

# Neuro-Ophthalmology Cases

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# Disclosures

- Nancy J. Newman:
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- Valerie Biousse:
  - Consultant for GenSight Biologics
- Cristian Luco:
  - No financial interest

# Learning Objectives

- To become better capable of diagnosing a appropriately managing afferent system neuro-ophthalmology cases
- To become better capable of diagnosing a appropriately managing efferent system neuro-ophthalmology cases

# Neuro-Ophthalmology Cases

- Key Message:
  - Where
  - Why
  - What
  - Now what?
- Reference:
  - Biousse V, Newman NJ. Neuro-Ophthalmology Illustrated. Thieme, 2<sup>nd</sup> ed. 2016.



- **CASE I**

# Emergency consult for 66 RHWMM with “blown pupils” after CABG

- PMHx:
  - CAD, unstable angina
  - S/p CABG, angioplasties
- Medications:
  - ASA, diltiazem, allopurinol, nitroglycerin
- FamHx:
  - Coronary artery disease (father)
  - Subarachnoid hemorrhage (brother)

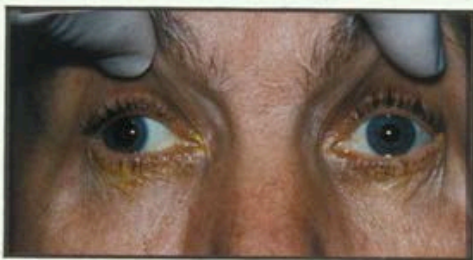
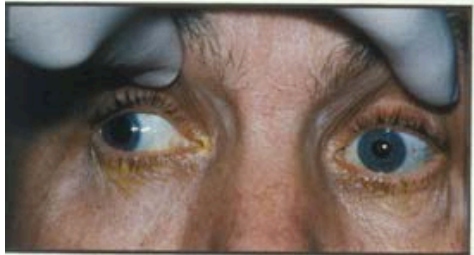
# HPI

- Coronary artery bypass graft surgery (complicated by angina, intra-aortic balloon pump) - Post-op routine
- Post-op day 2:
- Severe headache, photophobia, blurred vision
  - Rx'd Percocet some help
  - 4 hrs later: Headache and “blown pupils”

# Examination

- BP = 120/51, NSR, afebrile
- Somnolent, easily rousable, fully oriented
- Ptosis OU, complete right, partial left
- Near vision: 20/40 OD, 20/30 OS
- Confrontation VFs: full both eyes
- Pupils: 8 mm nonreactive OD, 6 mm trace reactive OS. No RAPD
- Poor adduction, elevation, depression both eyes, right eye worse than left
- Fundi: normal both eyes
- Neurologic exam otherwise normal







- **CASE 2**



# 55 yo woman with diplopia

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- PMHx: cholecystectomy, hysterectomy (endometriosis)
- Medications: None
- No tobacco, no alcohol
- Fam Hx: unremarkable

# 55 yo woman with diplopia

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- Dec 2004: right retro-orbital headaches
  - Episodic, isolated
- Feb 2005: still has episodic pain
  - Brain CT with contrast: normal
- March 2005: Acupuncture for headaches
- March 20, 2005: headaches worse, nausea, diplopia, right ptosis

# 55 yo woman with diplopia

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- March 21: neurologist
  - Ptosis OD, partial adduction OD
  - Right pupil sluggish
  - MRI brain with gad: normal
  - MRA and MRV: normal
  - CBC, ESR, CRP: normal

# Neuro-Op consultation (March 25)...

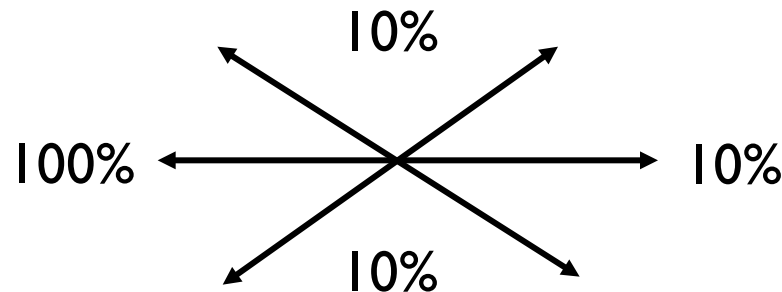
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- Neurologist not sure what to do at this point

# Neuro-Op consultation

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	OD	OS
VA	20/25	20/25
Pupils	Poorly reactive	Reactive
	No RAPD	
Lids	4 mm ptosis	Normal
Fundus	Normal	Normal
EOM		Full





- **CASE 3**



# 51 year old man s/p motor vehicle accident 3 months ago

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- No past medical history
- Rear-ended and hit back of head on seat
- No loss of consciousness
- "Blind" both eyes X 12-24 hours
- Eyes "shaking" in Emergency Department
- Eyes continue to shake -- worse with head and eye movements
- Neuro-ophthalmology exam normal except for:



# **BREAK**

- **CASE 4**

37 year old white woman with visual loss  
right eye

Past Medical History: Unremarkable

Medications: None

Family History: Migraines (mother)

5 weeks prior:

Irritation/itching right eye

Better with artificial tears

5 days later:

