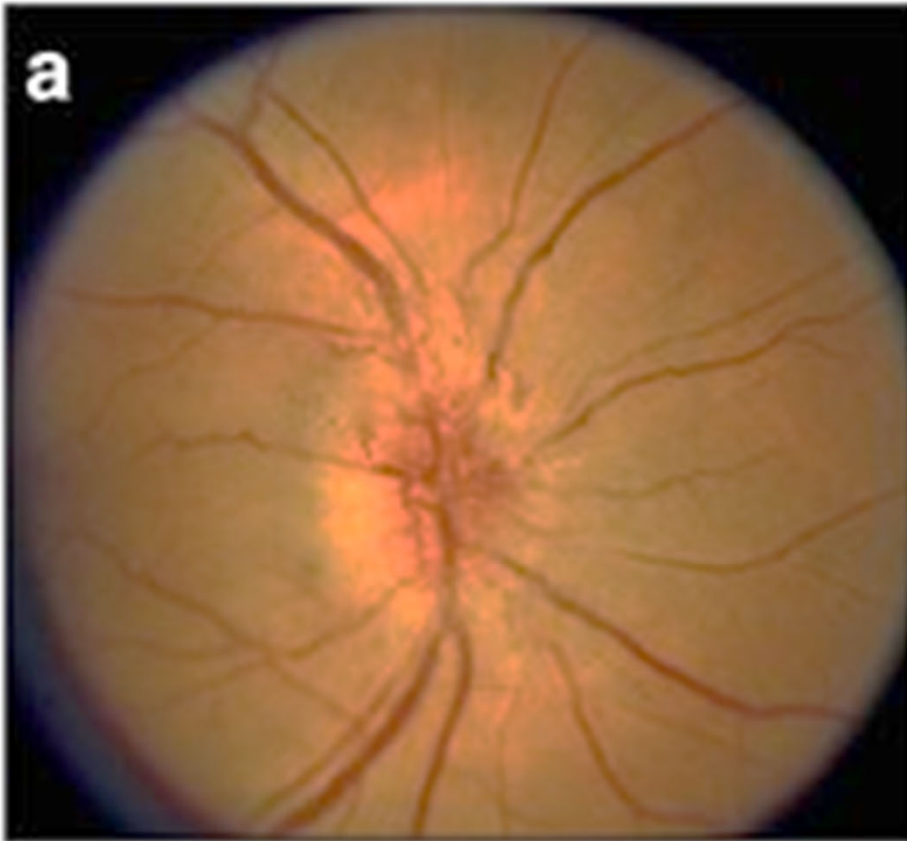
60 yo HTN, DM, HLD with acute  
loss of vision OD, RAPD



# To scan or not to scan



20 yo WF with no HTN, DM,  
HLD with acute loss of vision  
OD, RAPD



# To scan or not to scan



Found on routine eye exam  
20/20 OU



# To scan or not to scan



Found on routine eye exam  
20/200 OD, RAPD



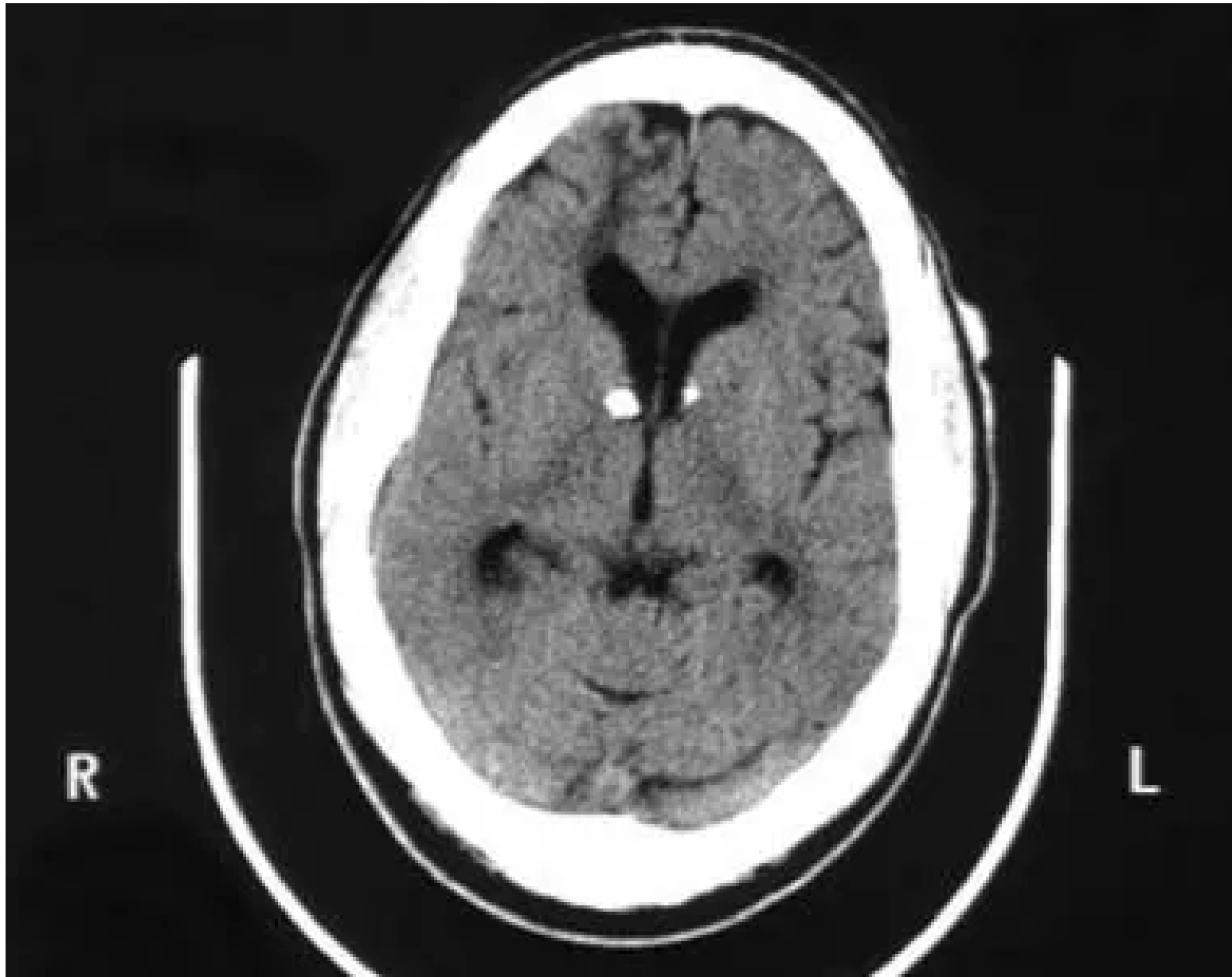
# Routine eye exam



# To scan or not to scan



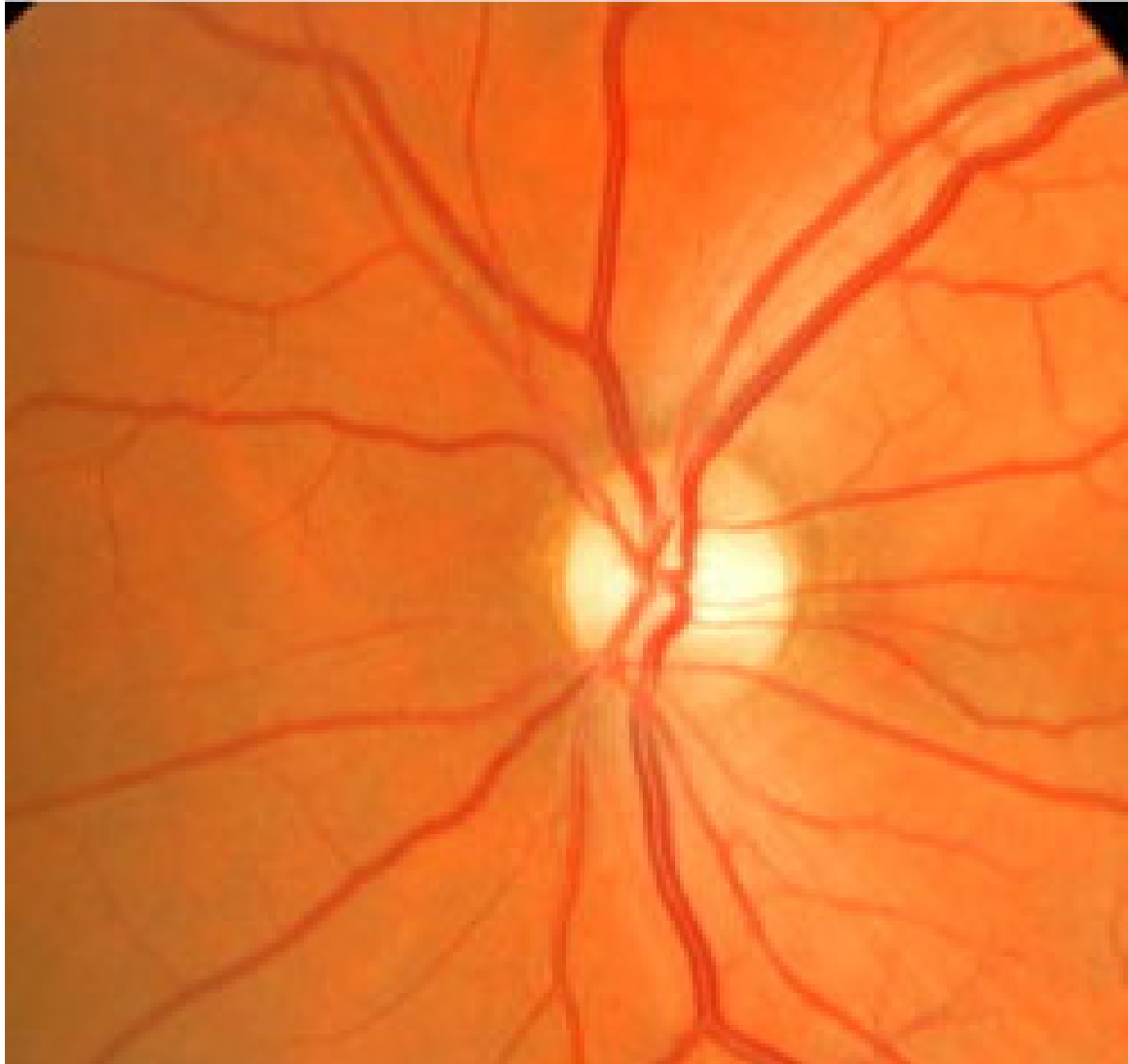
# Tuberous sclerosis



# Found on routine exam



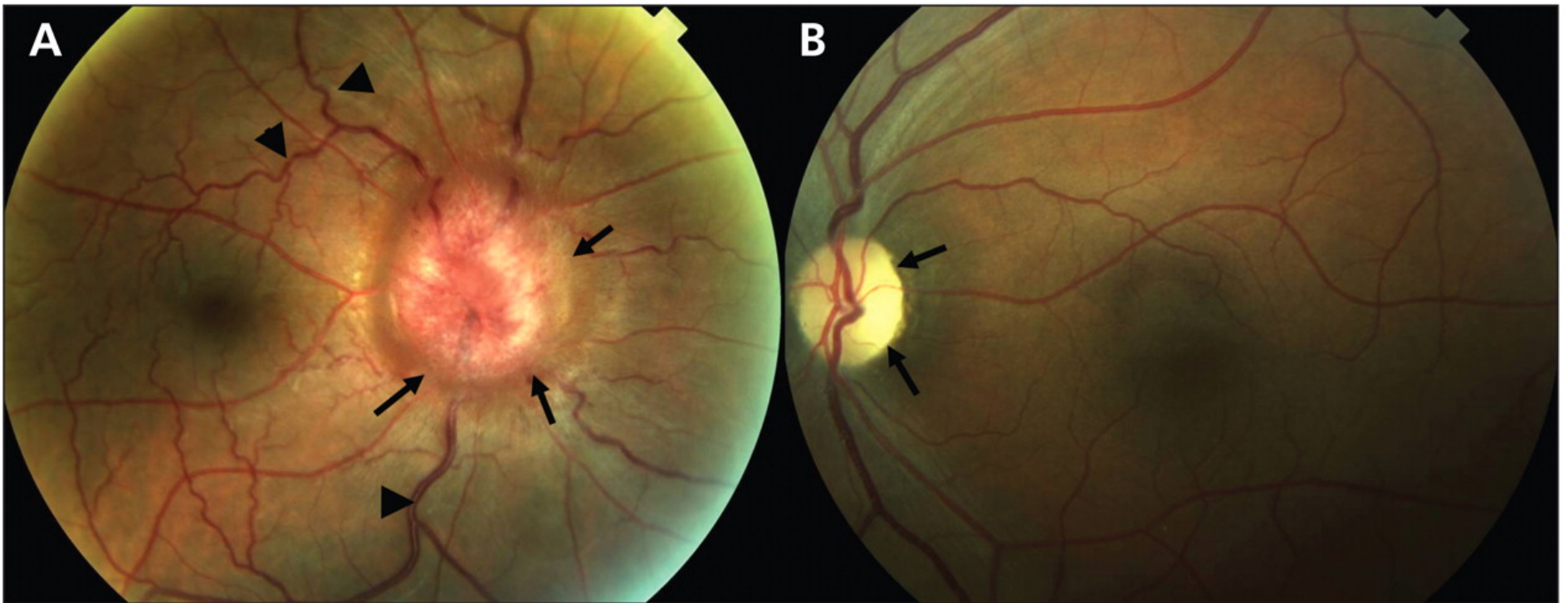
# Special type of optic atrophy



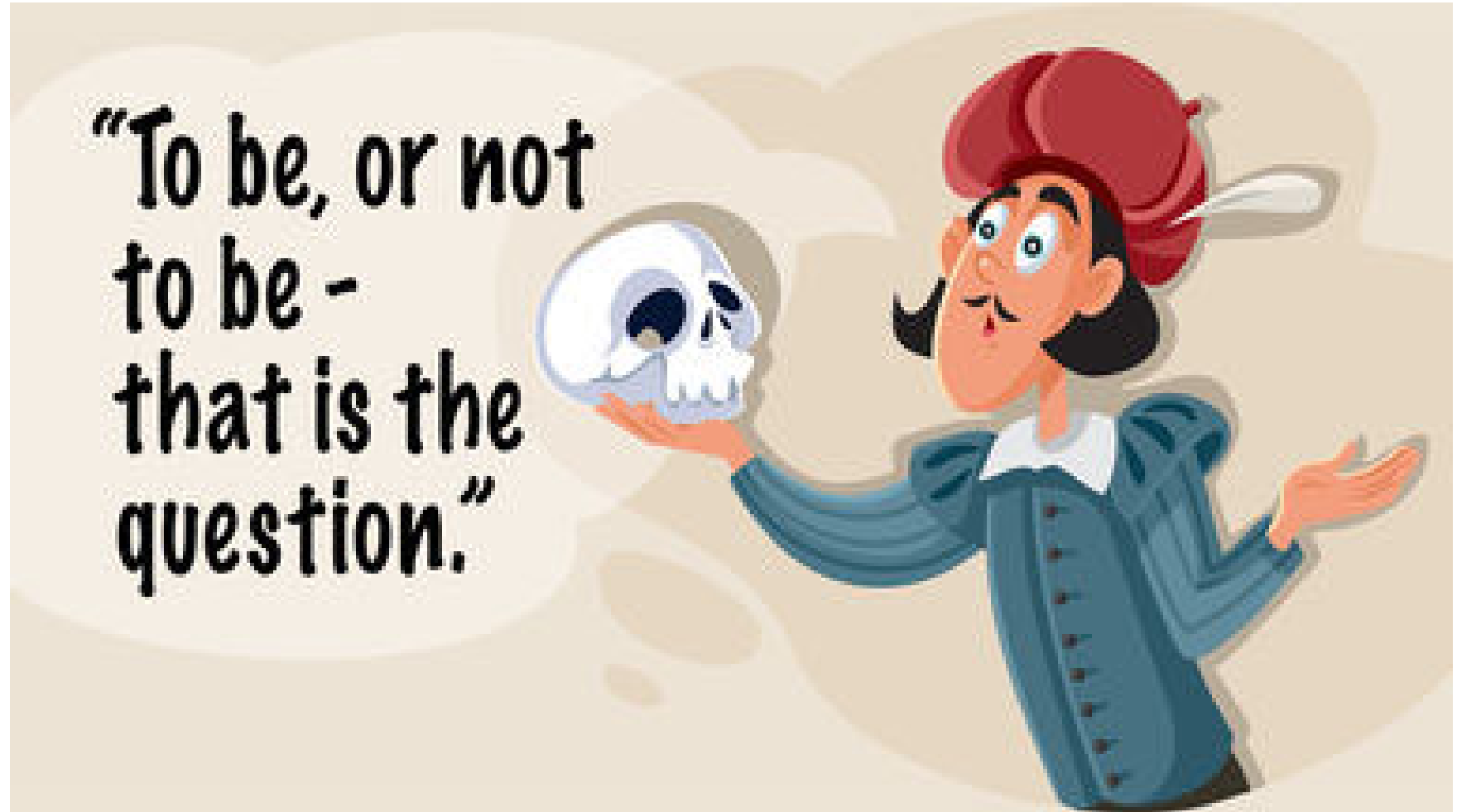
# To scan or not to scan



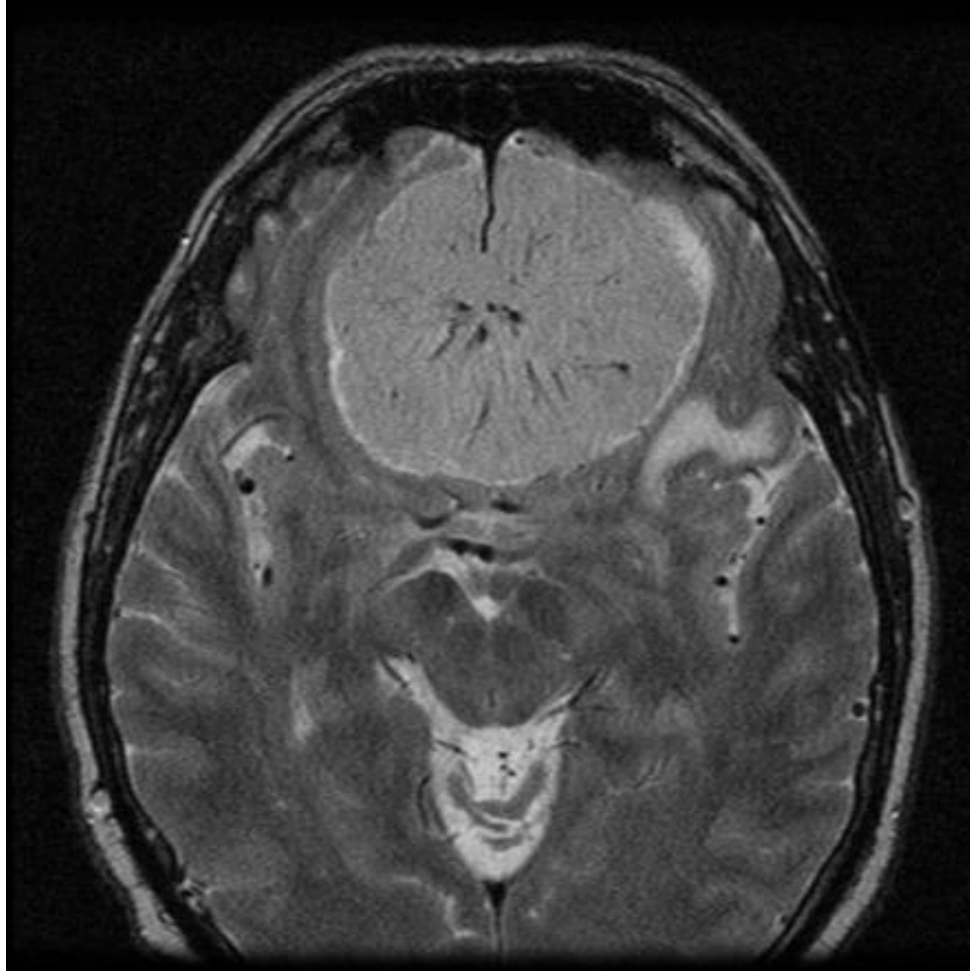
50 yo WM with 20/20 OD and  
CF OS, RAPD OS



