Course # 109

SECO2026
THE EDUCATION DESTINATION™

Is it Real or No Big Deal?

Kelly Malloy, OD

Please Silence All Mobile Devices.

attendseco.com

1

SECO2026
THE EDUCATION DESTINATION™

Kelly Malloy, OD

Disclosure statements:

No financial relationships with ineligible companies to disclose.

All relevant relationships have been mitigated.

2

Is it Real, or No Big Deal?

Kelly A. Malloy, OD, FAAO, Diplomate

3

Disclosure statement:

I have no financial disclosures within the past 2 years.

4

5

6

27 YEAR-OLD WOMAN

Presents urgently with a few complaints x 2-3 weeks

1. Flash in peripheral vision of OD
   - Like the phone camera (3x/hr now)
2. Blurry vision, smudge OD
3. Headache (frontal) last week (resolved)
   - No eye pain (w or wo mvmt)

She recently traveled to Puerto Rico with her family and returned home 2-3 weeks ago.

7

Upon return from the trip, her family all felt sick

She did a COVID test, which was negative.

Her symptoms were the worst of everyone. She had a fever and a sore throat, and thinks she had an ear infection. She saw her PCP, who gaze her a Z-pack.

On the 4th of 5 days, she d/c the med because she developed a skin rash and her skin was itching.

8

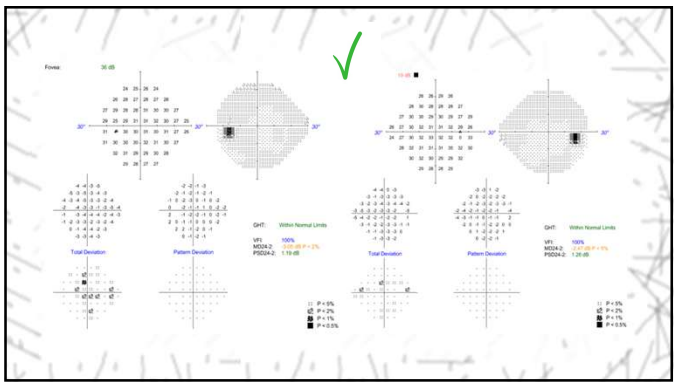
Hx of anemia. No other known health problems

Initial Visit

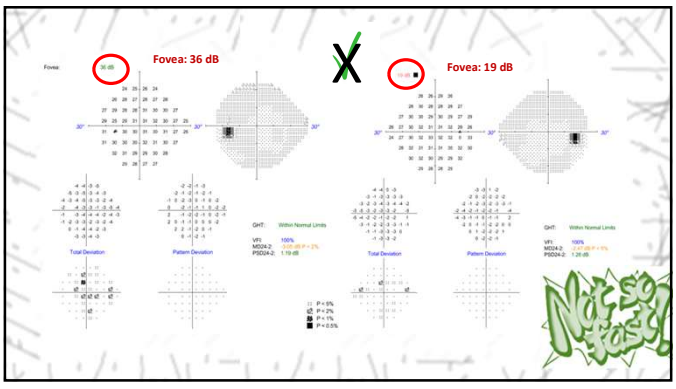
AFFERENT	EFFERENT
VA: 20/20 OD & OS Color: 7/7 OD & OS Pupils: (-) RAPD CF: Full OU	EOMS: Full, comitant No ptosis or proptosis No nystagmus No anisocoria