Decreasing vision in right eye lower visual field

Worsened over 4-5 days

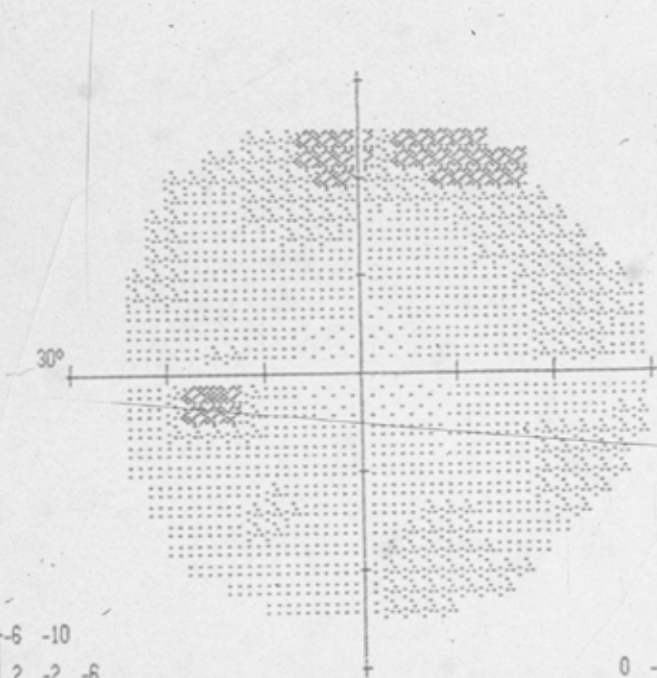
No headache, pain, pain on eye movement

No previous visual loss or neurologic dysfunction

Vision failed to recover over next 3-4 weeks

# Examination:

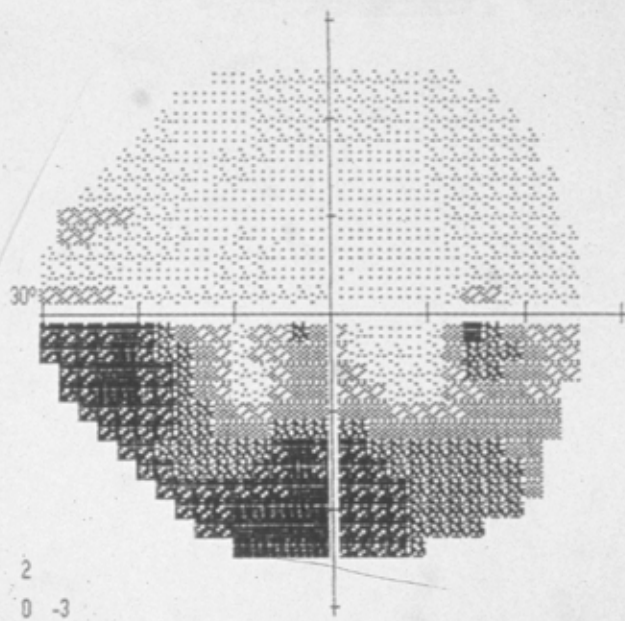
Vision:	20/20	20/20
Color:	14/14	14/14
	20% red desat	
Orbits:	Normal	Normal
SLE:	Normal	Normal
IOPs:	14	14
Pupils:	+ RAPD	
EOMs:	Full	Full



GLAUCOMA HEMIFIELD TEST (GHT)

			-2	-9	-6	-10			
		-1	-4	-5	2	-2	-6		
	-5	-1	0	-3	-2	-2	-4	-4	
	-1		-1	0	1	-4	-2	-8	0
	-2		-2	0	1	-1	-5	-2	-2
	-4	-2	-5	-1	-5	-1	-3	-7	
	-4	-6	-4	-3	-7	0			
	-4	0	-6	-7					

PATTERN  
DEVIATION



GLAUCOMA HEMIFIELD TEST (GHT)

						2	-4	-1	2	
			0	-2	0	-1	0	-3		
	-6	-2	-3	0	0	-1	-3	-5		
	-4	0	-2	-6	-3	2	-1	-3		
	-23	-29	-16	-7	-20	-6	0	-12		
	-29	-21	-6	-17	-11	-7	-12	-12		
	-19	-19	-30	-23	-22	-19				
	-29	-29	-27	-20						

PATTERN  
DEVIATION





- **CASE 5**



# **19 yo woman with visual loss**

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- Past medical history: Obese
- Meds: None
- No tobacco, no alcohol
  
- Family history: Unremarkable

# 19 yo woman with visual loss

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- Past 2 weeks:
  - severe headaches
  - Rapidly progressive visual loss OU
  - Diplopia