# To scan or not to scan



# Giant olfactory meningioma



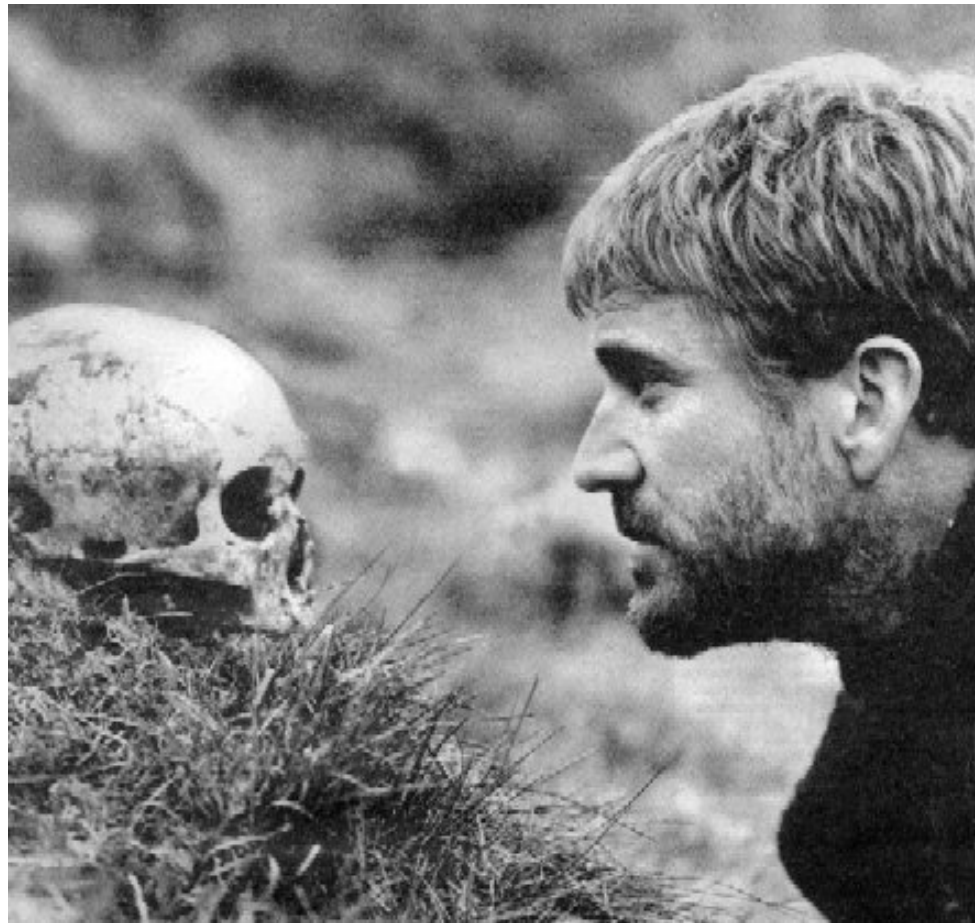
# Nettleship collaterals after CRAO



# Nettleship collaterals

- Peripheral disc
- Arterial origin
- Narrowed retinal arterioles
- Optic atrophy
- Importance: Work up for CRAO is embolic/thrombotic & differs from optic atrophy work up
- OCT or ERG might make diagnosis

# To scan or not to scan

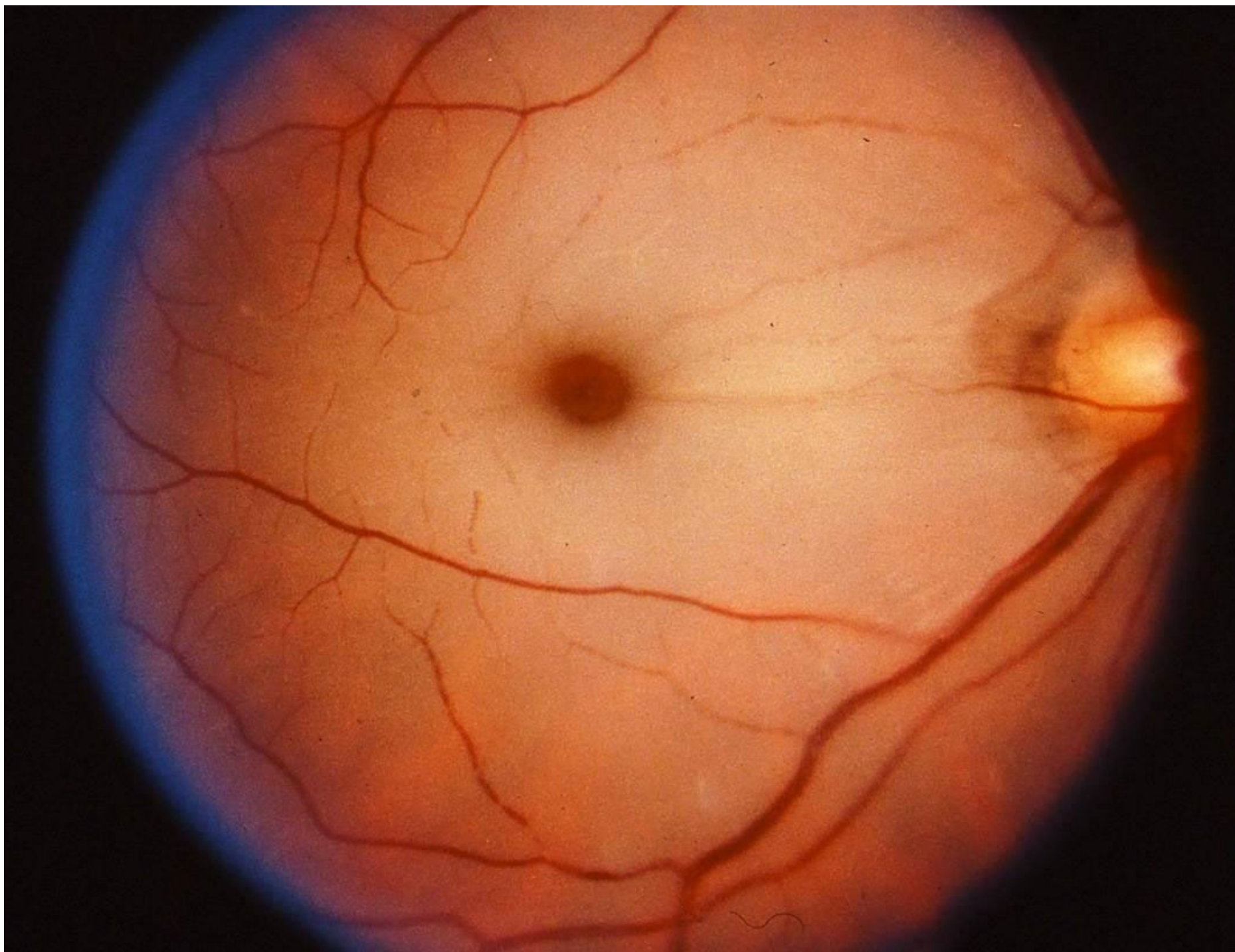


# Do this, not that

- Not this: Imp: Not the retina (is not the right question)
- Do this: Answer a different question: “Not neuro-op” or “This is neuro-op”
- Then do this.....
- This is neuro-op & needs to be seen... (when?)... “today, tomorrow, next available”
- Your job: Recognize, triage, refer

# Optic atrophy is not a diagnosis

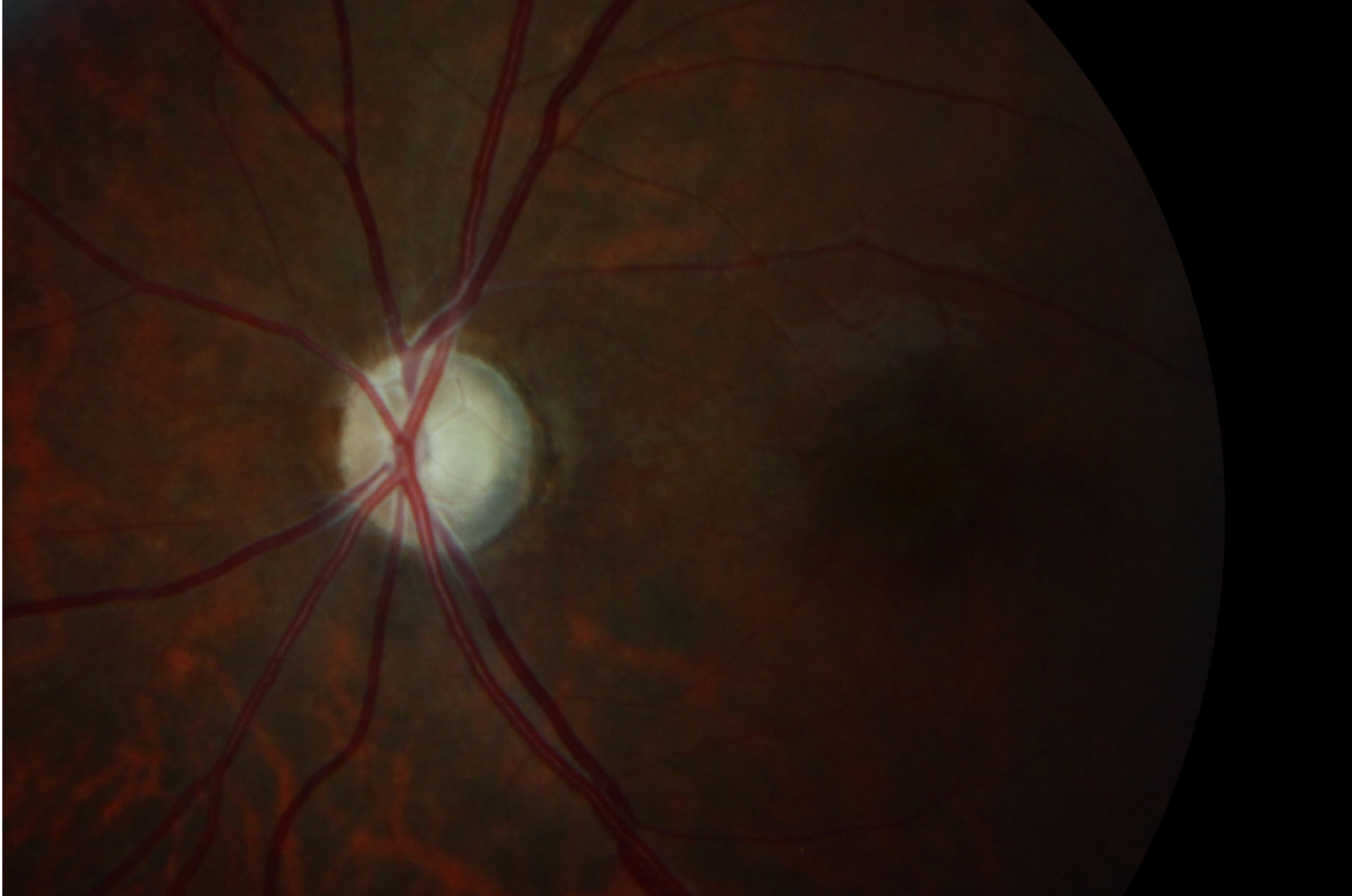
- Optic atrophy can be the result of intraocular (including retinal) disease or intraorbital or intracranial disease
- Optic atrophy does NOT automatically mean optic nerve is the problem
- Optic atrophy can STILL BE THE RETINA



# To scan or not to scan



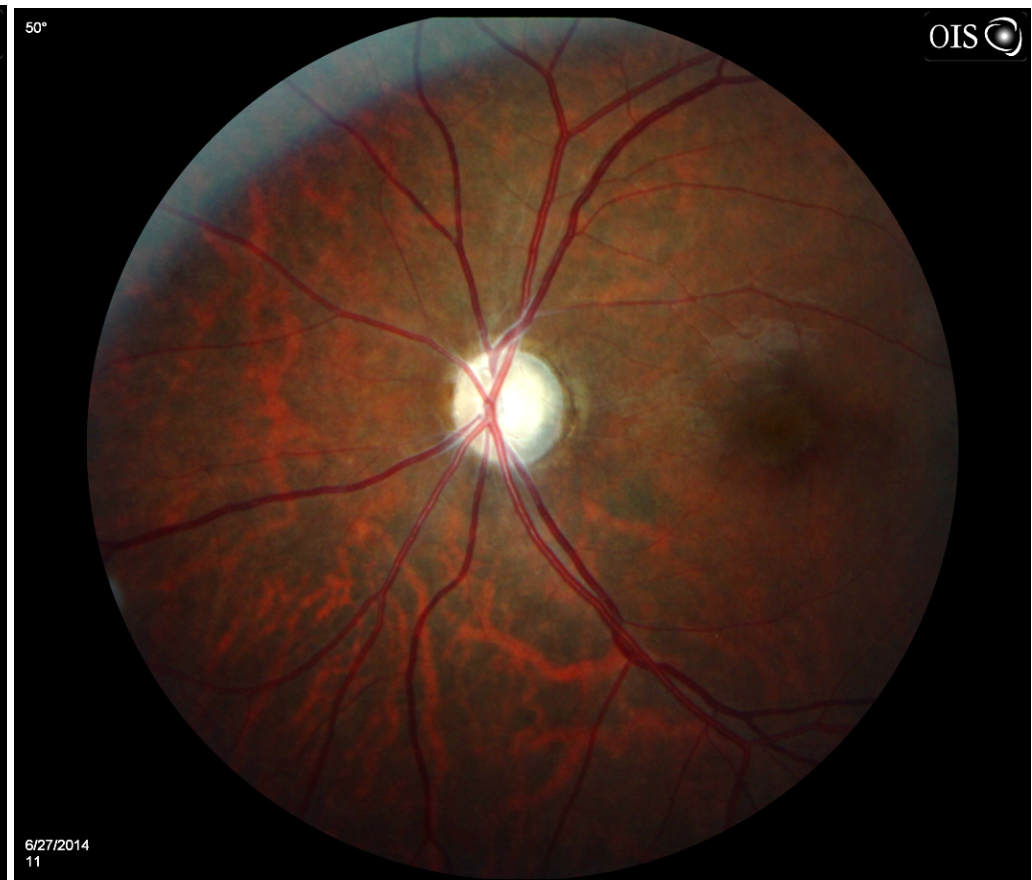
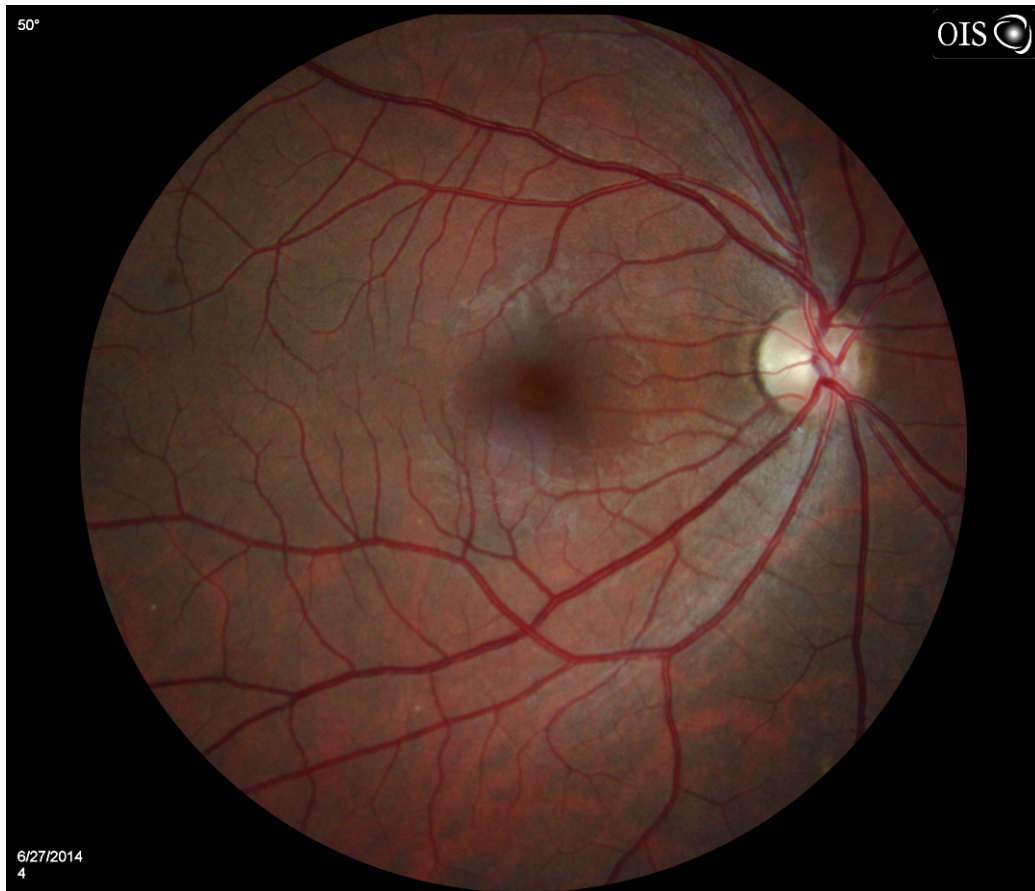
Acute painless loss of vision OS in  
60 year old woman six months  
ago....