9

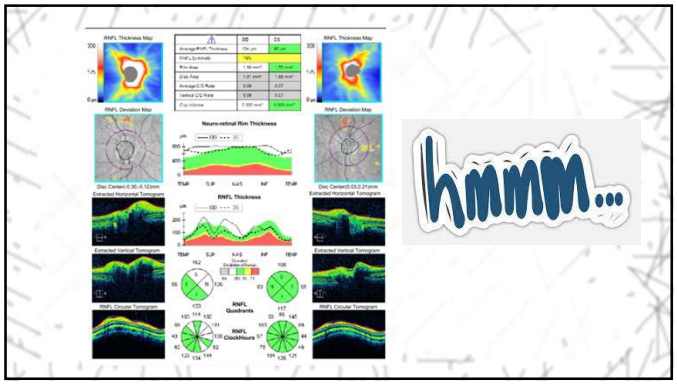
10



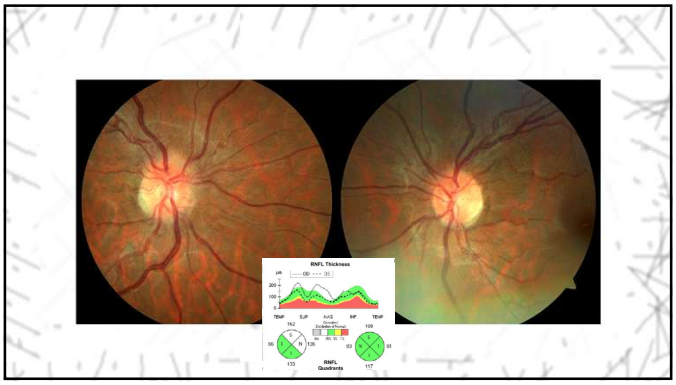
11



12



13



14

15

CAUSES OF INDISTINCT OPTIC DISC MARGINS

Papilledema	LHON
AAION	Diabetic Papillopathy
NAION	Disc Drusen
Optic Neuritis	Vitreopapillary Traction
Perioptic Neuritis	Hypoplastic Disc
Neuroretinitis	Other Anomalous Disc
Emboli / Ischemia	

16

CAUSES OF INDISTINCT OPTIC DISC MARGINS

~~Papilledema~~ (Bilateral ?)	LHON
~~AAION~~ (She's too young)	~~Diabetic Papillopathy~~(She's not diabeti
NAION	Disc Drusen
Optic Neuritis	Vitreopapillary Traction
Perioptic Neuritis	Hypoplastic Disc
Neuroretinitis	Other Anomalous Disc
~~Emboli / Ischemia~~ (No underlying health issues)	

17

CAUSES OF INDISTINCT OPTIC DISC MARGINS

~~Papilledema~~ (Bilateral)	LHON
~~AAION~~ (She's too young)	~~Diabetic Papillopathy~~(She's not diabeti
~~NAION~~ (No RAPD)	Disc Drusen
~~Optic Neuritis~~ (No RAPD)	Vitreopapillary Traction
Perioptic Neuritis	Hypoplastic Disc
Neuroretinitis	Other Anomalous Disc
~~Emboli / Ischemia~~ (No underlying health issues)	

18

CAUSES OF INDISTINCT OPTIC DISC MARGINS

~~Papilledema~~ (Bilateral)

~~AAION~~ (She's too young)

~~NAION~~ (No RAPD)

~~Optic Neuritis~~ (No RAPD)

Perioptic Neuritis

Neuroretinitis

~~Emboli / Ischemia~~ (No underlying health issues)

~~LHON~~ (Much more likely in males)

~~Diabetic Papillopathy~~ (She's not diabeti

Disc Drusen

Vitreopapillary Traction

Hypoplastic Disc

Other Anomalous Disc

19

CAUSES OF INDISTINCT OPTIC DISC MARGINS

~~Papilledema~~ (Bilateral)

~~AAION~~ (She's too young)

~~NAION~~ (No RAPD)

~~Optic Neuritis~~ (Nom RAPD)

Perioptic Neuritis

Neuroretinitis REAL!

~~Emboli / Ischemia~~ (No underlying health issues)

~~LHON~~ (Much more likely in males)

~~Diabetic Papillopathy~~ (She's not diabeti

Disc Drusen NO

Vitreopapillary Traction BIG

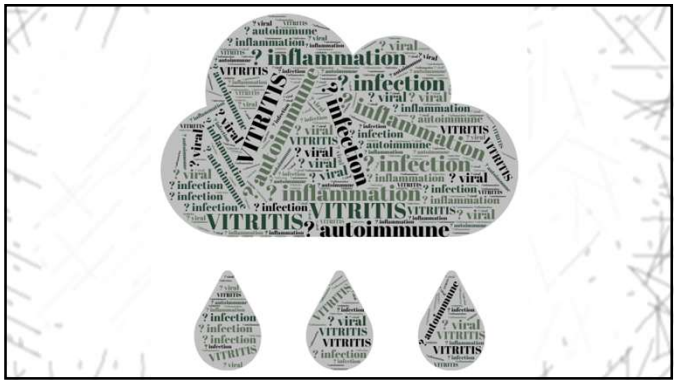
Hypoplastic Disc

Other Anomalous Disc DEAL!