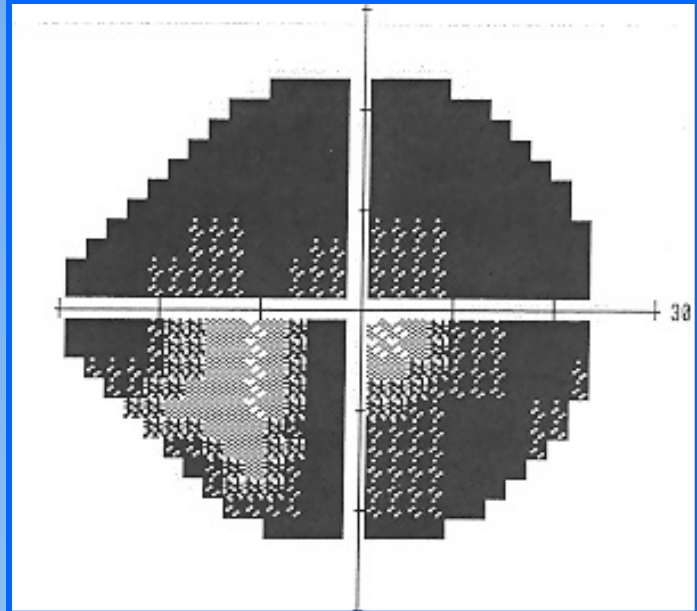
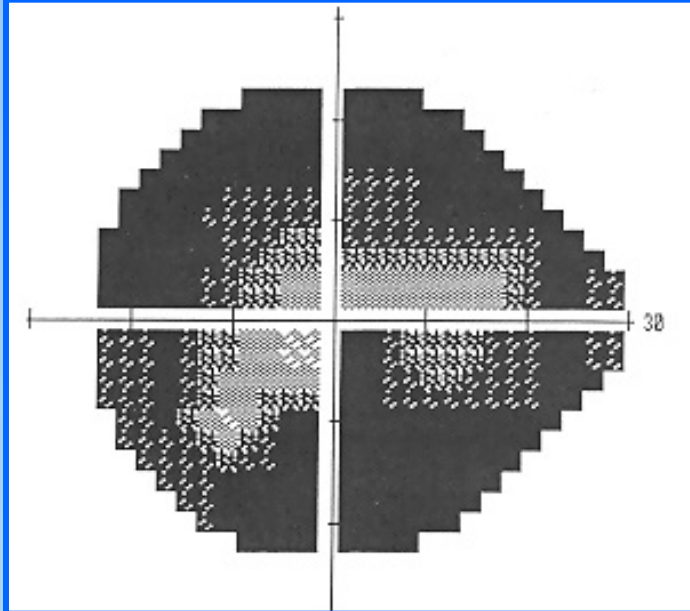
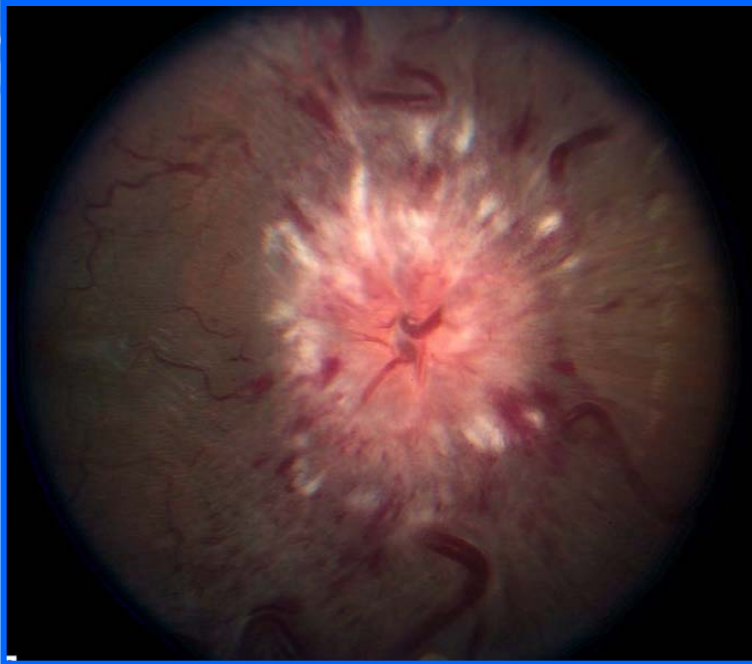
## Examination

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	Right eye	Left eye
VA	20/100	20/30
CV	3/14	10/14
SLE/IOP	Normal	Normal
Pupils	No RAPD	
Lids	Normal	Normal

# Extraocular Movements: Abduction deficit / Esotropia







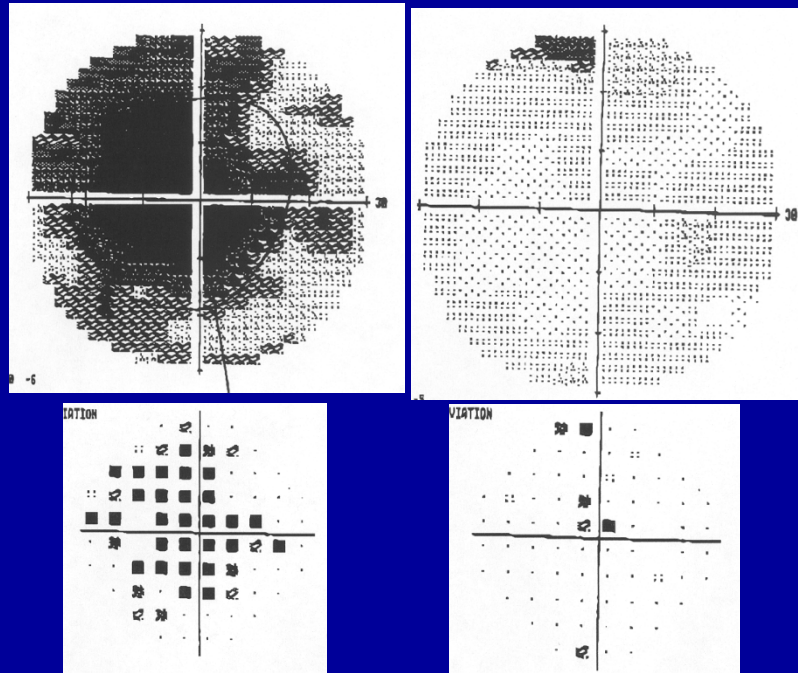
- **CASE 6**

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- ◆ **20-yo WM with visual loss in both eyes**
  - ◆ **PMHx**
    - ◆ **Unremarkable**
  - ◆ **Fam Hx:**
    - ◆ **Unremarkable**
  - ◆ **College student – no ETOH or drugs**