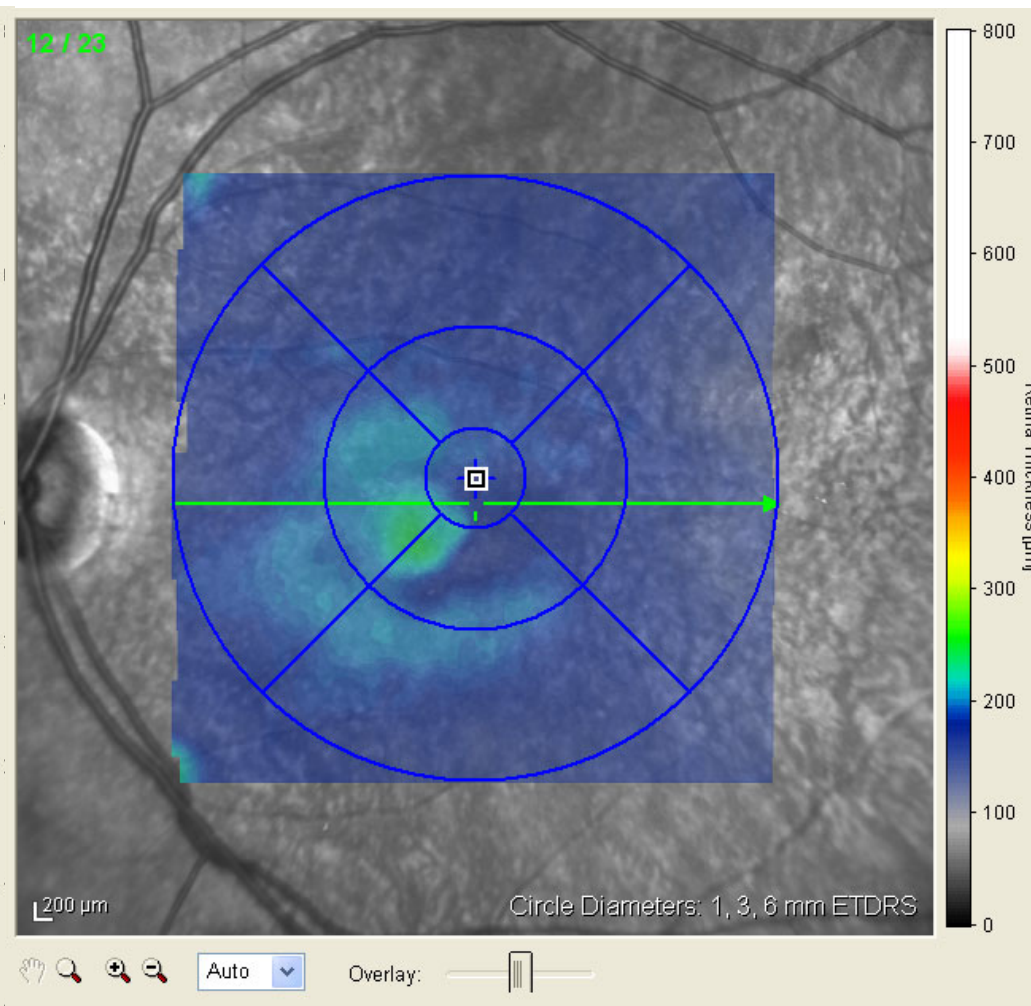
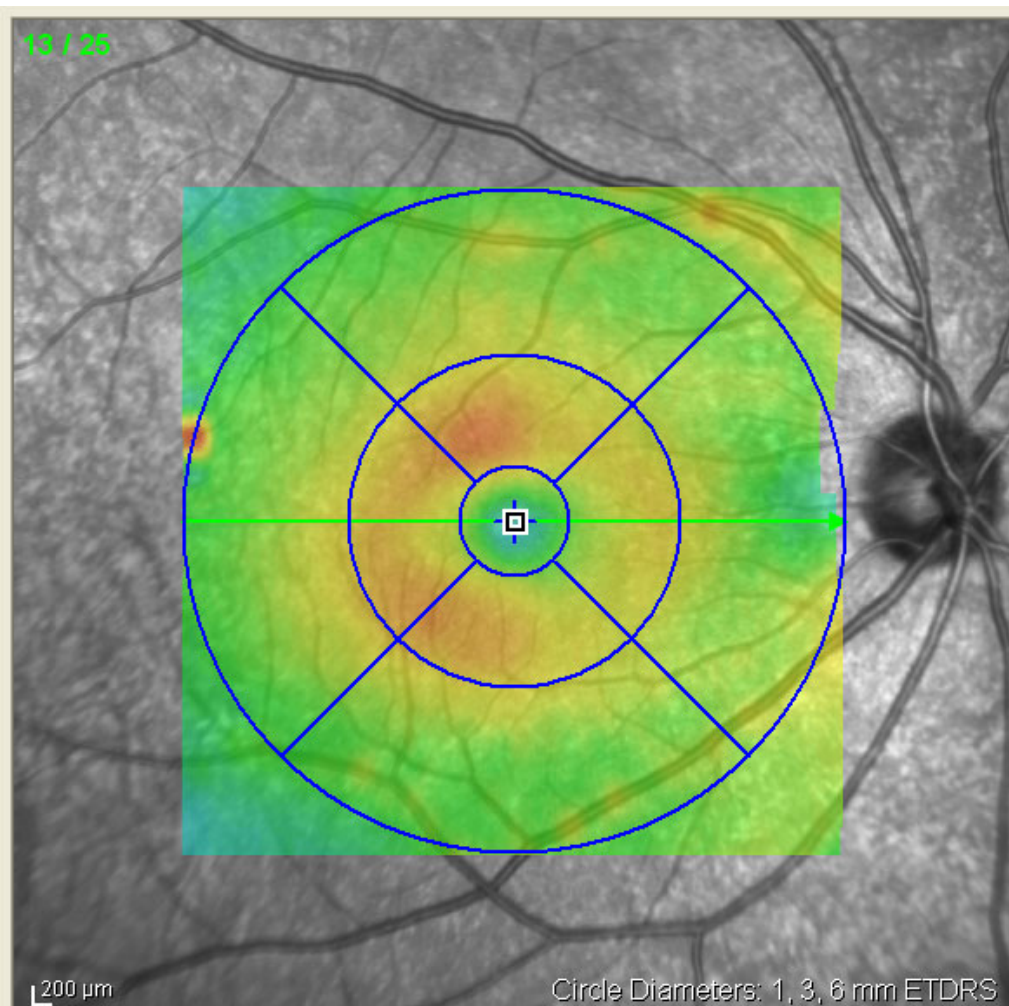
# Seen by retina

- 20/20 OD
- CF OS
- RAPD OS
- Retina looks normal
- IMP: “Optic atrophy, not retina”
- “MRI head/orbit: negative”
- Plan “Neuro-op”

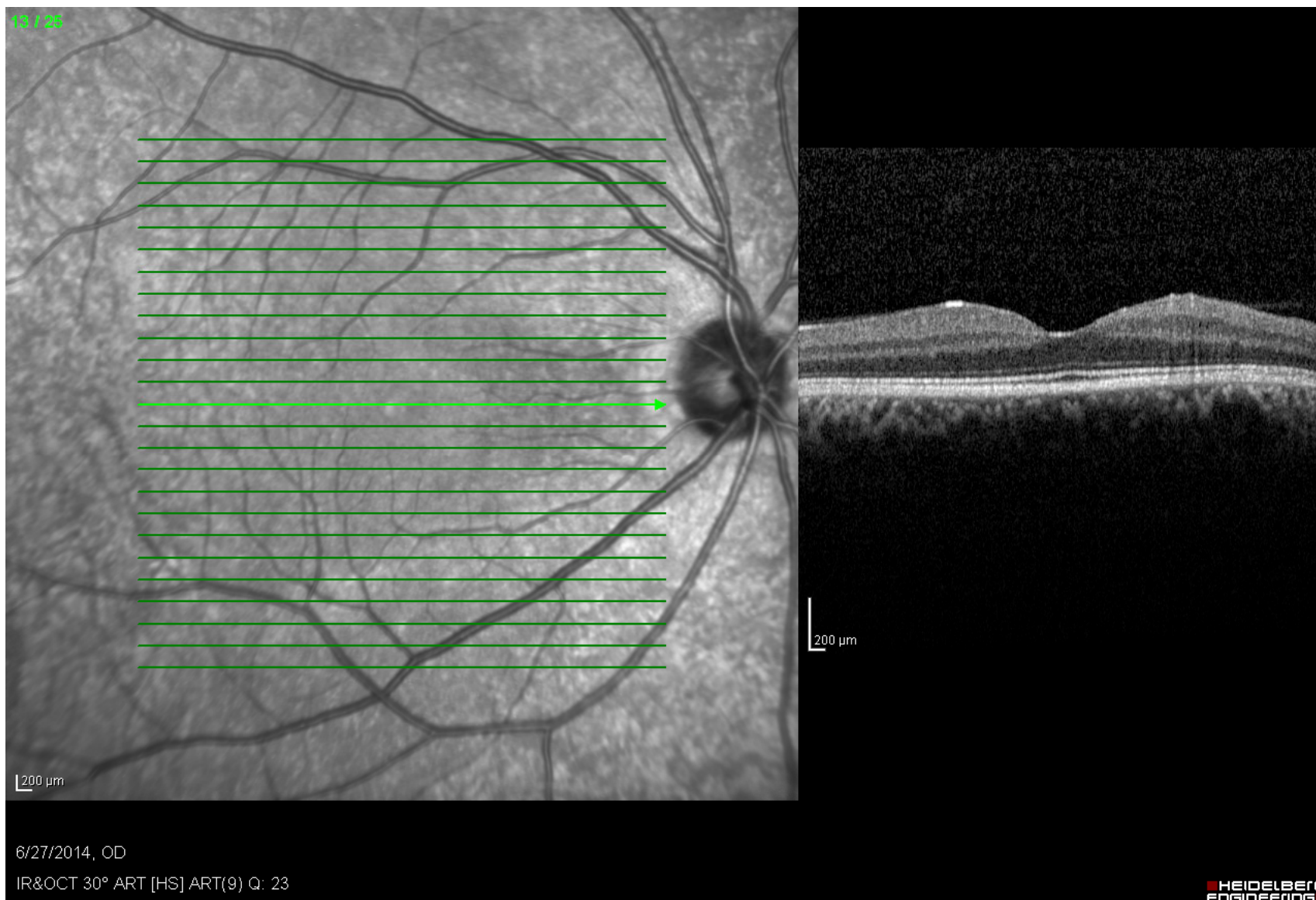
# Retina really did look normal



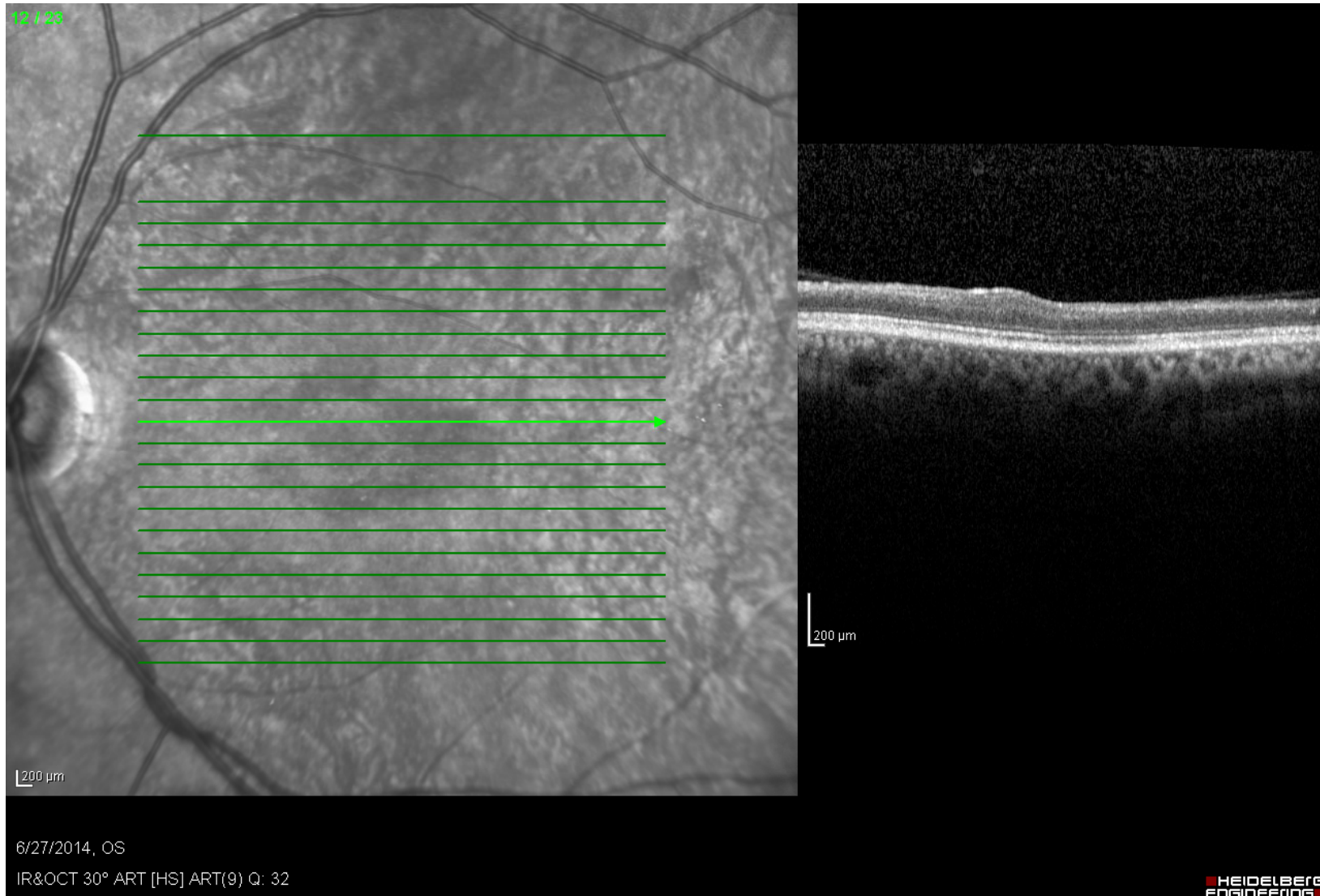
# OCT OS retinal thinning



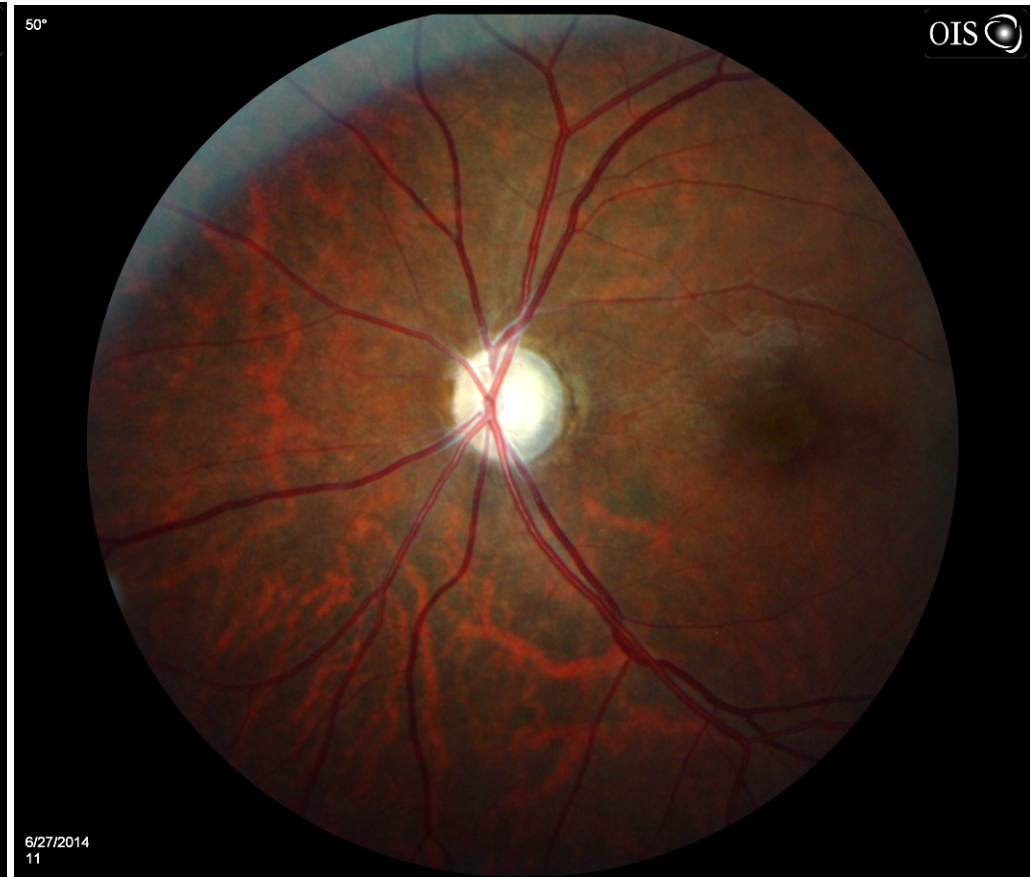
# OCT OD WNL 20/20



# OCT OS



# Did the retina really look normal



The retina is transparent when alive  
and is also transparent when

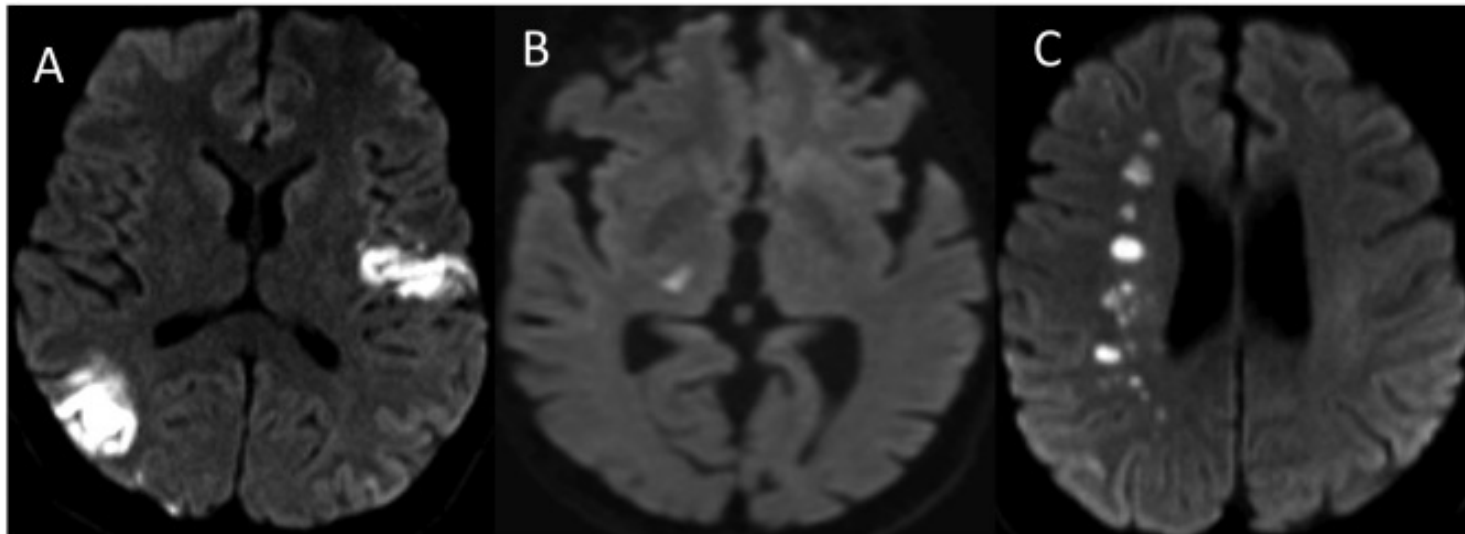
# Clinical significance

- Optic atrophy from old CRAO needs a different work up
  - ECHO, EKG, Carotid Doppler, Hypercoaguable, etc.
- Optic atrophy from old NAION does NOT need an ECHO or EKG or Carotid Doppler