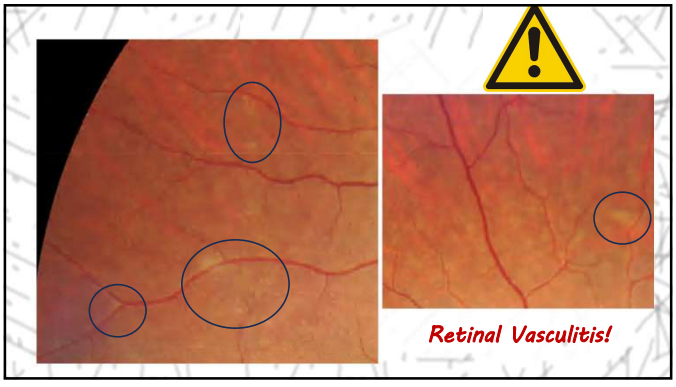
20

21

22



23



24

Retinal Vasculitis!

Ocular diseases
1. Idiopathic
2. Eales disease
3. Birdshot retinochoroidopathy
4. Intermediate uveitis
5. Frosted branch angiitis
6. IRVAN
7. Acute multifocal hemorrhagic retinal vasculitis

Infectious diseases
1. Toxoplasmosis
2. Tuberculosis
3. Syphilis
4. Lyme disease
5. Cytomegalovirus
6. Herpes simplex
7. Varicella zoster
8. Whipple disease
9. Human T-cell lymphotropic virus
10. Brucellosis
11. Hepatitis
12. Cat scratch disease
13. HIV

Systemic diseases
1. Admantiades-Behcet disease
2. Sarcoidosis
3. Crohn disease
4. SLE
5. Wegener granulomatosis
6. Polyarteritis nodosa
7. Buerger disease
8. Relapsing polychondritis
9. Antiphospholipid syndrome
10. Churg-Strauss syndrome
11. Sjögren syndrome
12. Rheumatoid arthritis
13. Microscopic polyangiitis
14. Dermatomyositis
15. Takayasu disease
16. Primary central nervous system lymphoma
17. Acute leukemia
18. Cancer-associated retinopathy

https://entokey.com/10-retinal-vasculitis/

25

Retinal Vasculitis!

Ocular diseases
1. Idiopathic
2. Eales disease
3. Birdshot retinochoroidopathy
4. Intermediate uveitis
5. Frosted branch angiitis
6. IRVAN
7. Acute multifocal hemorrhagic retinal vasculitis

Infectious diseases
1. Toxoplasmosis
2. Tuberculosis
3. Syphilis
4. Lyme disease
5. Cytomegalovirus
6. Herpes simplex
7. Varicella zoster
8. Whipple disease
9. Human T-cell lymphotropic virus
10. Brucellosis
11. Hepatitis
12. Cat scratch disease
13. HIV

She had an acute illness with fever, sore throat, ear ache, etc

Systemic diseases
1. Admantiades-Behcet disease
2. Sarcoidosis
3. Crohn disease
4. SLE
5. Wegener granulomatosis
6. Polyarteritis nodosa
7. Buerger disease
8. Relapsing polychondritis
9. Antiphospholipid syndrome
10. Churg-Strauss syndrome
11. Sjögren syndrome
12. Rheumatoid arthritis
13. Microscopic polyangiitis
14. Dermatomyositis
15. Takayasu disease
16. Primary central nervous system lymphoma
17. Acute leukemia
18. Cancer-associated retinopathy

https://entokey.com/10-retinal-vasculitis/

26

27

CAUSES OF INDISTINCT OPTIC DISC MARGINS

~~Papilledema~~ (Bilateral)

~~AAION~~ (She's too young)

~~NAION~~ (No RAPD)

~~Optic Neuritis~~ (No RAPD)

Perioptic Neuritis

Neuroretitis — REAL!