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- ◆ **Age 8: told he had « swelling OU » during routine examination**
    - ◆ **Asymptomatic**
    - ◆ **Observed yearly, without change**

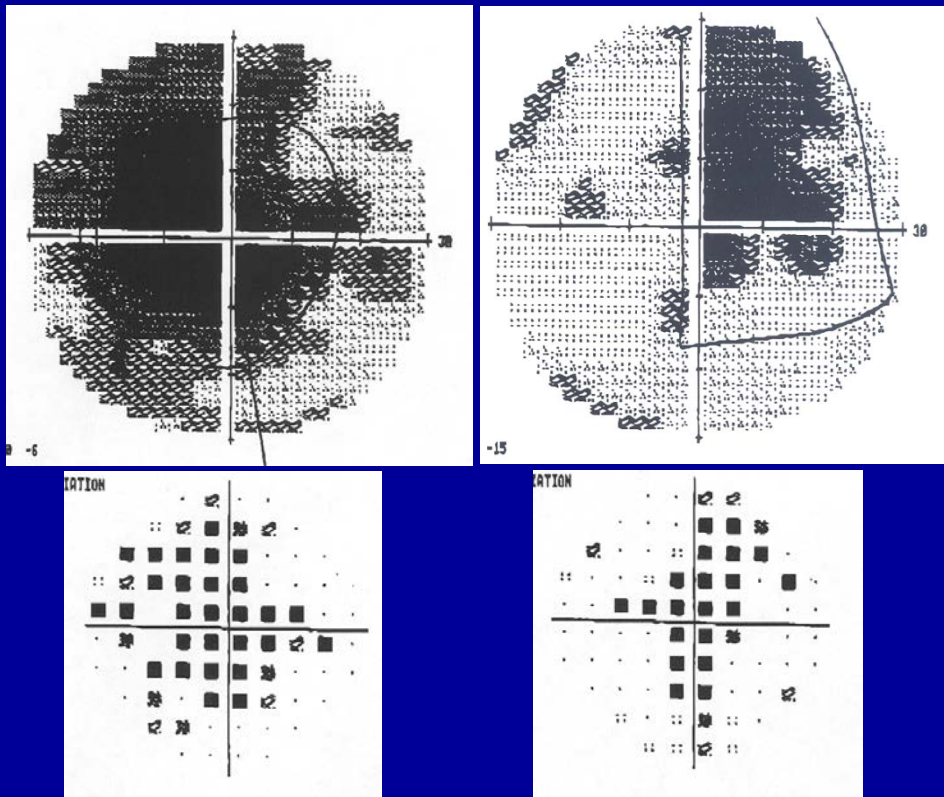


- ◆ Age 20 (8 months prior seeing us)
  - ◆ Sudden, painless visual loss OS
    - ◆ VA: 20/20 OD; 20/200 OS
    - ◆ “Swelling” OS



- 
- ◆ **MRI brain/orbits: normal**
  - ◆ **CBC, bartonella, toxo, RPR, FTA:  
normal or negative**

- ◆ 6 months later:
  - ◆ Visual loss OD
  - ◆ VA: 20/100 OD; CF OS



- 
- ◆ **Repeat MRI: normal**
  - ◆ **« More blood tests » : all normal**
  - ◆ **Lumbar puncture:**
    - ◆ **OP: 16 cm**
    - ◆ **CSF contents: normal**