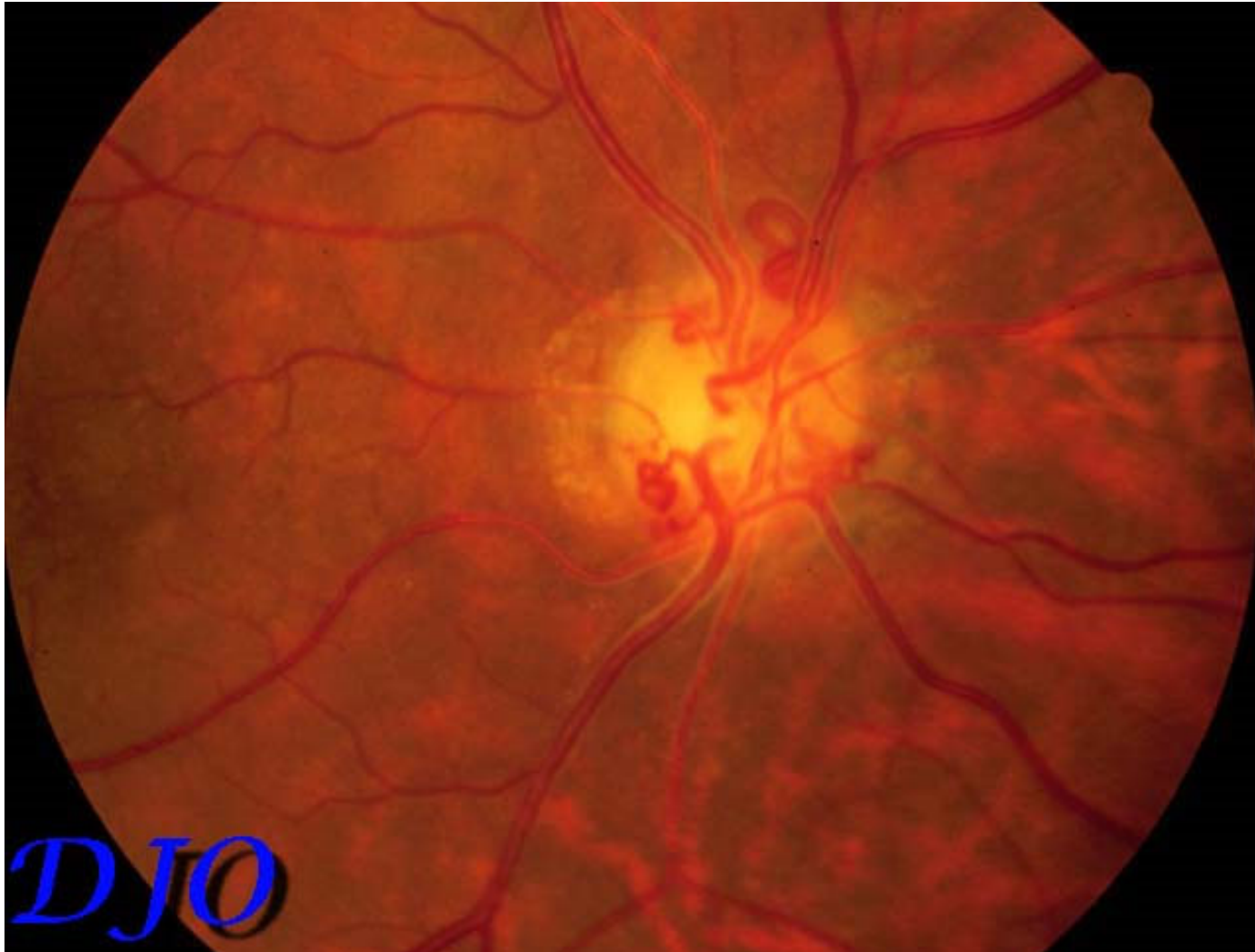
# Scan this....

- MRI + DWI: CVA
- Carotid Doppler
- Echocardiogram
- Thrombotic/thrombo-embolic work up

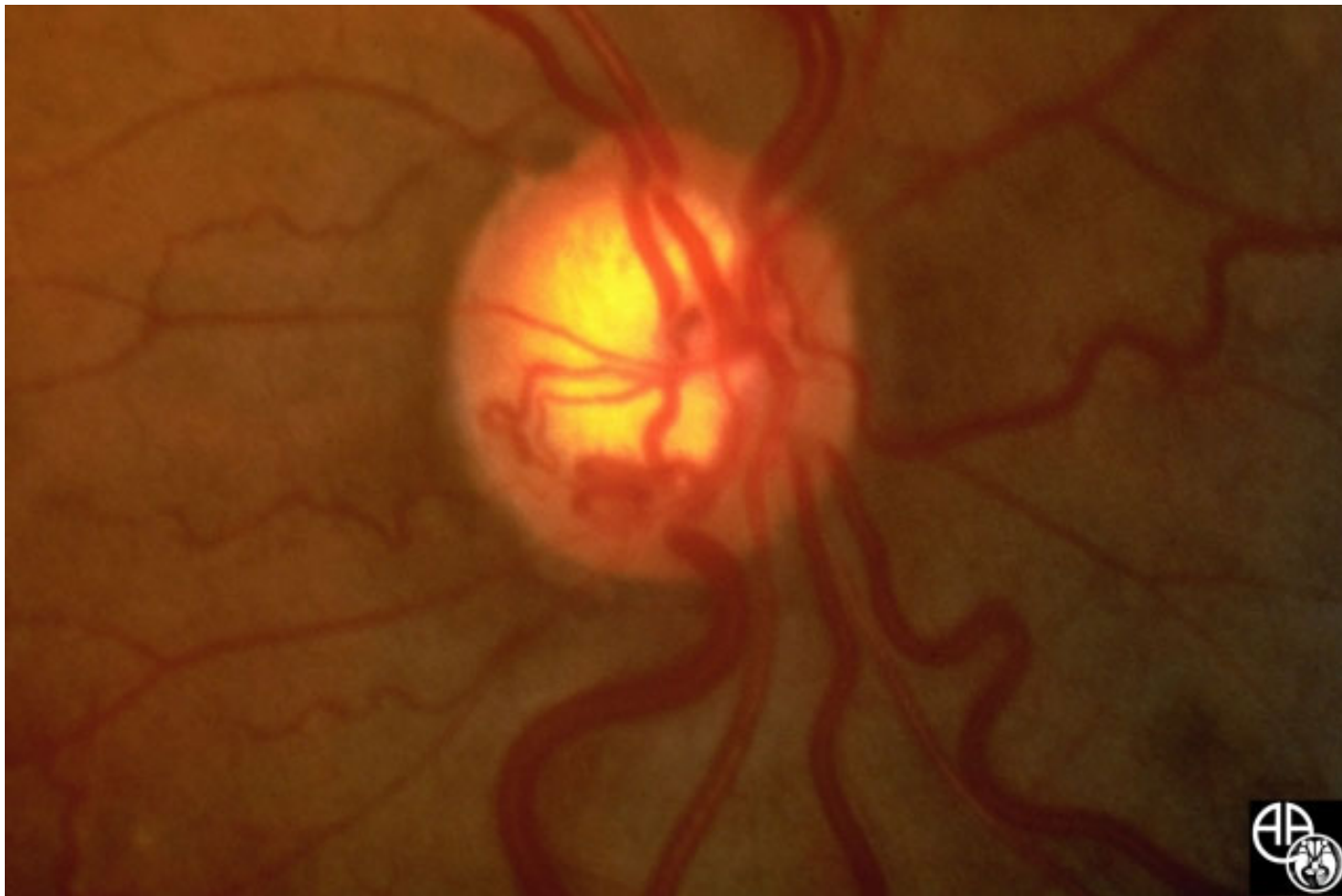
# MRI DWI ischemic infarcts



# Optociliary shunt vessel



# Another retinochoroidal venous collateral



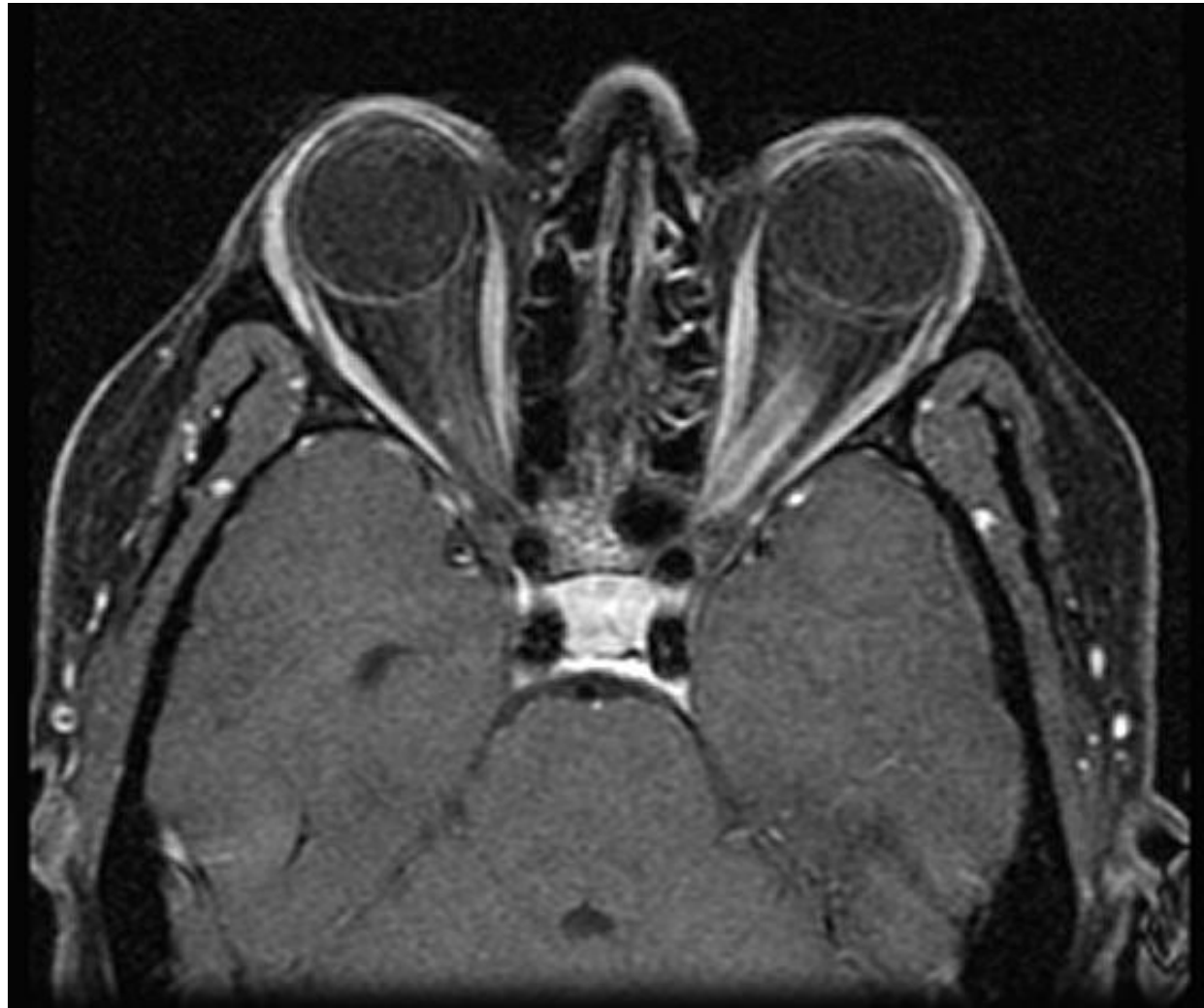
# To scan or not to scan



# Optociliary shunt vessels

- Not opto, not ciliary, not a shunt
- Retinochoroidal venous collateral
- Old CRVO or optic nerve sheath meningioma

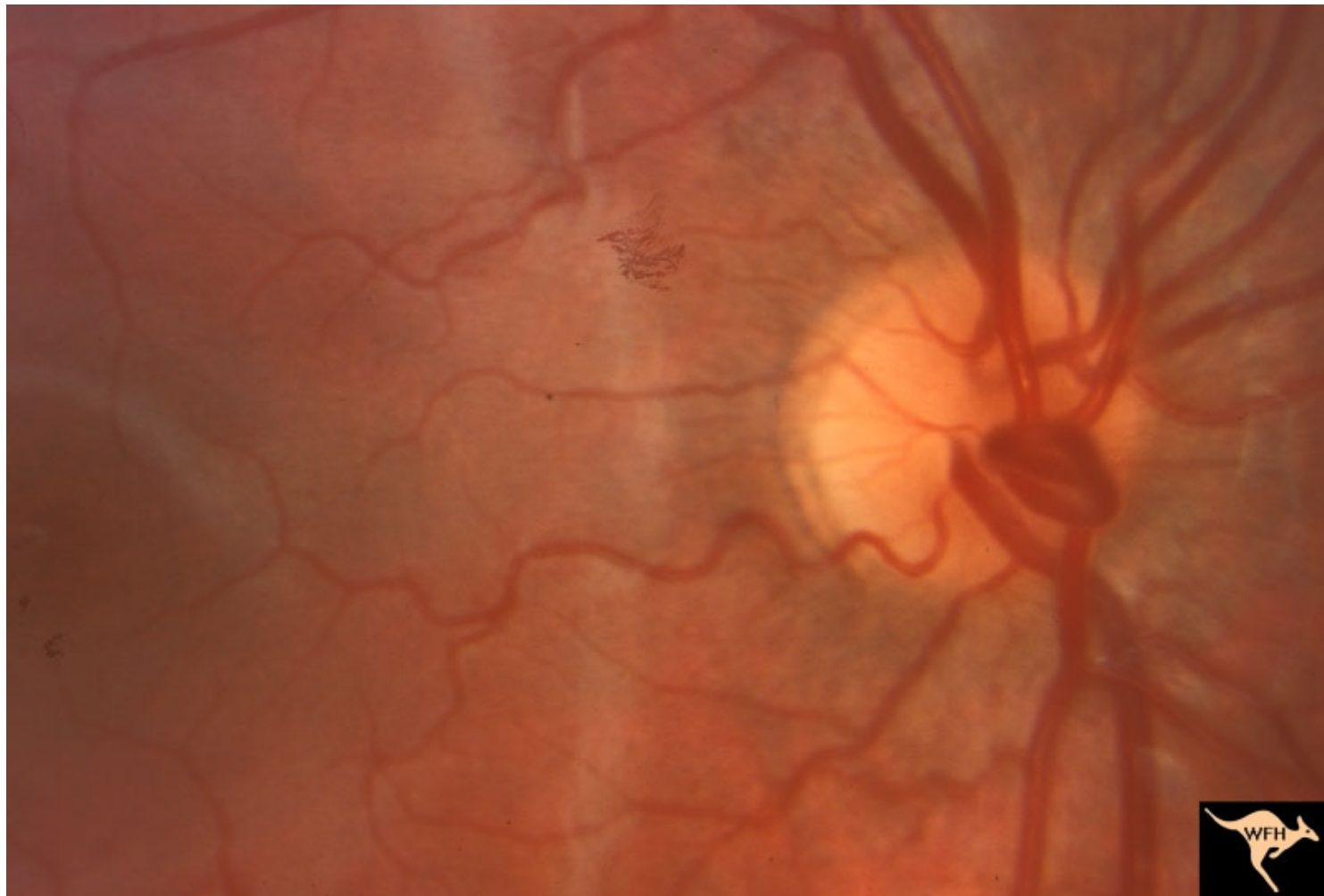
Scan this



# Prepapillary arterial loop



# Prepapillary venous loop



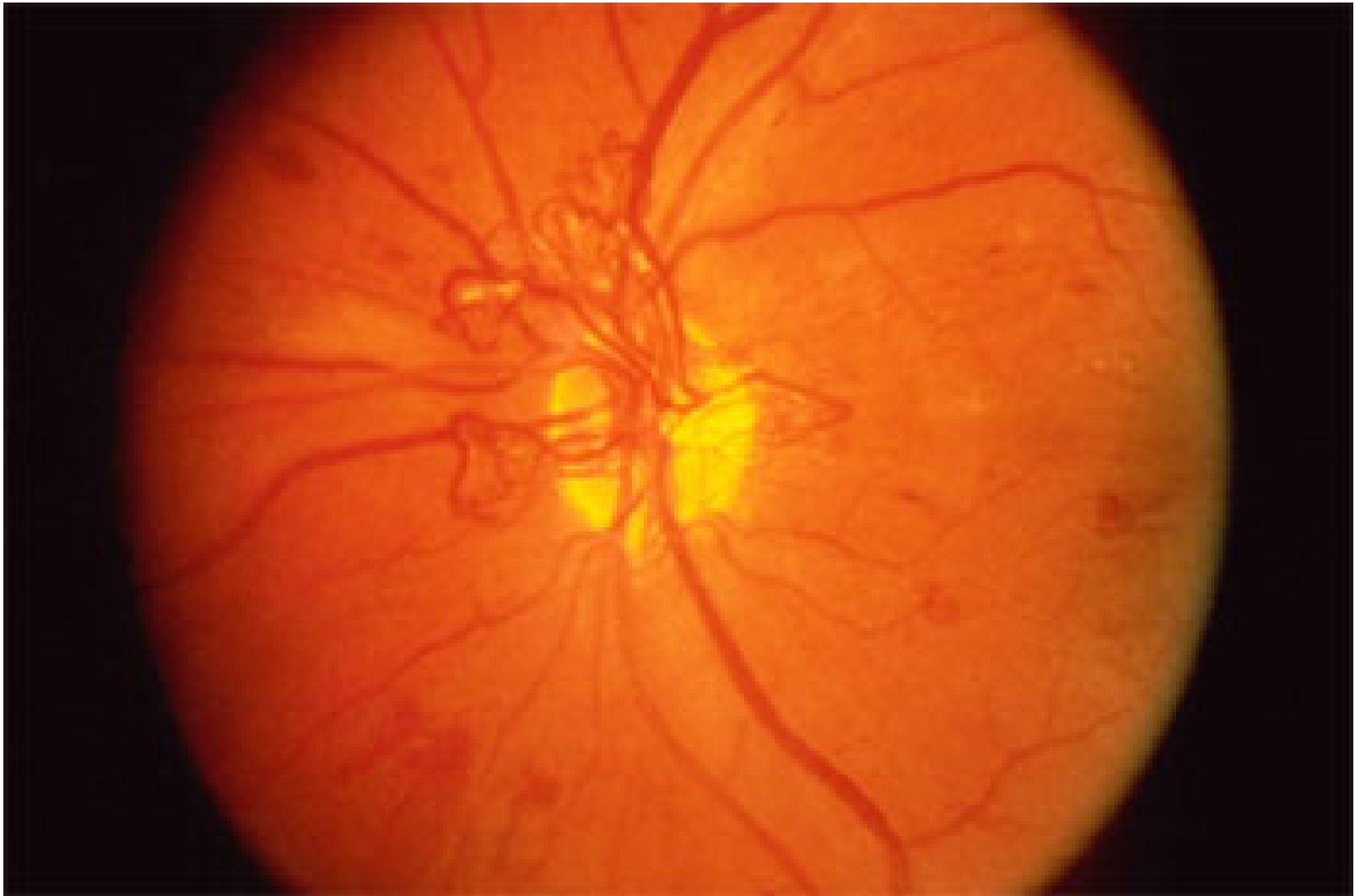
# Prepapillary loop

- Asymptomatic
- Artery to artery or vein to vein
- Looks like a pretzel
- No imaging necessary
- No associations