~~Emboli / Ischemia~~ (No underlying health issues)

~~LHON~~ (Much more likely in males)

~~Diabetic Papillopathy~~ (She's not diabeti

Drusen

Vitr… Traction

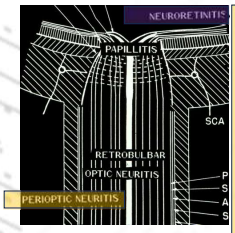
Hyp…

O… Anomal… isc

BIG DEAL!

28

Types of Optic Neuritis



We will initially focus on infectious processes

Perioptic Neuritis
Swollen optic disc
Visual function varies (can be good)
Can be painful
Most commonly due to
- Idiopathic
- Sarcoid
- Syphilis
- IgG4RD
- GPA
- GCA
- Behcet's
- Lupus
- TB
- Leukemia
- Herpes
- Viral encephalopathies
- Metastatic malignancy

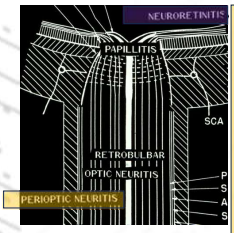
• Neuroretinitis
- Swollen optic disc
- Acute change in vision
- Painless
- Many have upper resp infxn
- Peripapillary exudative RD
- Macular star not present for 2 wks
- Most commonly due to:
  - Cat Scratch
  - Sarcoid
  - Syphilis
  - Lyme
  - Toxo
  - TB

Neither are ever related to MS!

29

Types of Optic Neuritis

She has already had symptoms for a few weeks, and there is no macular star.



We will initially focus on infectious processes

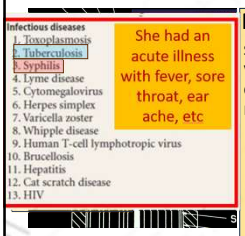
Perioptic Neuritis
Swollen optic disc
Visual function varies (can be good)
Can be painful
Most commonly due to
- Idiopathic
- Sarcoid
- Syphilis
- IgG4RD
- GPA
- GCA
- Behcet's
- Lupus
- TB
- Leukemia
- Herpes
- Viral encephalopathies
- Metastatic malignancy

• Neuroretinitis
- Swollen optic disc
- Acute change in vis…
- P… ss
- M… e upp… infxn
- Peripa… ative RD
- Macular… present for 2 wk…
- Most c… to:
  - …cratch
  - …coid
  - Syphilis
  - Lyme
  - Toxo
  - TB

Neither are ever related to MS!

30

Types of Optic Neuritis



She had an acute illness with fever, sore throat, ear ache, etc

We will initially focus on infectious processes

Perioptic Neuritis

Swollen optic disc
Visual function varies (can be good)
Can be painful
Most commonly due to
- Idiopathic
- Sarcoid
- Syphilis
- IgG4RD
- GPA
- GCA
- Behcet's
- Lupus
- TB
- Leukemia
- Herpes
- Viral encephalopathies
- Metastatic malignancy

Neuroretinitis

- Swollen optic disc
- Acute change in vision
- Painless
- Many have upper resp infxn
- Peripapillary exud[illegible]RD
- [illegible]lar star no[illegible] for 2 wks
- Mo[illegible]mmo[illegible]to:
  - [illegible]
  - Sa[illegible]
  - S[illegible]
  - [illegible]xo
  - TB

Neither are ever related to MS!

31

Initial labs ordered:

CBC w/ diff, platelets
ESR, CRP
Lyme titer
RPR, FTA-ABS
Quantiferon Gold *(IGRA: interferon gamma release assay)*
Bartonella quintana and Bartonella hensalae IgM & IgG
Toxoplasmosis gondii IgM and IgG

We will initially focus on infectious processes

If these are unrevealing, we will order additional tests for other infections, inflammations, autoimmune diseases.

32

Initial labs ordered:

CBC w/ diff, platelets
ESR, CRP
Lyme titer
RPR, FTA-ABS
Bartonella quintana and Bartonella hensalae IgM & IgG
Toxoplasmosis gondii IgM and IgG

MRI was considered, but the labs were reported before the MRI could be done.
So, now we are focusing our attention on treating the identified underlying etiology.