# Examination 2 months later

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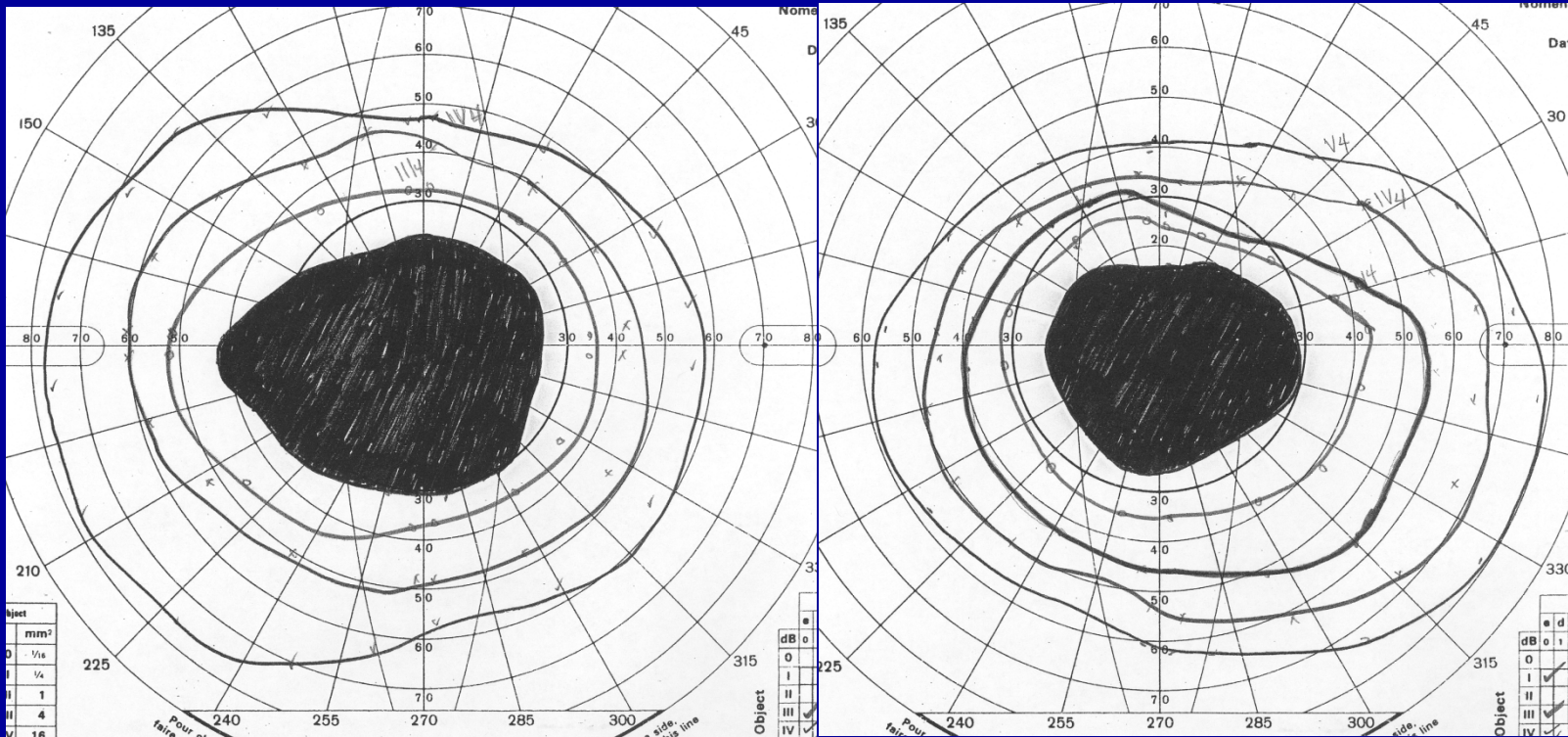
**OD**

**OS**

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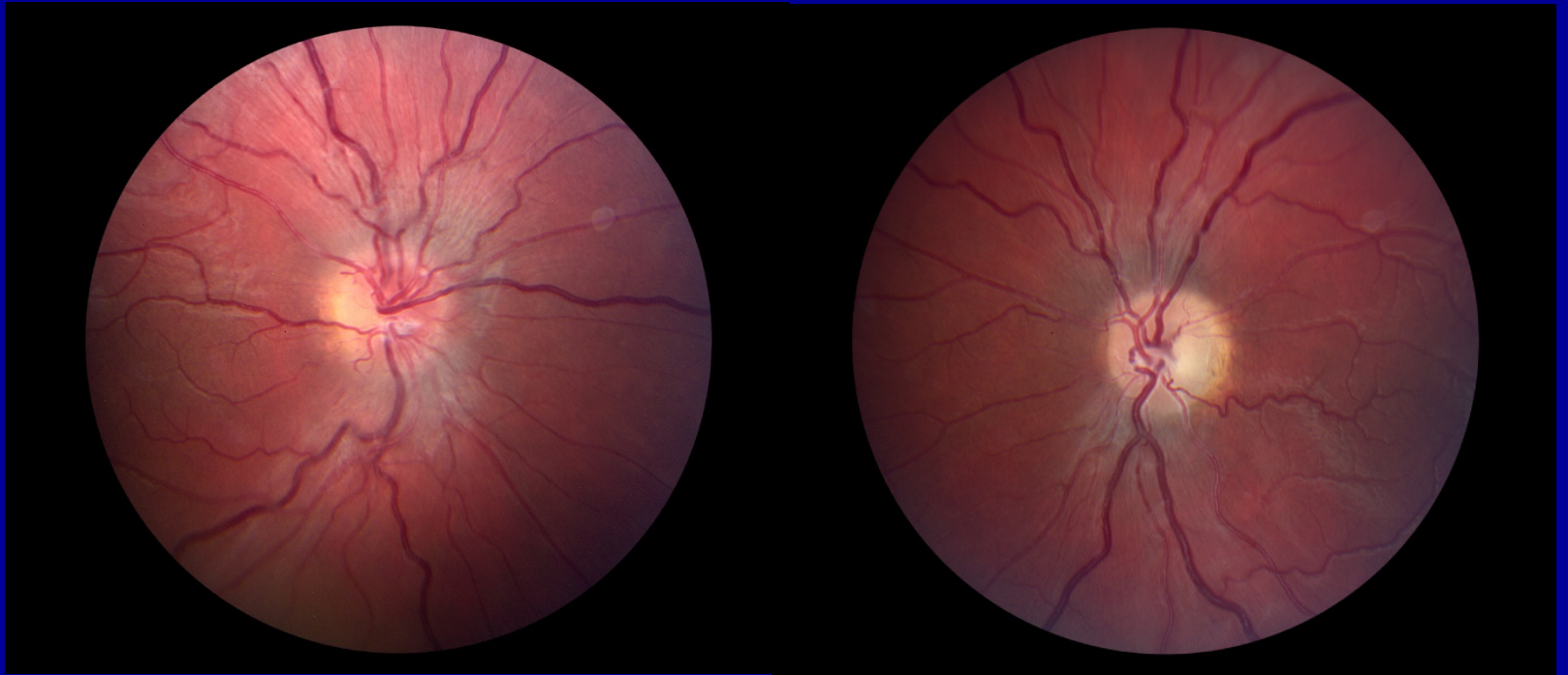
◆ <b>VA</b>	<b>CF</b>	<b>CF</b>
◆ <b>Col Vis</b>	<b>No control</b>	<b>No control</b>
◆ <b>Orbit</b>	<b>Normal</b>	<b>Normal</b>
◆ <b>Lid</b>	<b>Normal</b>	<b>Normal</b>
◆ <b>IOP</b>	<b>14</b>	<b>15</b>
◆ <b>SLE</b>	<b>Normal</b>	<b>Normal</b>
◆ <b>Pupils</b>	<b>Normal</b>	<b>1.2 RAPD</b>
◆ <b>EOM</b>	<b>Full</b>	<b>Full</b>