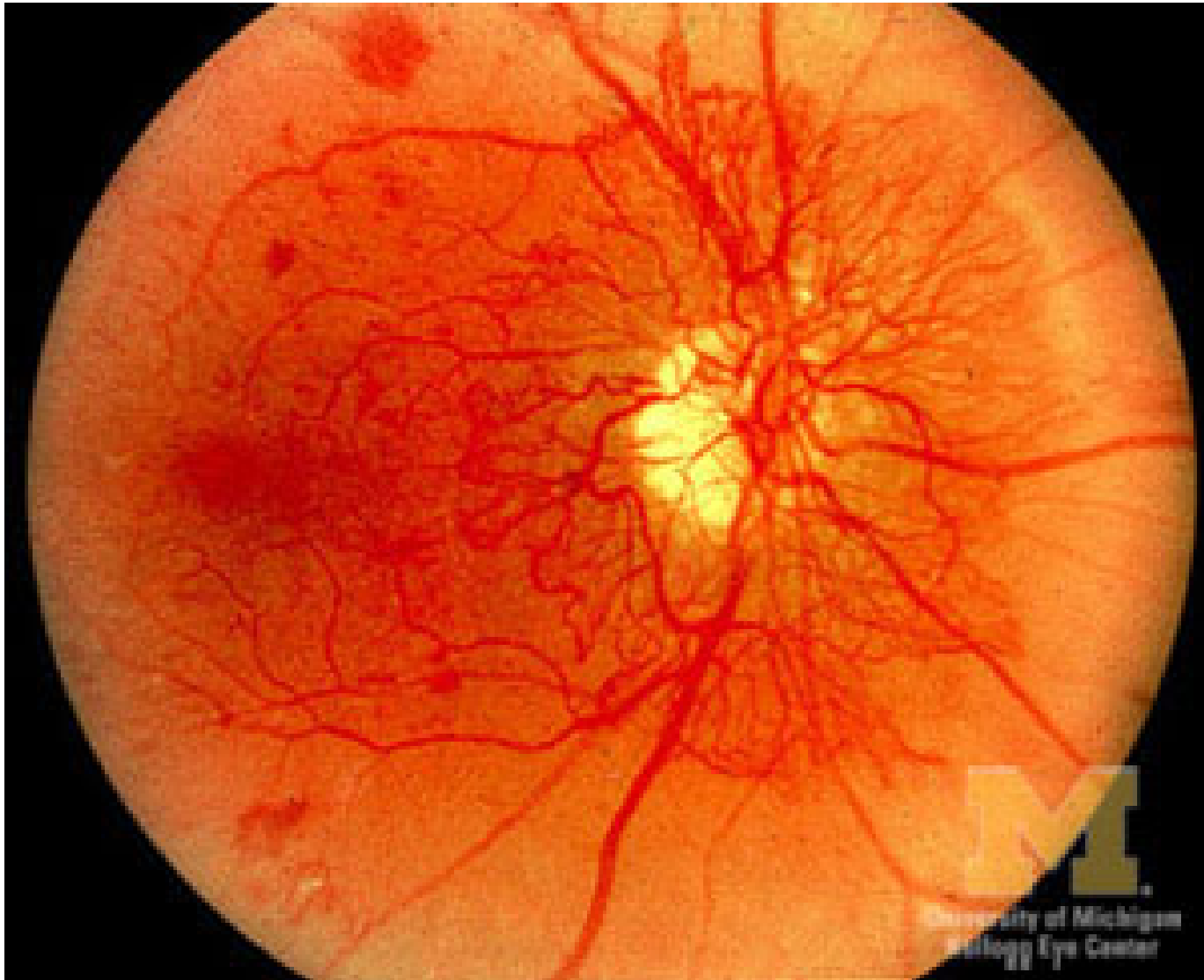
# To scan or not to scan



# Neovascularization of disc



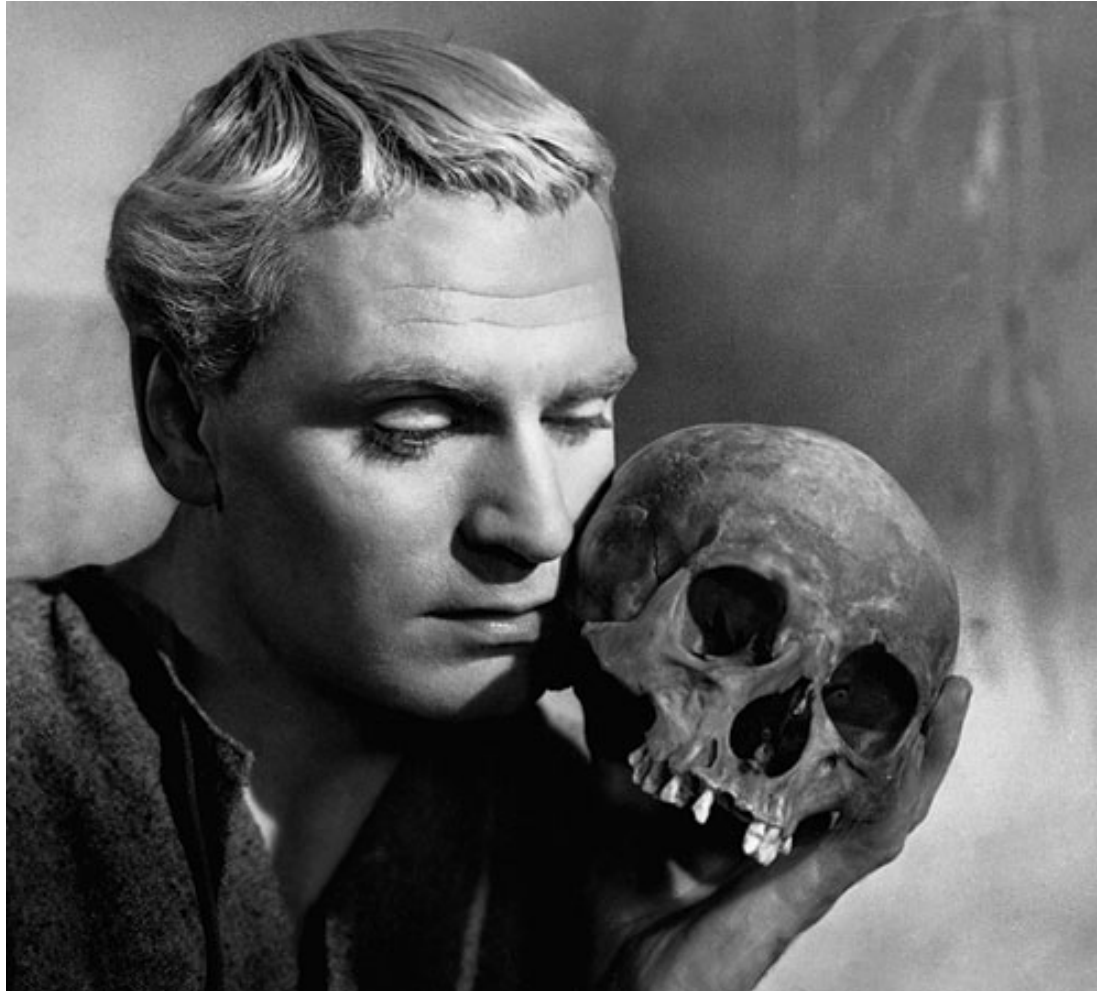
# Neovascularization of disc



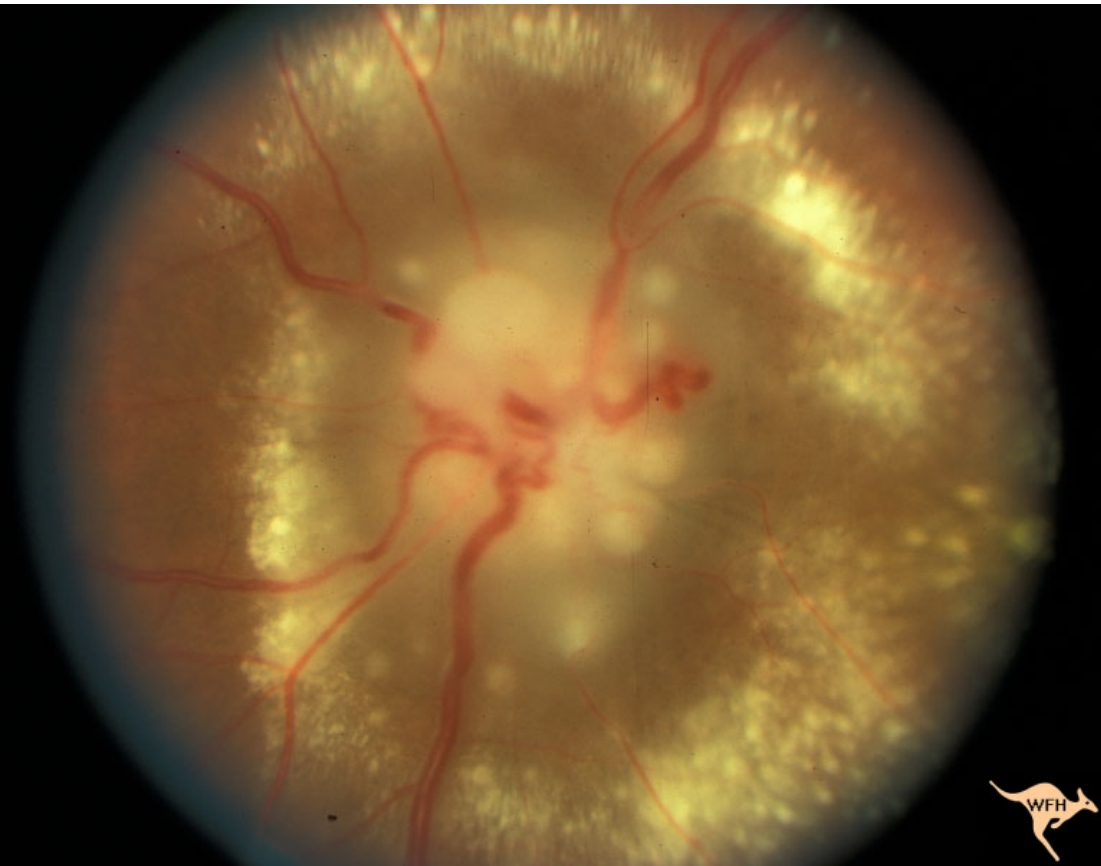
# Neovascularization of disc

- No imaging
- Diabetes
- Net like
- Diabetic retinopathy

# To scan or not to scan



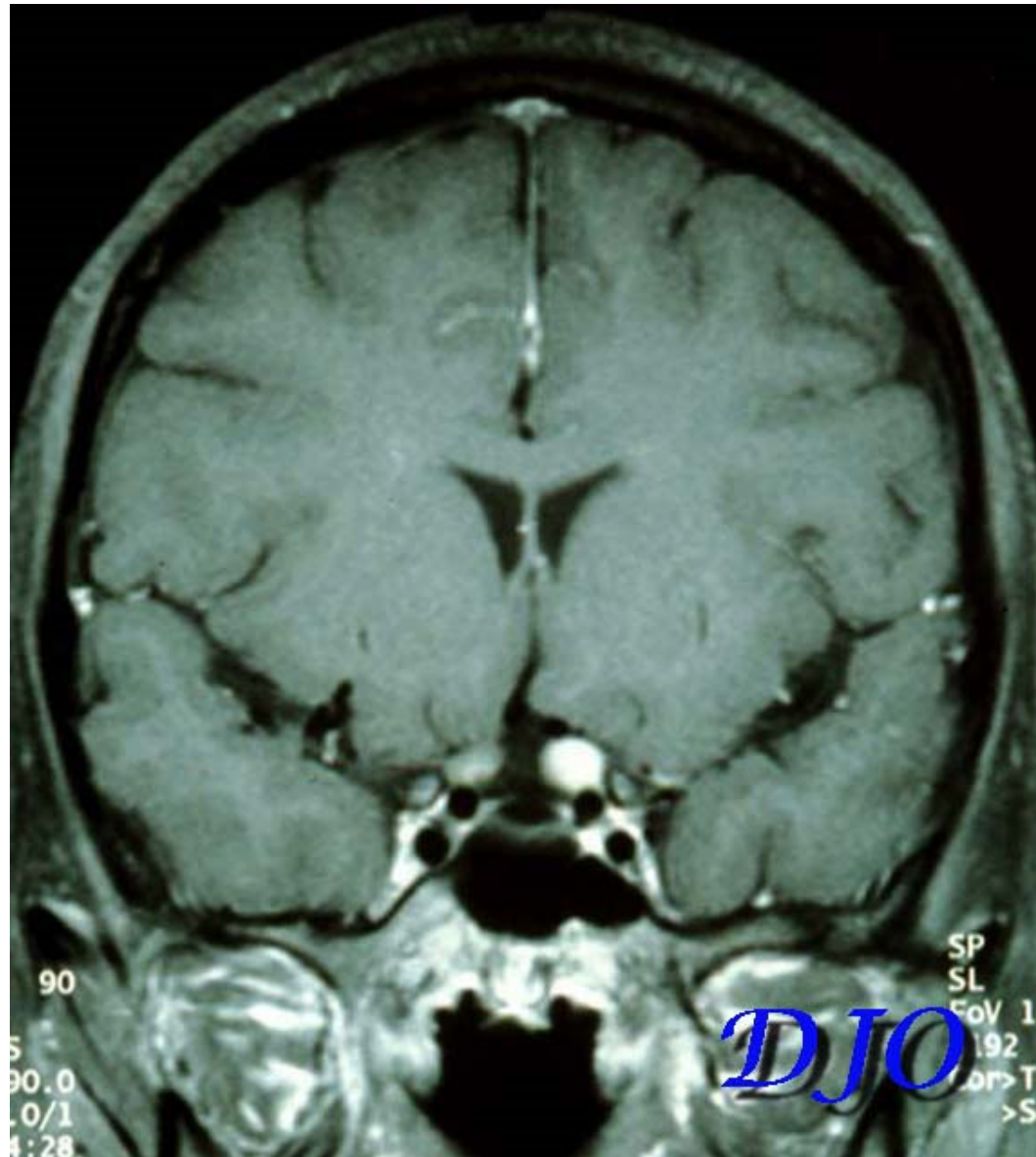
# Nodular papillopathy



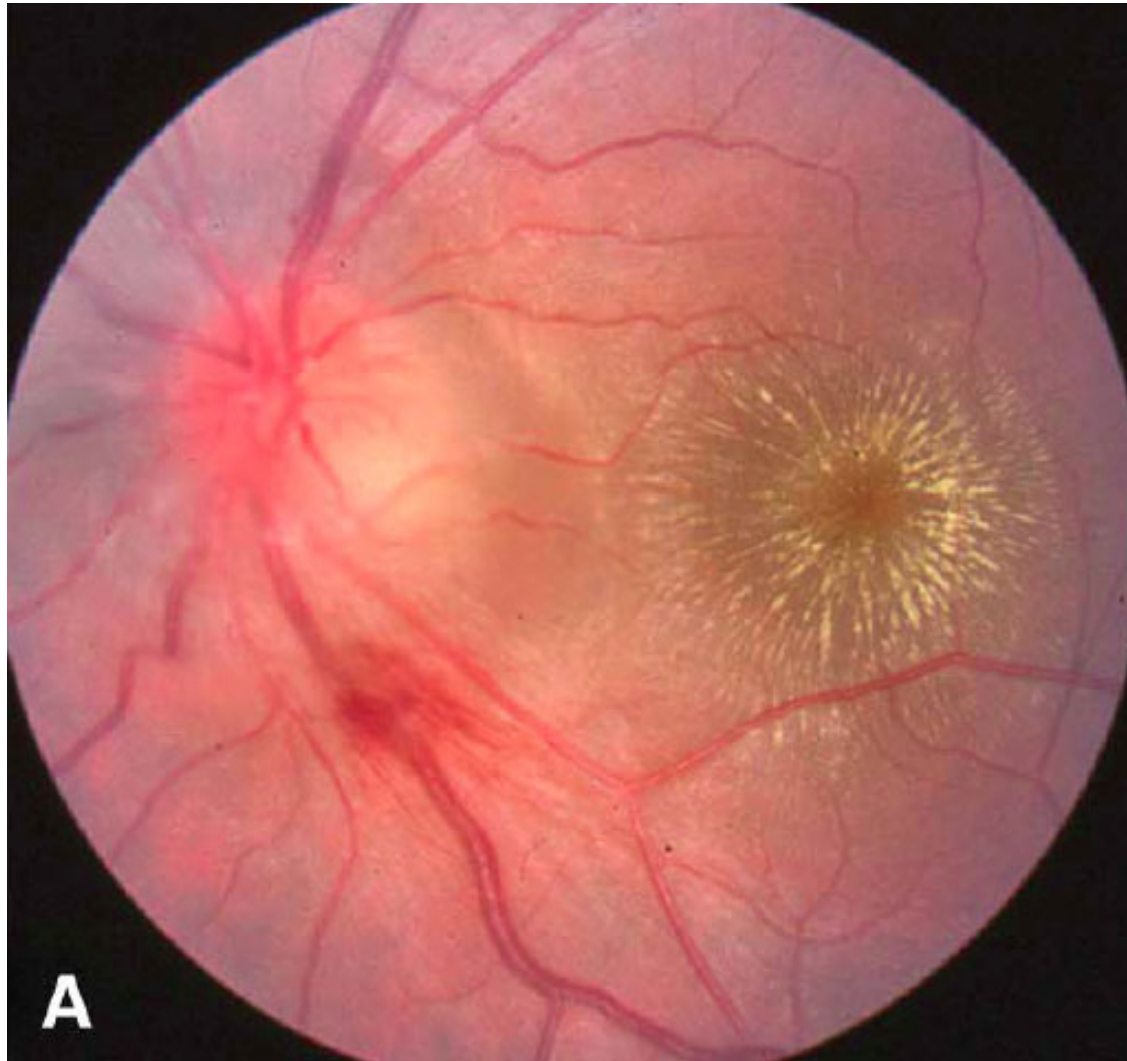
# To scan or not to scan



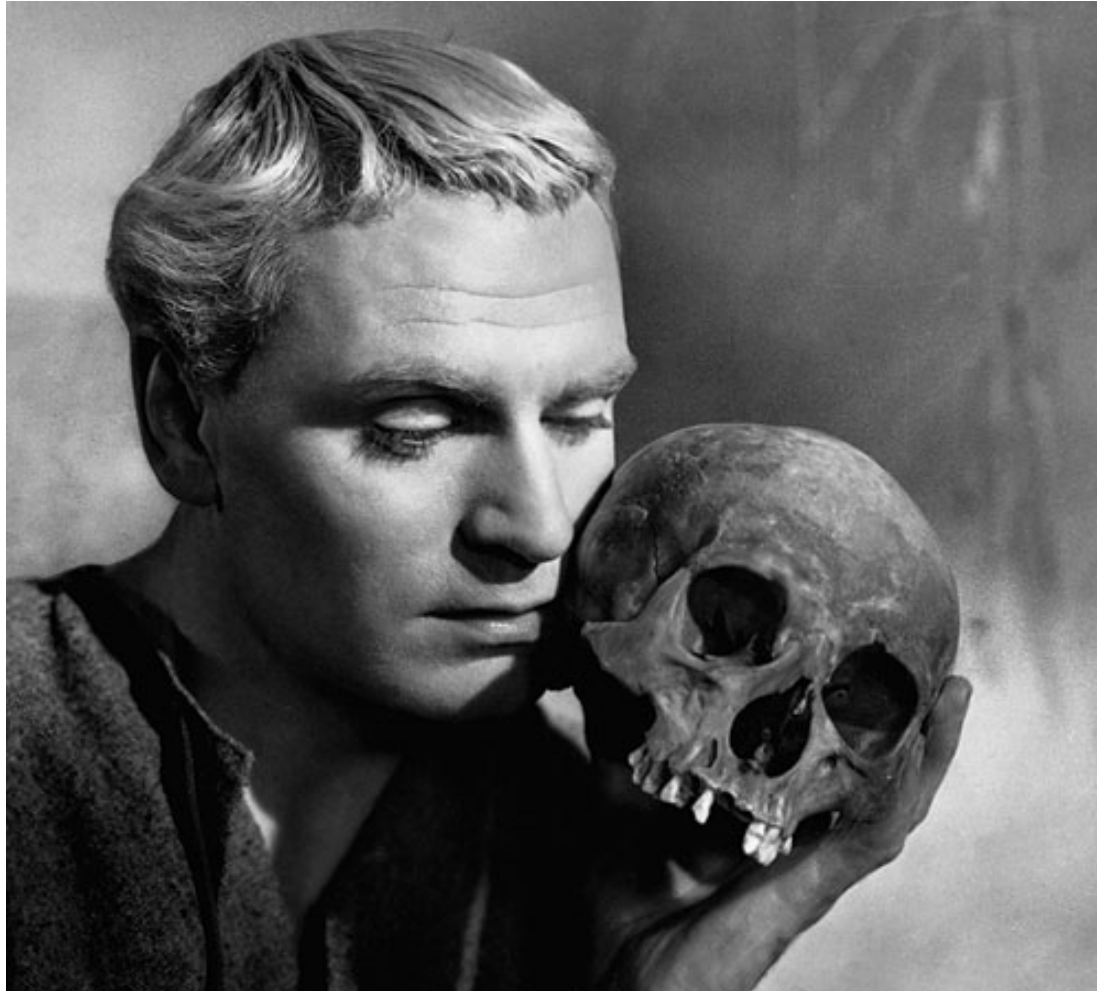