33

Initial labs ordered:

CRP *13mg/L*

RPR *Reactive with 1:32 titer*

FTA-ABS *Reactive*

+ RPR	+ FTA-ABS	Current Syphilis
+ RPR	- FTA-ABS	False Positive
- RPR	+ FTA-ABS	Prior Syphilis
- RPR	- FTA-ABS	No Syphilis

** Other STDs and HIV were subsequently ruled-out

34

NEUROSYPHILIS

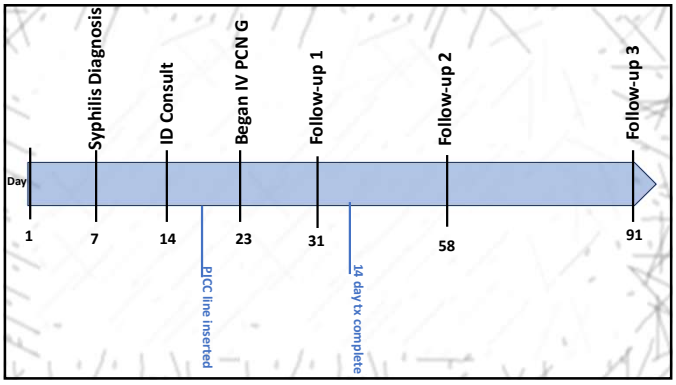
Syphilitic involvement of the CNS
- optic nerve
- retina

Definitively diagnosed with LP
- VDRL of CSF (most specific)
- FTA-ABS of CSF

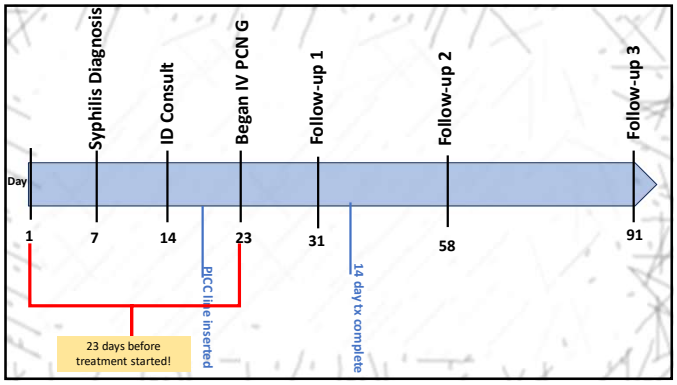
Treatment for neurosyphilis and ocular syphilis
•10-14 days of IV penicillin G (18-24 million units/day)

We referred to infectious disease for treatment. They felt diagnosis was clear without need for LP. Patient was treated as above.

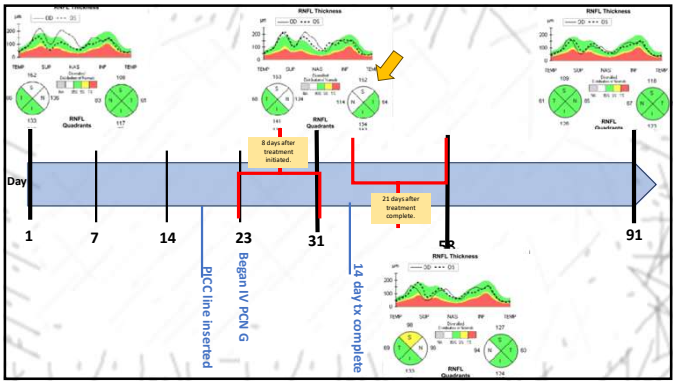
35



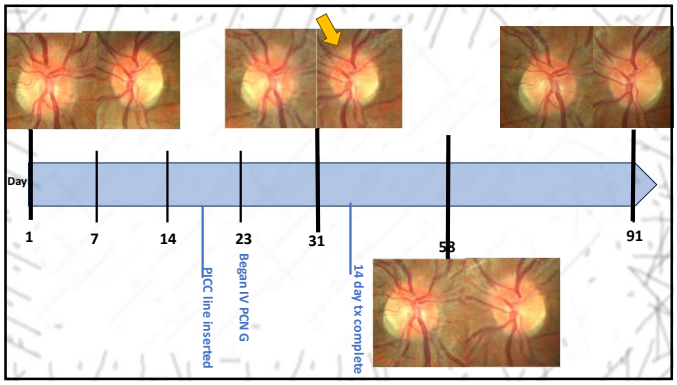
36



37



38



39

Be sure to include syphilis in your DDX. It can take on various presentations. (also remember congenital syphilis)

Syphilis rates are on the RISE, across the US (and in PR)

Syphilis is easily treatable and doesn't leave lasting effects if identified and treated early!!