# Goldmann Visual Fields



# Fundus

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- **CASE 7**



# Case

- 41 yo woman with visual loss in left eye
- PMHx:
  - Hypertension, borderline diabetes
  - Migraine headaches (no aura)
- Medications:
  - Hydrochlorothiazide, aspirin 81, vitamins, ibuprofen prn

# HPI

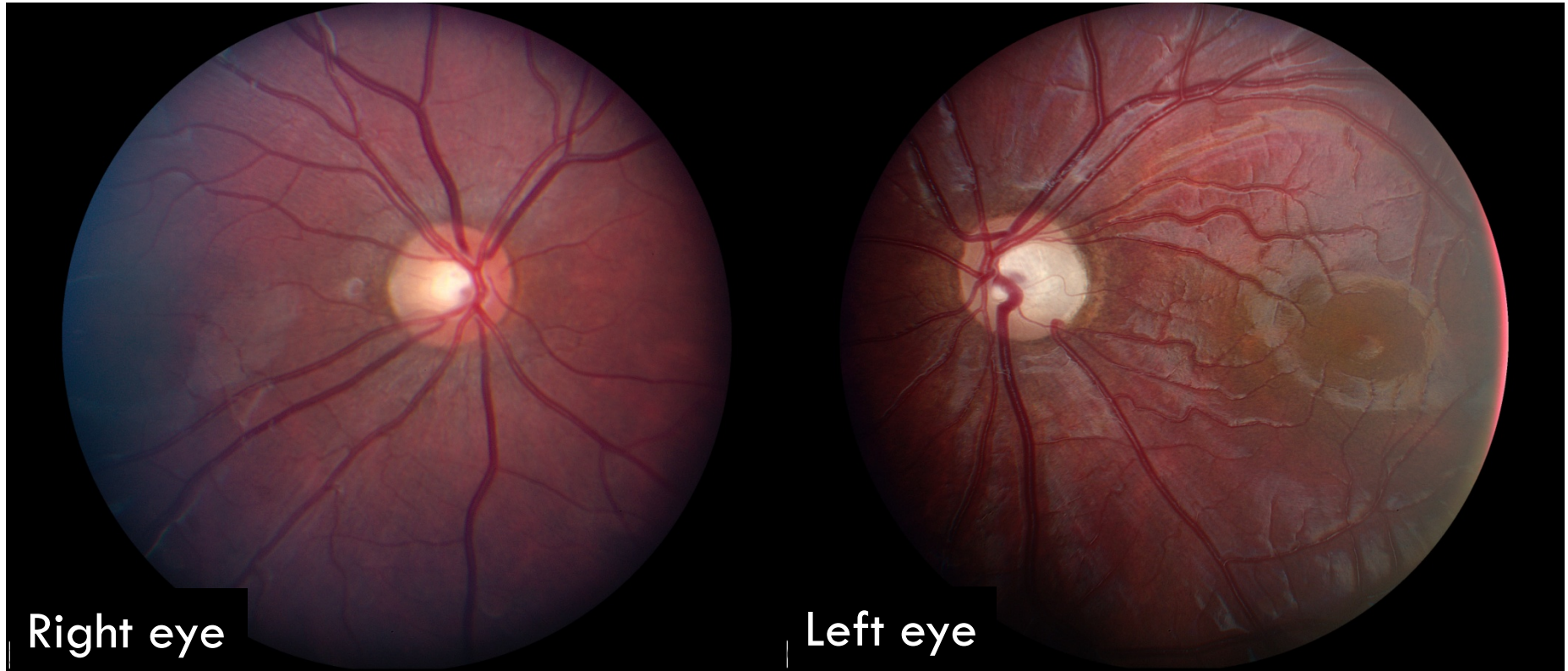
- Followed by neurologist for episodes of tingling of both legs and occasionally left arm shaking
  - Normal brain MRI
- Saw ophthalmologist for annual visit:
  - Decreased vision left eye
  - Left optic nerve pallor
  - => “Left optic neuritis”