# Enhancing optic nerve



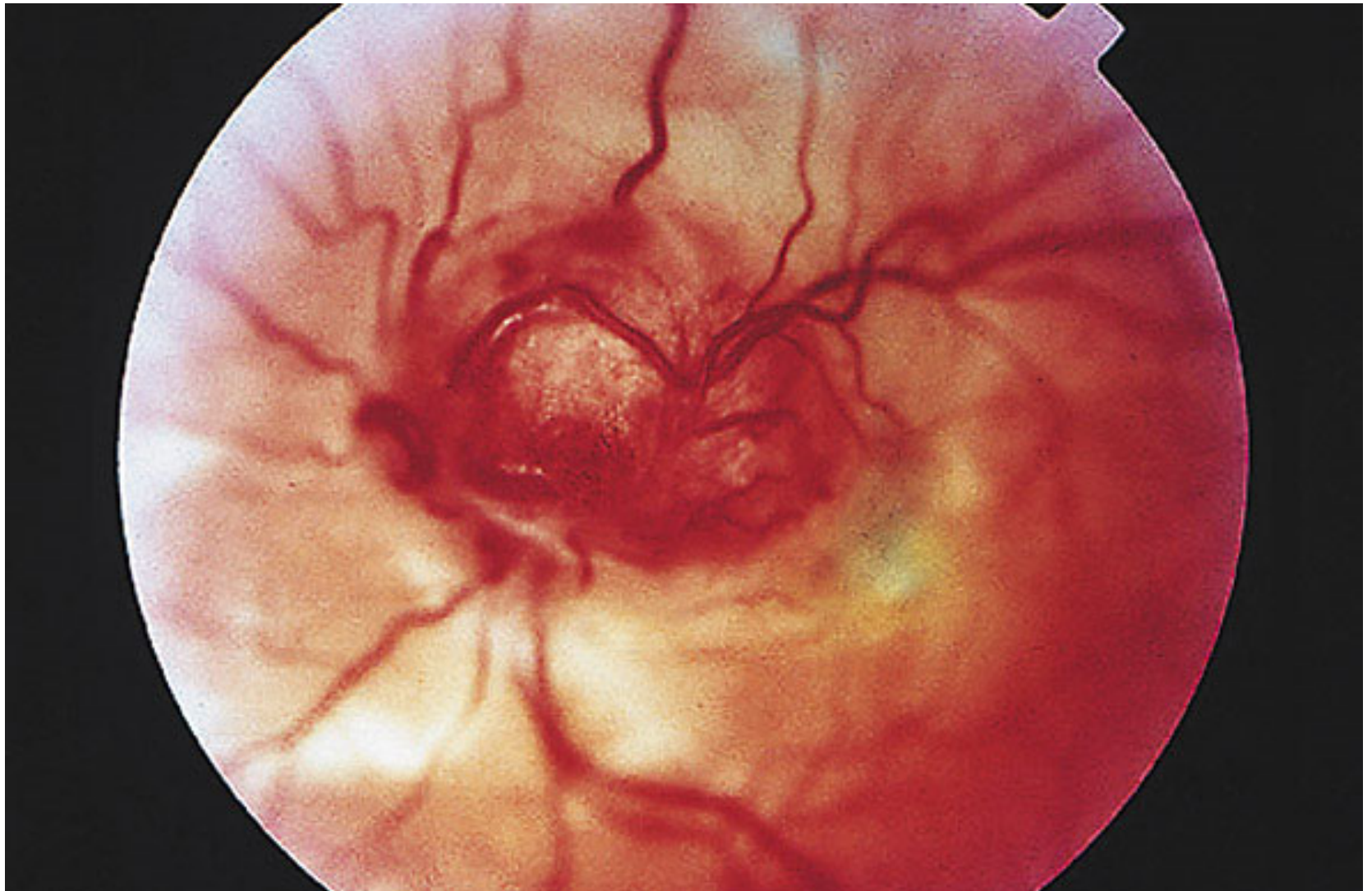
Would you scan this? If  
unilateral or bilateral?



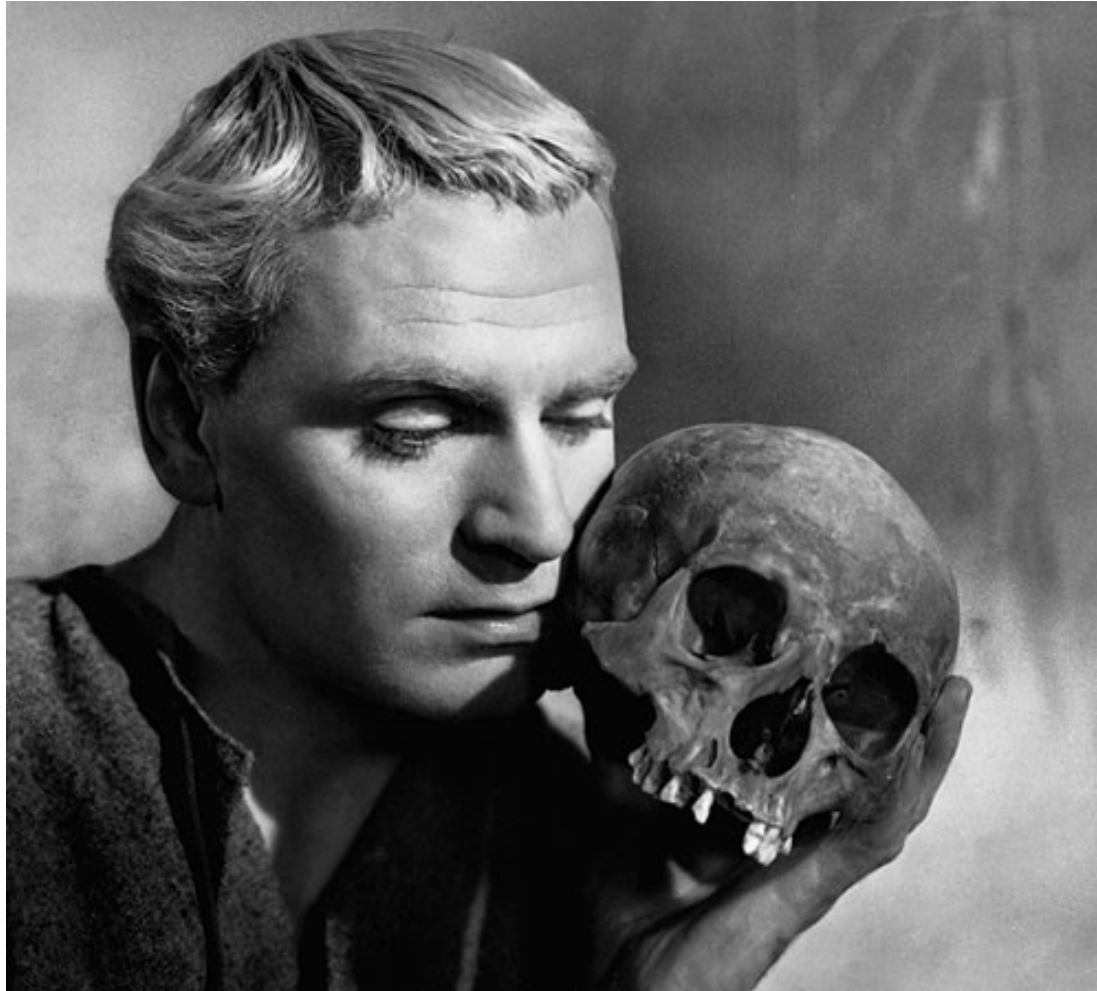
# To scan or not to scan



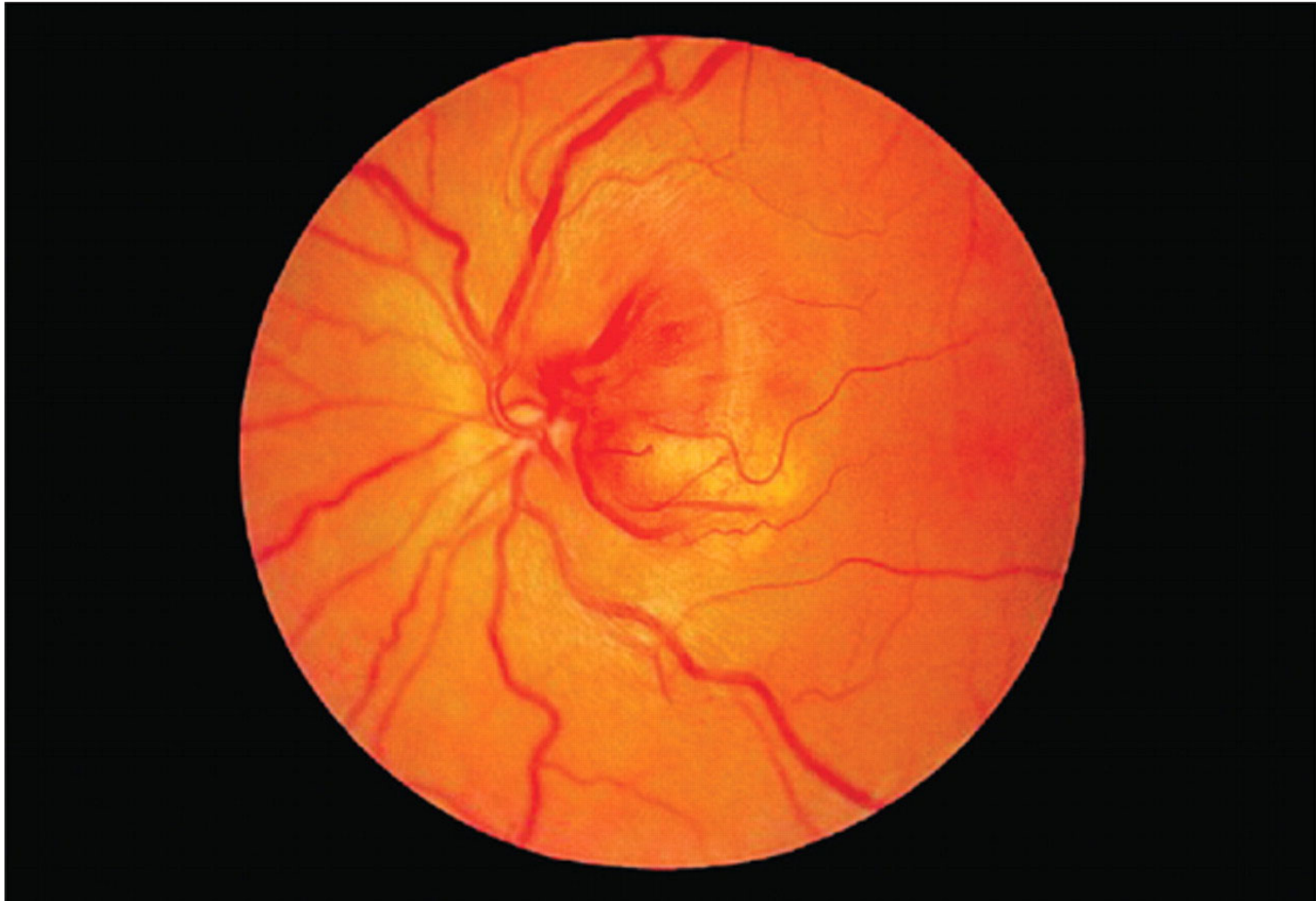
# Capillary hemangioma of disc



# To scan or not to scan



# Von Hippel Lindau



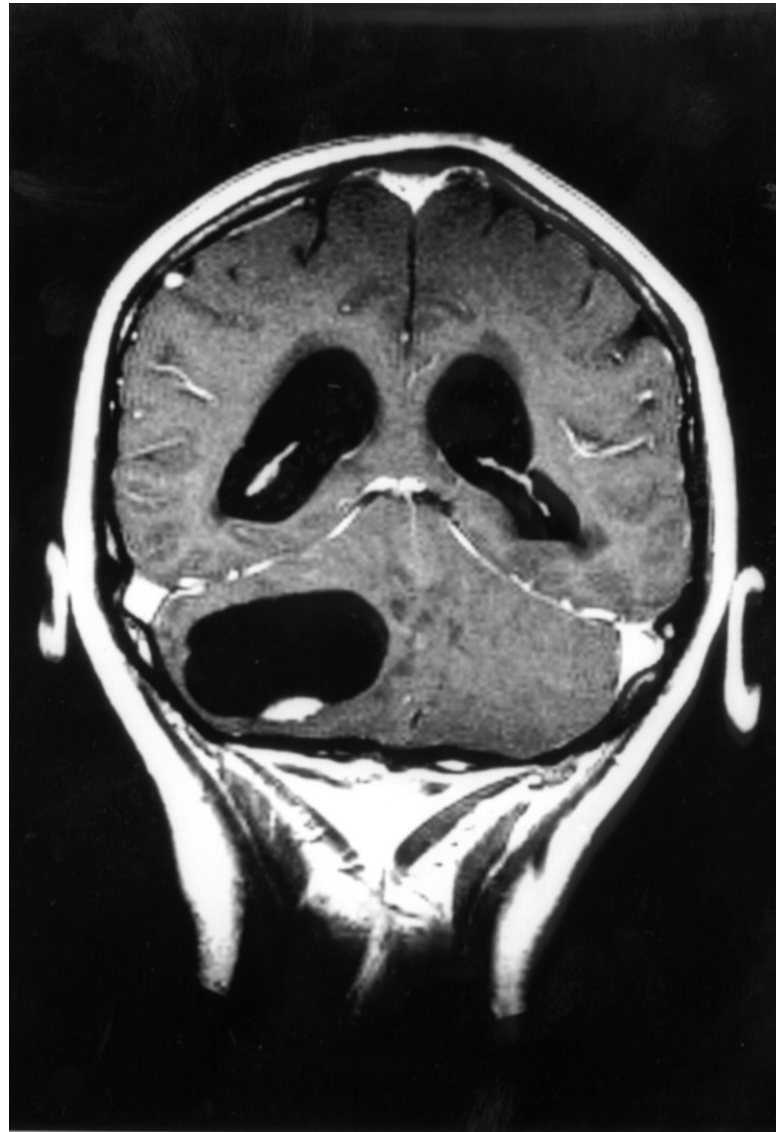
# Von Hippel Lindau



# To scan or not to scan



**T1 weighted gadolinium enhanced brain MRI; coronal section, through the posterior fossa showing cerebellar haemangioblastoma.**