Also, the stigma of STIs doesn't just happen from the patient side, it also comes from clinicians —many physicians think, "my patient doesn't have syphilis."

https://publichealth.jhu.edu/2024/why-is-syphilis-spiking-in-the-us

40

41

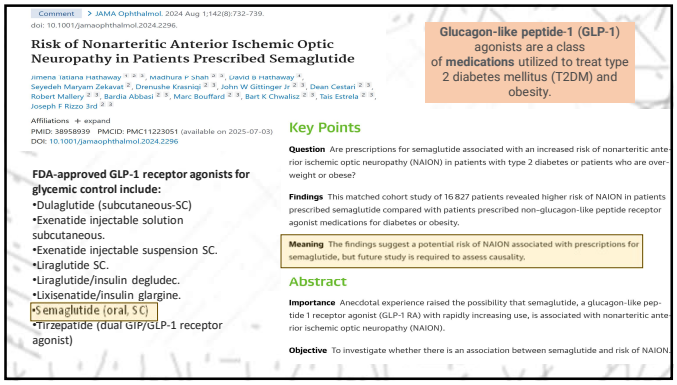
44 YEAR-OLD MAN

Referred to rule-out papilledema vs anomalous optic discs

He denies every symptom of increased ICP, or any other symptoms.

Health history is remarkable only for obesity for which he has been taking Wegovy for the past year. He has lost 75 lbs so far.

42



Comment > JAMA Ophthalmol. 2024 Aug 1;142(8):732-739.
doi: 10.1001/jamaophthalmol.2024.2296.

Risk of Nonarteritic Anterior Ischemic Optic Neuropathy in Patients Prescribed Semaglutide

Jimena Tatiana Hathaway [1 2 3], Madhura P Shah [2 3], David B Hathaway [4], Seyedeh Maryam Zekavat [2], Drenushe Krasniqi [2 3], John W Gittinger Jr [2 3], Dean Cestari [2 3], Robert Mallery [2 3], Bardia Abbasi [2 3], Marc Bouffard [2 3], Bart K Chwalisz [2 3], Tais Estrela [2 3], Joseph F Rizzo 3rd [2 3]

Affiliations + expand
PMID: 38958939 PMCID: PMC11223051 (available on 2025-07-03)
DOI: 10.1001/jamaophthalmol.2024.2296

FDA-approved GLP-1 receptor agonists for glycemic control include:
- Dulaglutide (subcutaneous-SC)
- Exenatide injectable solution subcutaneous.
- Exenatide injectable suspension SC.
- Liraglutide SC.
- Liraglutide/insulin degludec.
- Lixisenatide/insulin glargine.
- Semaglutide (oral, SC)
- Tirzepatide (dual GIP/GLP-1 receptor agonist)

Glucagon-like peptide-1 (GLP-1) agonists are a class of **medications** utilized to treat type 2 diabetes mellitus (T2DM) and obesity.

Key Points

Question Are prescriptions for semaglutide associated with an increased risk of nonarteritic anterior ischemic optic neuropathy (NAION) in patients with type 2 diabetes or patients who are overweight or obese?

Findings This matched cohort study of 16 827 patients revealed higher risk of NAION in patients prescribed semaglutide compared with patients prescribed non–glucagon-like peptide receptor agonist medications for diabetes or obesity.