- Neurologist:
  - ▣ Repeated brain MRI (normal)
  - ▣ Planned LP for possible multiple sclerosis
  
- Patient:
  - ▣ Panicked
  - ▣ Refused LP
  - ▣ Second opinion

# Neuro-Ophthalmology

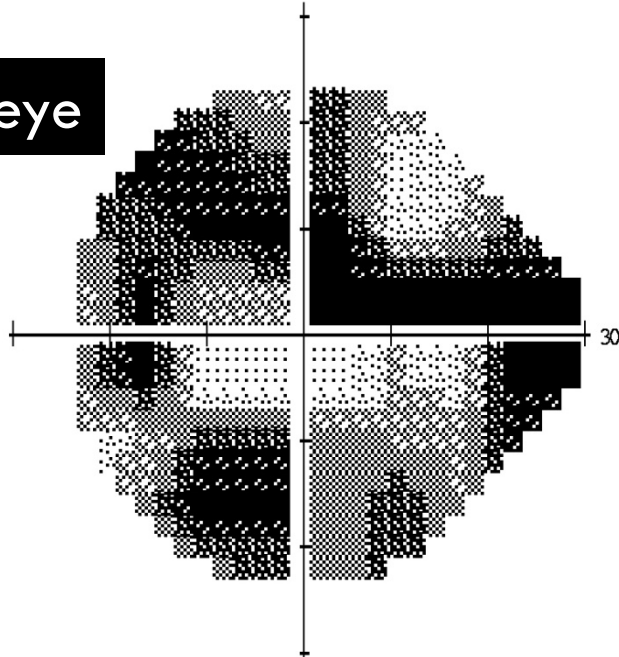
	<u>Right eye</u>	<u>Left eye</u>
□ Visual acuity	20/20	20/40-
□ Color vision	14/14	3/14
□ Slit lamp	Mild cataracts	
□ IOP	12	13
□ Pupils	Normal	RAPD++
□ Eye movements	Full	Full