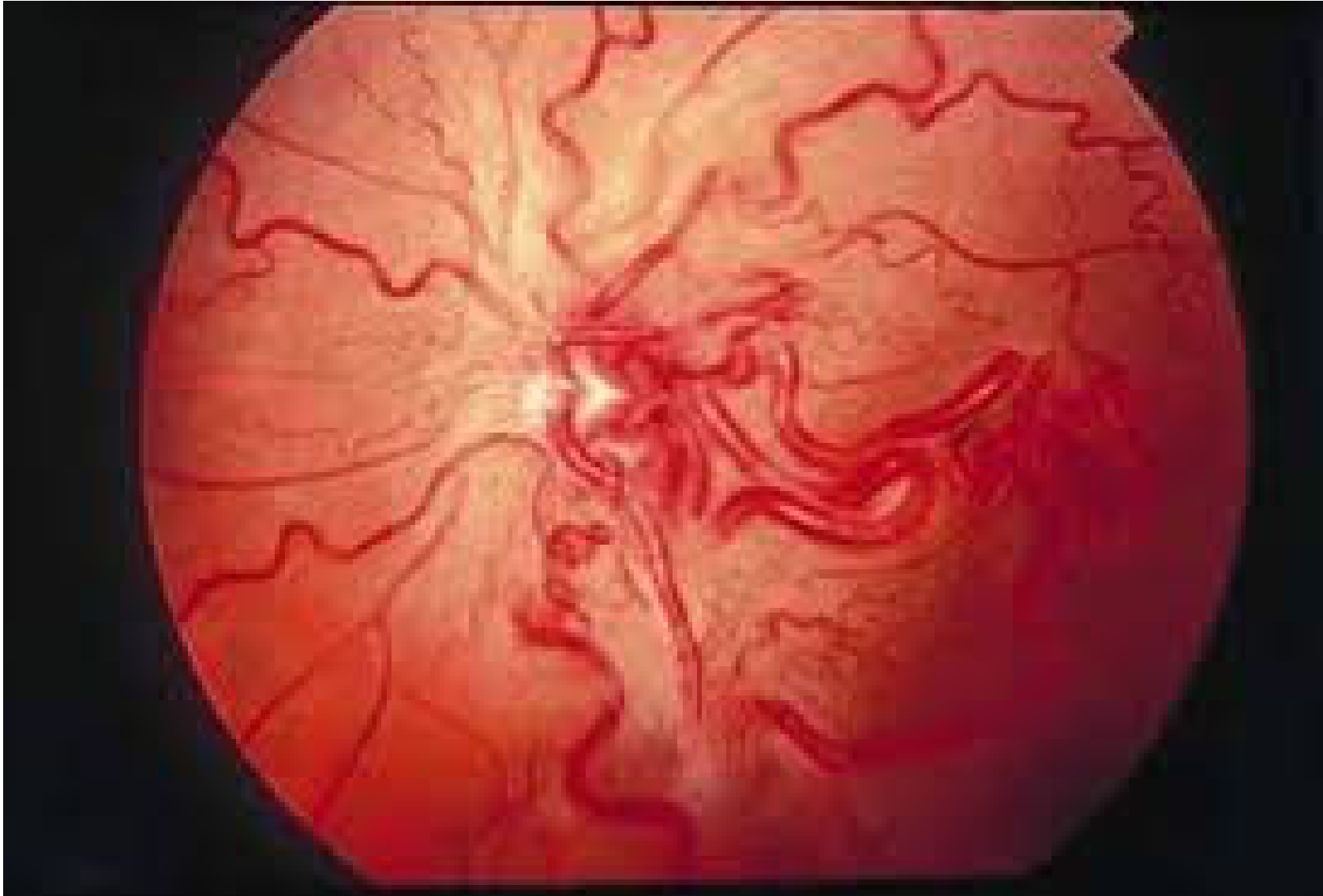


**Burn D J , Bates D J Neurol Neurosurg Psychiatry  
1998;65:810-821**

# Von Hippel Lindau

- Reddish vascular mass on disc
- Dilated feeder vessel
- A tumor of blood vessels (not just a malformation or anomaly)
- Associated with cerebellar hemangioblastoma
- Von Hippel Lindau

# AVM of disc



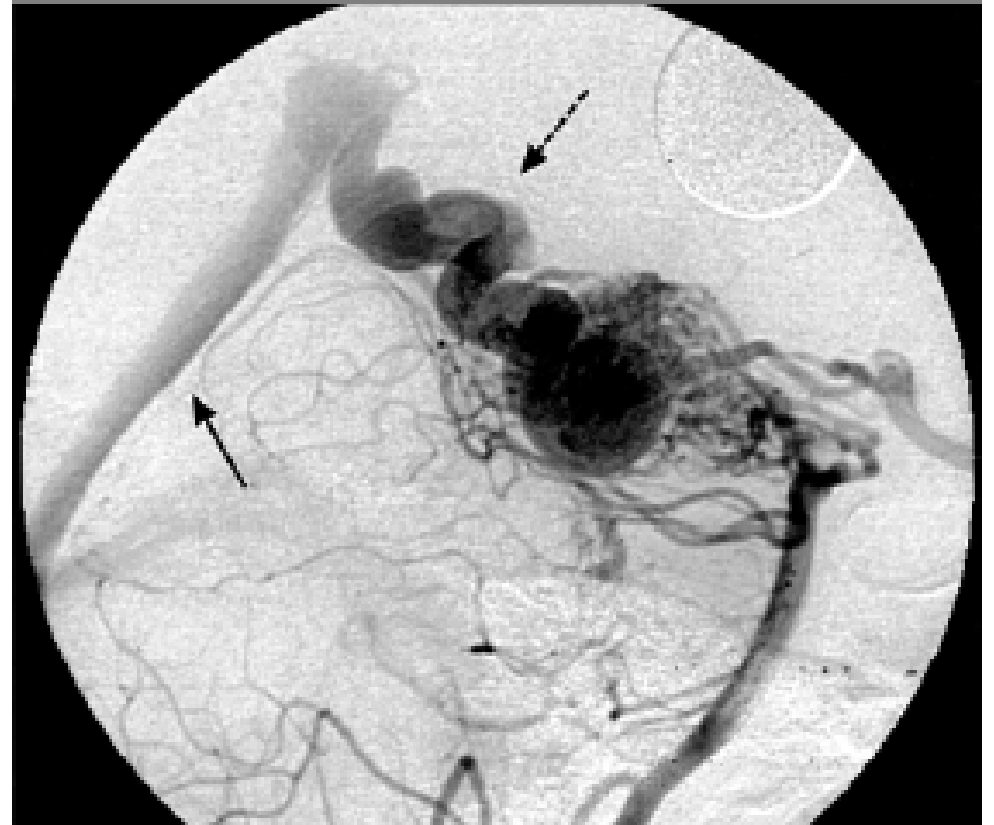
# To scan or not to scan



# AVM

- Spaghetti
- Dilated feeders
- Venous drainage
- Wyburn Mason

# AVM



# Congenital tortuosity



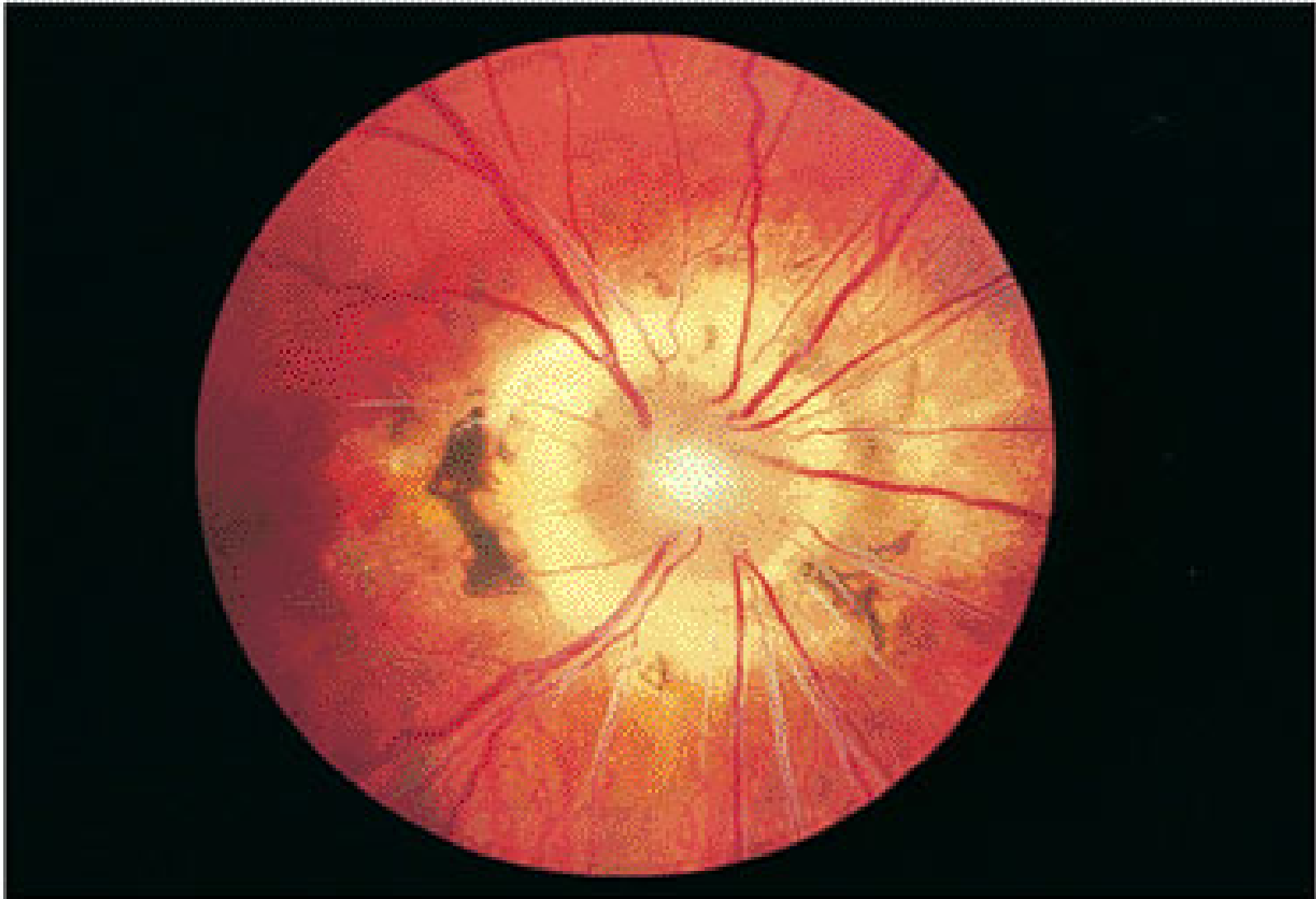
# Congenital venous tortuosity

- Benign
- No arterial feeders
- No nidus
- No mass

# To scan or not to scan



# Morning glory



# Morning glory syndrome

- Vessels radiate out from disc margin
- Cavitory disc anomaly
- Glial tuft in center
- Peripapillary derangement
- Neuroimaging: basal encephalocoele or Moya Moya



# Optic disc coloboma



# To scan or not to scan



# Scan this: Nasal encephalocele



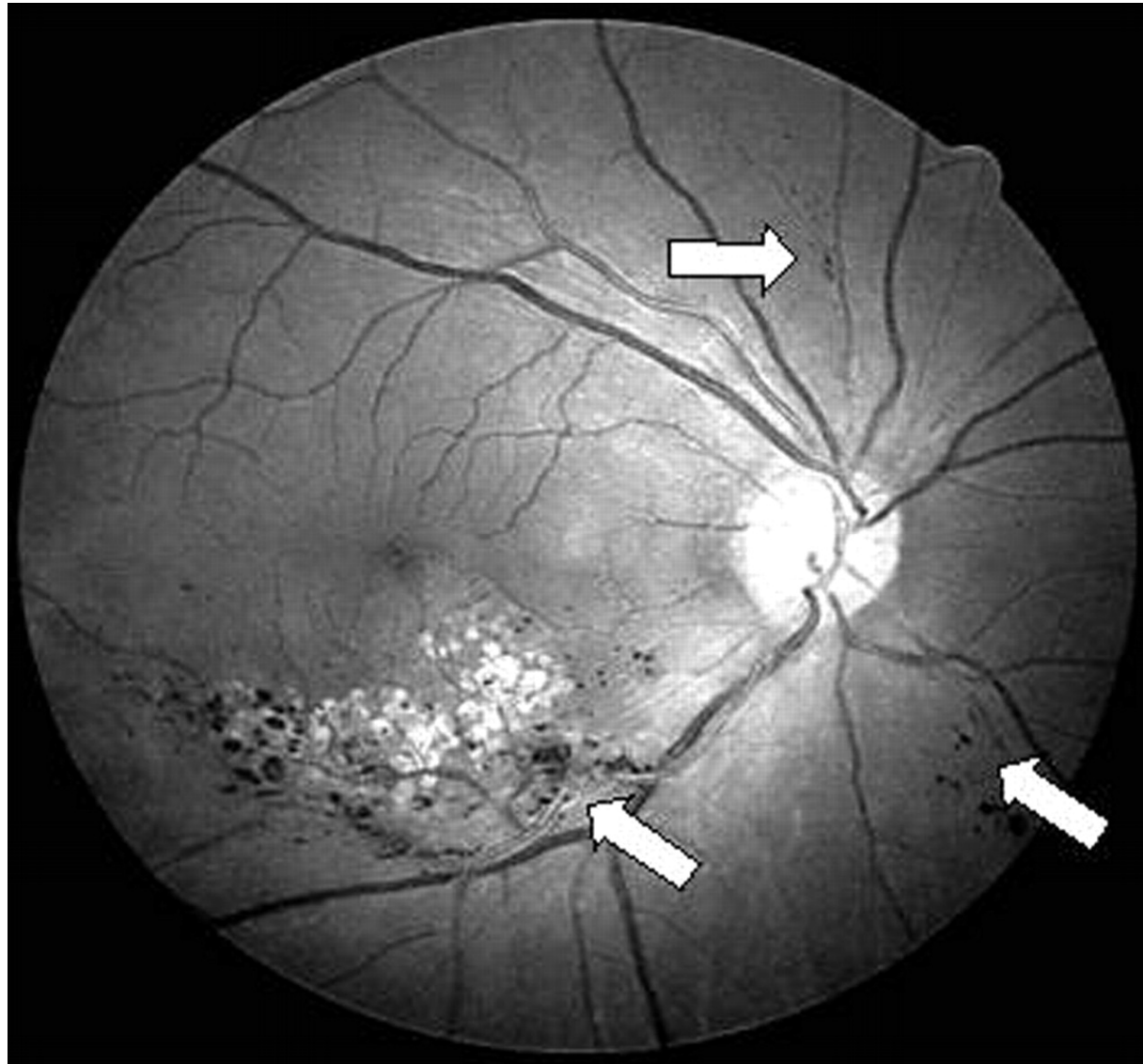
# Cavernous hemangioma



# Cavernous malformation

- Cluster of grapes
- Endothelial lined channels
- Usually isolated
- Can be associated with cavernous malformation

**Figure 1. Ophthalmoscopy shows retinal angiomas of the right eye after laser photocoagulation.**

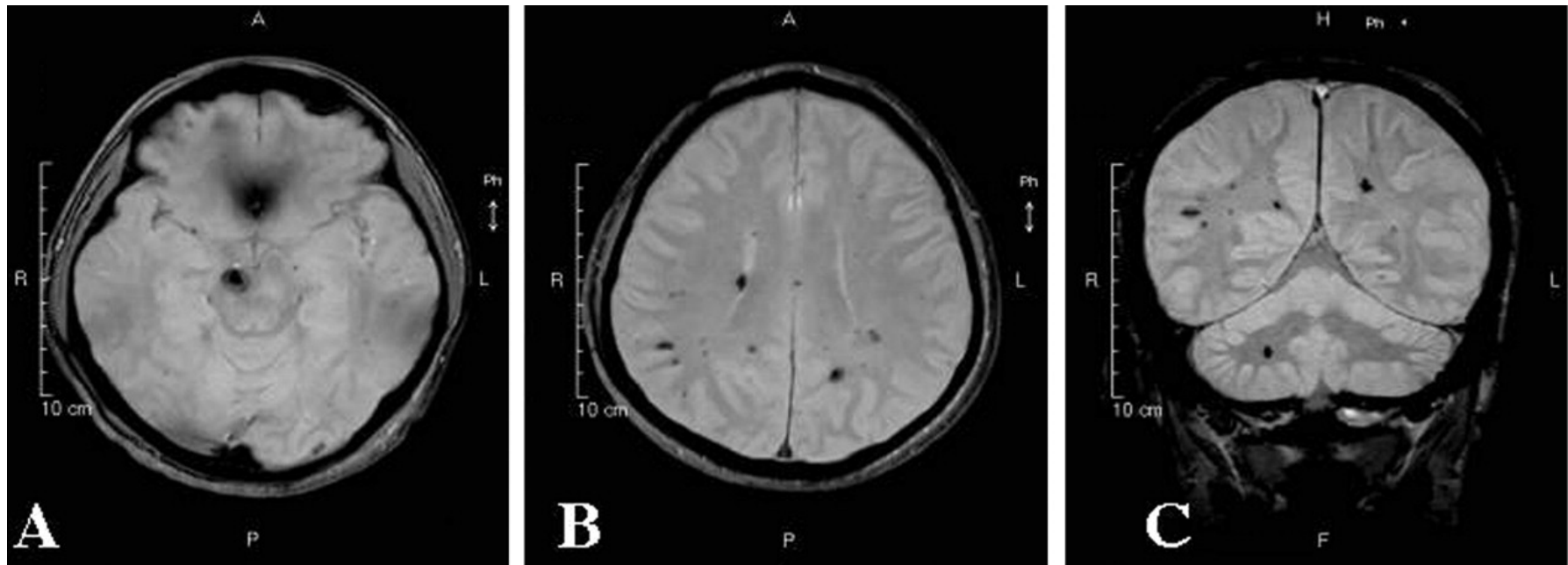


**Ikeda K et al. Neurology 2005;64:163-163**

# To scan or not to scan



**Figure 2. (A, B) Axial and (C) coronal T2\*-weighted gradient echo MRI shows multiple signal loss lesions in the brain.**