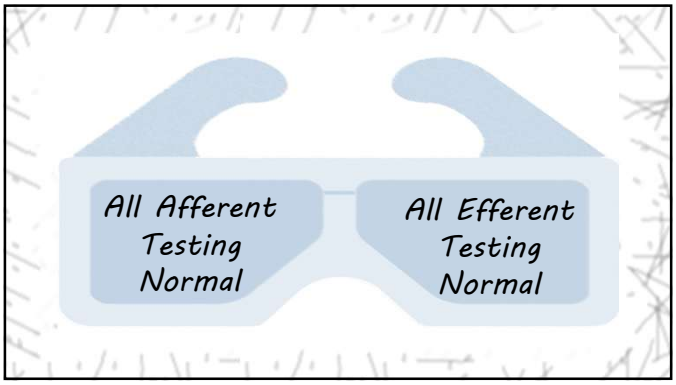
Meaning The findings suggest a potential risk of NAION associated with prescriptions for semaglutide, but future study is required to assess causality.

Abstract

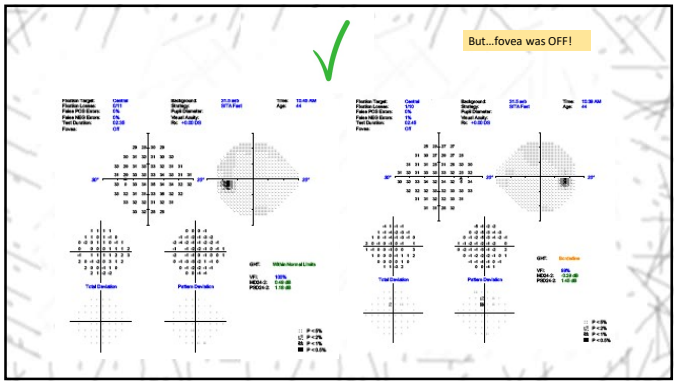
Importance Anecdotal experience raised the possibility that semaglutide, a glucagon-like peptide 1 receptor agonist (GLP-1 RA) with rapidly increasing use, is associated with nonarteritic anterior ischemic optic neuropathy (NAION).

Objective To investigate whether there is an association between semaglutide and risk of NAION.

43



44



45

46

CAUSES OF INDISTINCT OPTIC DISC MARGINS

Papilledema	LHON
AAION	Diabetic Papillopathy
NAION	Disc Drusen
Optic Neuritis	Vitreopapillary Traction
Perioptic Neuritis	Hypoplastic Disc
Neuroretinitis	Other Anomalous Disc
Emboli / Ischemia	

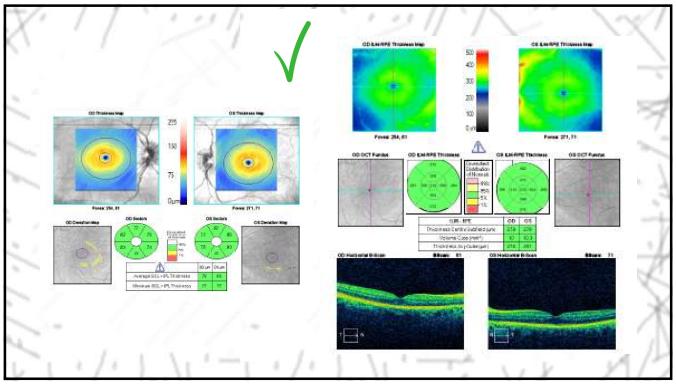
47

CAUSES OF INDISTINCT OPTIC DISC MARGINS

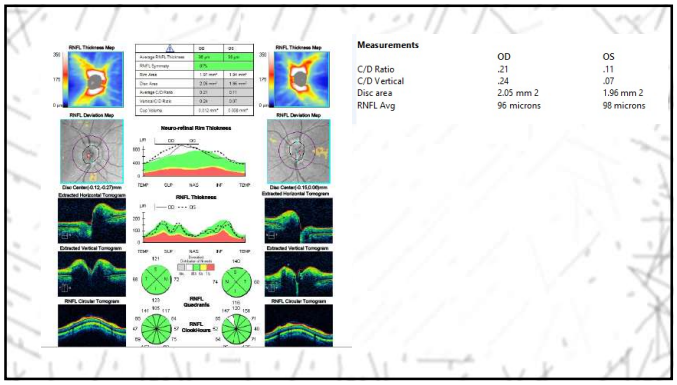
Papilledema REAL!	~~LHON~~
~~AAION~~	~~Diabetic Papillopathy~~
~~NAION~~	Disc Drusen NO
~~Optic Neuritis~~	Vitreopapillary Traction BIG
~~Perioptic Neuritis~~	Hypoplastic Disc
~~Neuroretinitis~~	Other Anomalous Disc DEAL!
~~Emboli / Ischemia~~	