# Fundus Examination

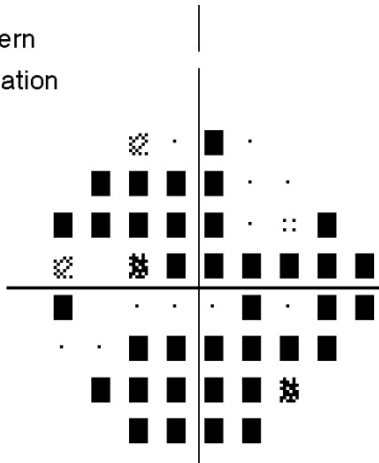


# Humphrey Visual Fields

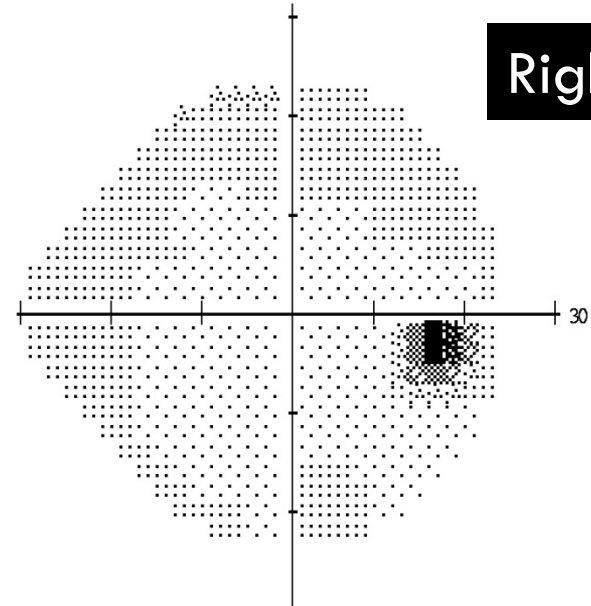
Left eye



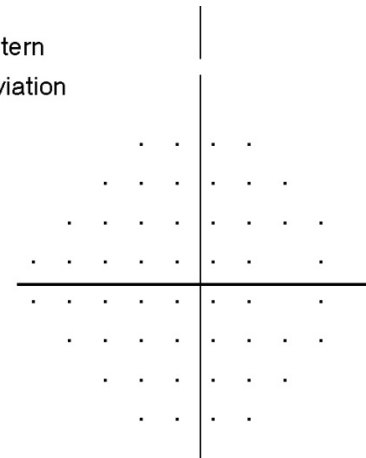
Pattern  
Deviation



Right eye

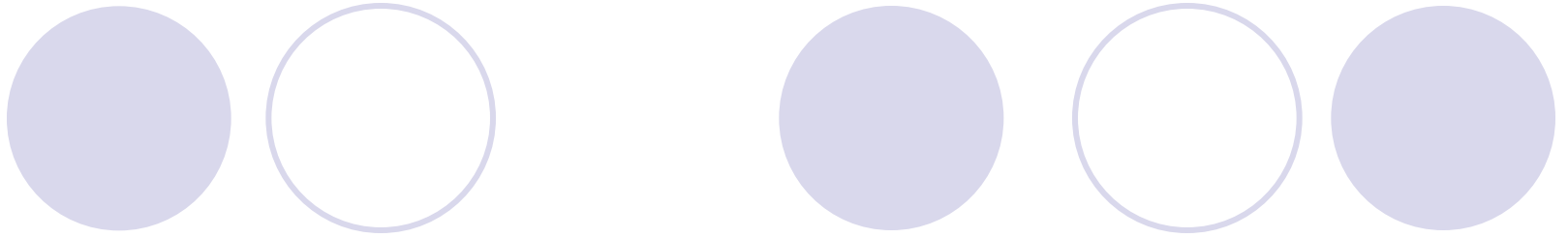


Pattern  
Deviation



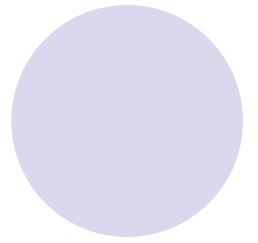
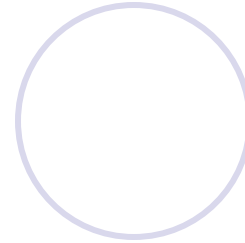
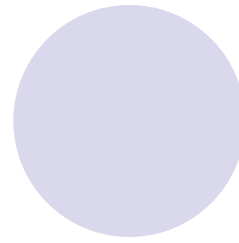
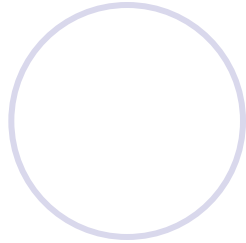
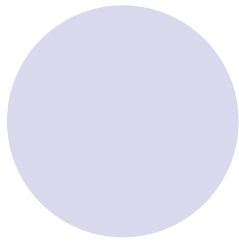


- **CASE 8**



- 17 y/o man with anisocoria
- Myelodysplastic syndrome
- S/p bone marrow transplant
- Intubated for respiratory compromise
- Two days after extubation:
  - New onset seizures
  - Anisocoria left pupil larger than right

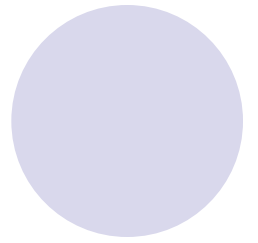
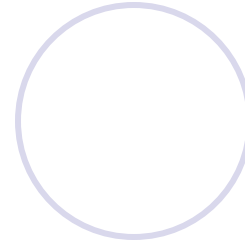
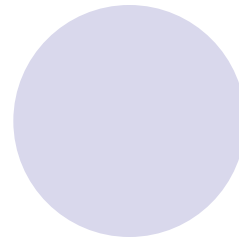
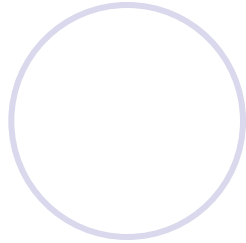
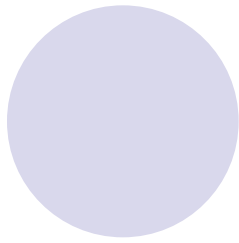




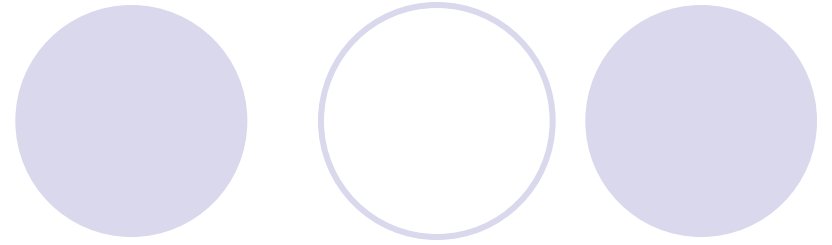
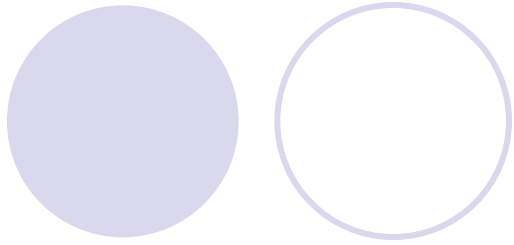
- **Neurologic consultation:**

- Dilated left pupil

- Normal visual acuity and EOMs



- **Ophthalmologic consultation:**
  - Normal visual acuity, intraocular pressures, anterior segment, fundi
  - Normal EOMs, lids
  - OD pupil normal; OS 8mm and minimally reactive, no RAPD




- **Work-up:**


- MRI/MRA and LP: all normal


- Seizures secondary to metabolic derangement



- **CASE 9**

- 
- 48 year old man with difficulty reading after coronary artery bypass surgery
  - PMHx:
    - Hypertension
    - Hypercholesterolemia
  - Had good vision (reading glasses)

- 
- Developed chest pain from angina
  - Severe systemic hypertension
  
  - => Coronary artery bypass graft (off pump)
  - No immediate complication

- 
- A few days later:
    - Difficulty reading

# Seen Emergently

- BP 148/86; HR 58, regular
- Mild obesity
- Neurologic examination normal
- Visual acuity, color vision, confrontation visual fields, anterior segment, intraocular pressures, pupils, extraocular movements:
  - Normal





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- Send an email to Valerie Biousse [vbiousse@emory.edu](mailto:vbiousse@emory.edu) to receive the PDF of the discussion slides by email