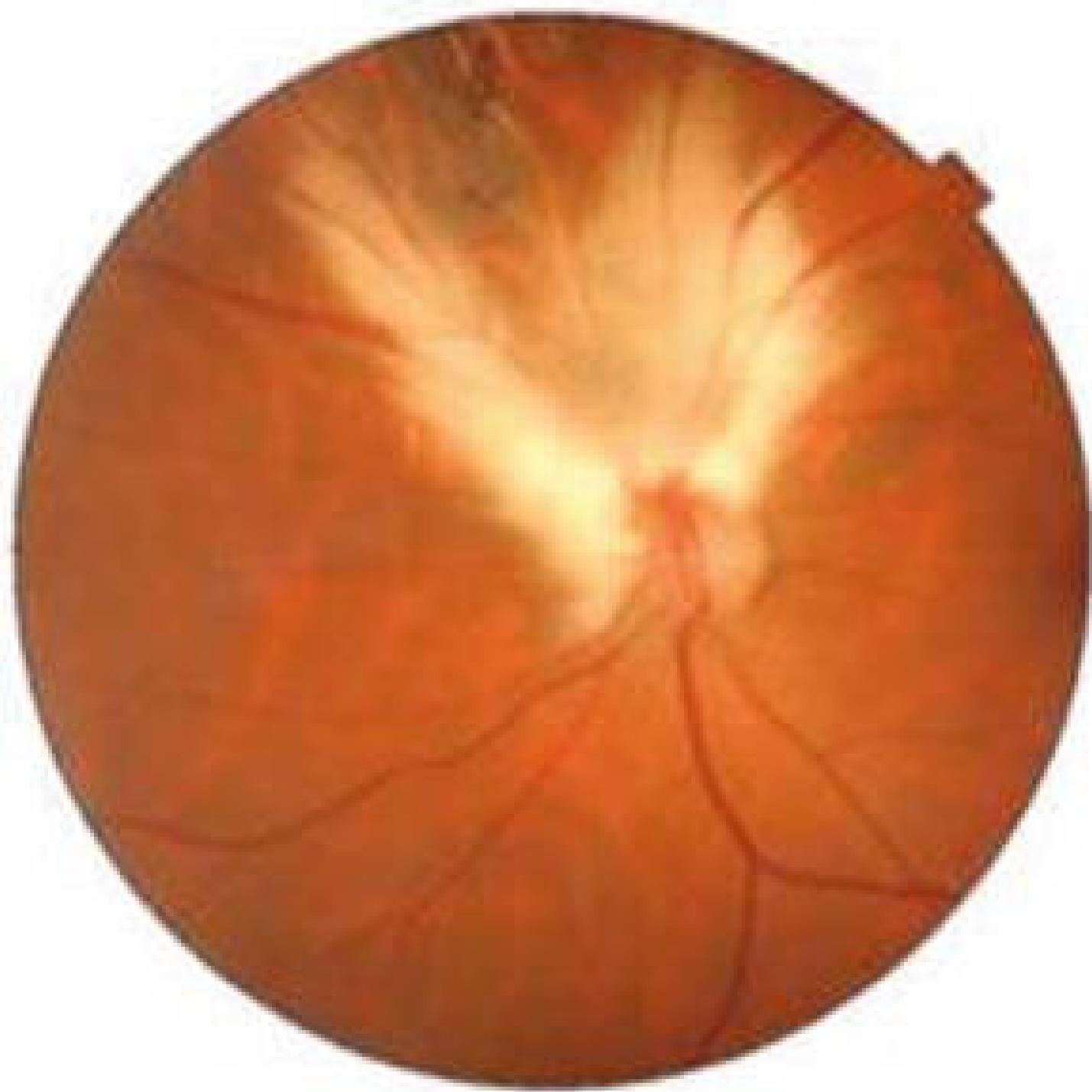
**Ikeda K et al. Neurology 2005;64:163-163**



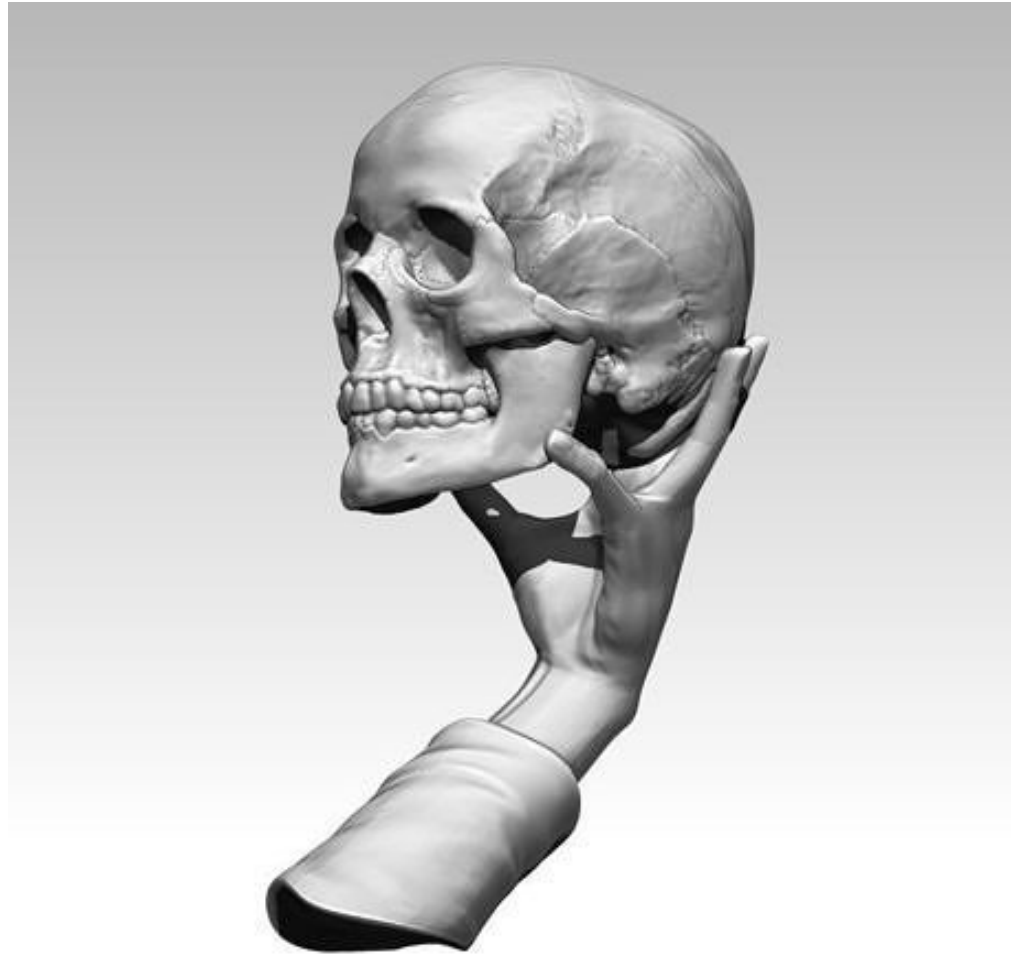
©ECN

# To scan or not to scan





# To scan or not to scan





# To scan or not to scan



# To scan or not to scan

- No scan: NAION, disc drusen, NVD, optic pit
- Scan: Nettihsip collaterals, optociliary shunt vessel, AVM, disc hemangioma, morning glory disc, cavernous hemangioma

# Summary

## Funny blood vessels on disc

- Identify key clinical findings (sign)
- Define important history (symptoms)
- List differential diagnosis
- Describe imaging indications
- Define distinctive radiographic finding

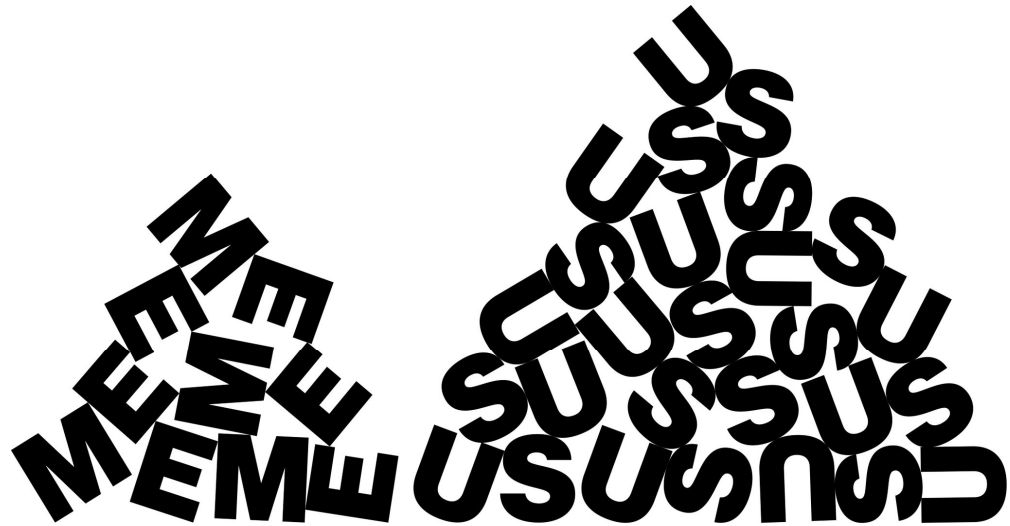
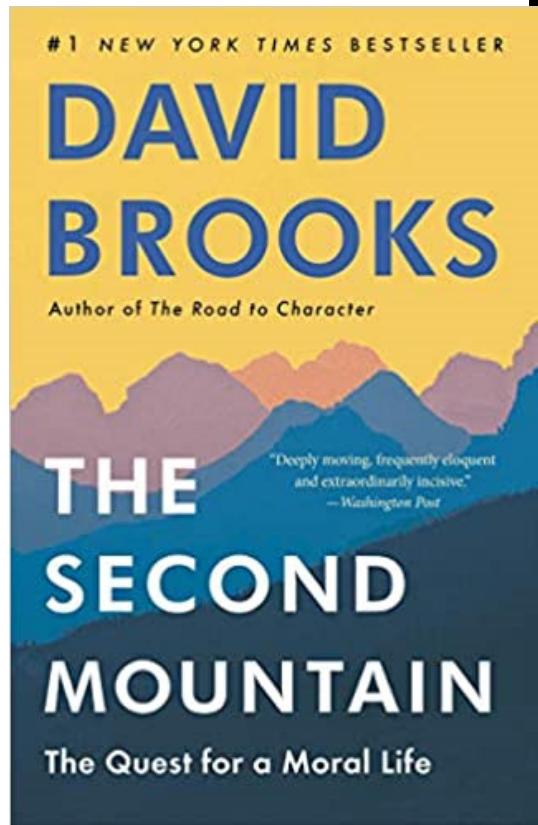
# Hawaiian Eye<sup>SM</sup> and Retina



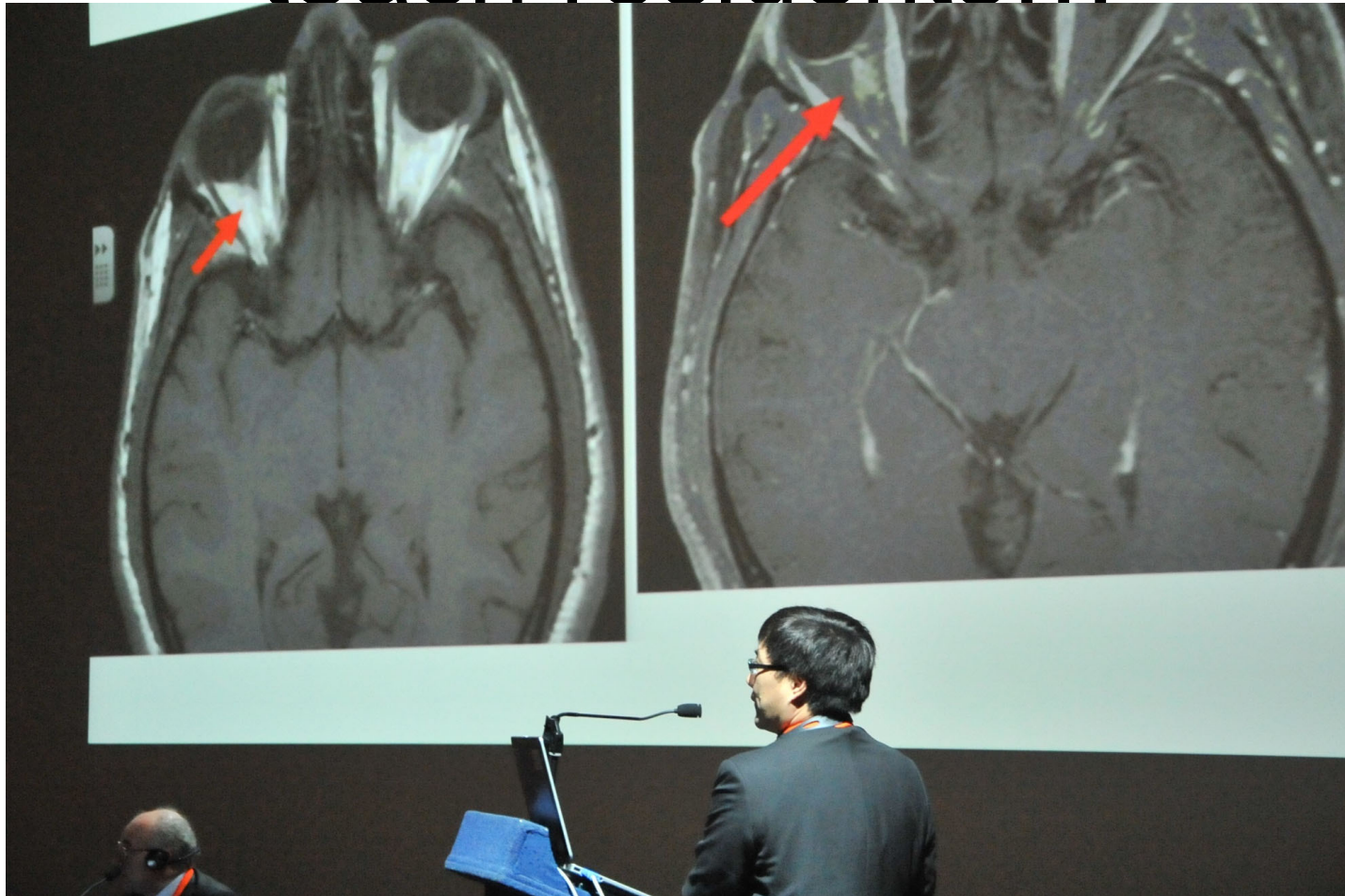
Don't forget to....

- Join me for the Banyan Tree session

# Defeating burnout by climbing my “second mountain”



How my Mom thinks I  
teach residents....





How I  
think I am  
teaching

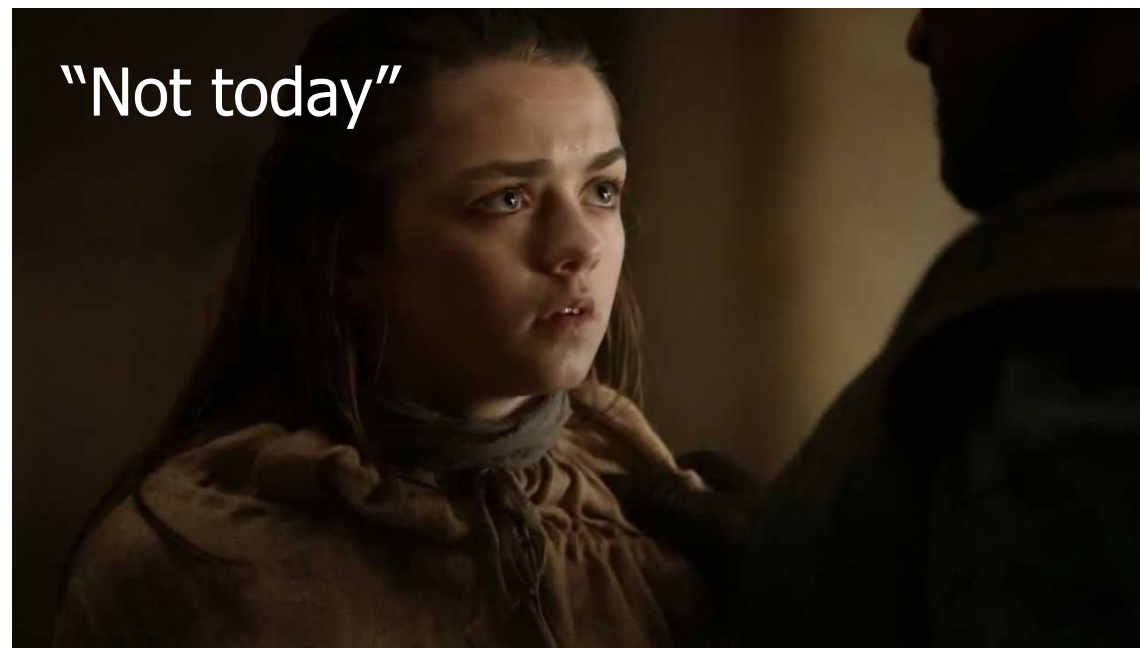
How my residents think I  
teach them....



# How residents really learn



...and when the god of death comes for you or your patient...what shall we say?



# Not today, not on my watch



# Don't forget to vote



# Thanks for your time and attention

- **Andrew G. Lee, MD**
- Herb and Jean Lyman Professor of Ophthalmology, Neurology and Neurosurgery, Weill Cornell Medical College and Chair, Blanton Eye Institute
- Chair, Department of Ophthalmology, Houston Methodist Hospital, Houston, TX
- Adjunct Professor, University of Iowa Hospitals & Clinics, Iowa City, Iowa, Baylor COM, UTMB, UTMDACC



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Started with audience participation  
and we end with same