48

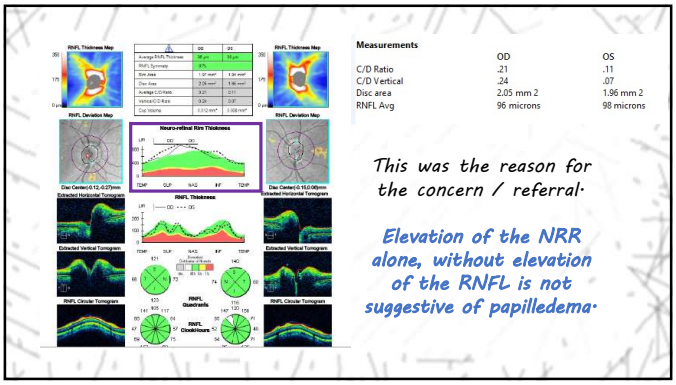
49



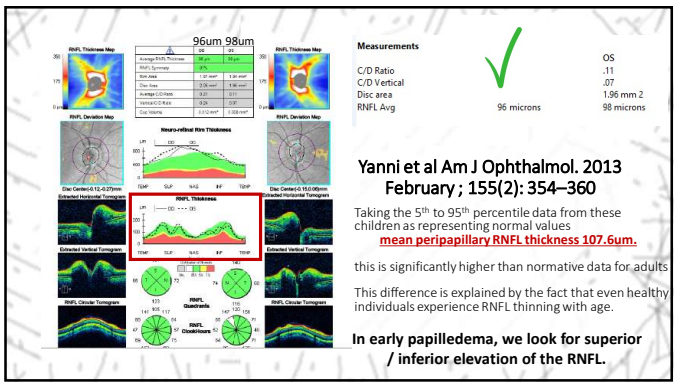
50



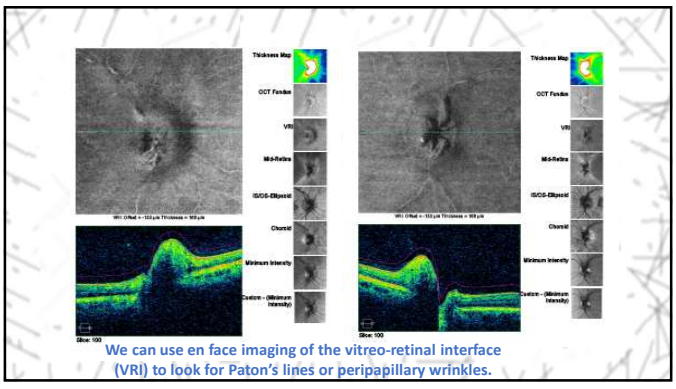
51



52



53



54

State-of-the-Art Review

OPEN

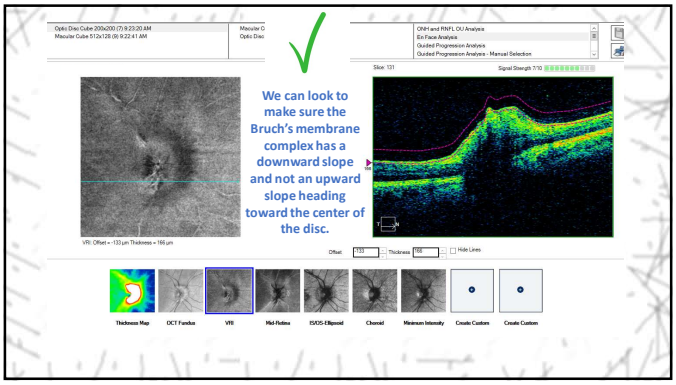
Section Editors: Fiona Costello, MD, FRCP(C)
Sashank Prasad, MD

Optical Coherence Tomography Neuro-Toolbox for the Diagnosis and Management of Papilledema, Optic Disc Edema, and Pseudopapilledema

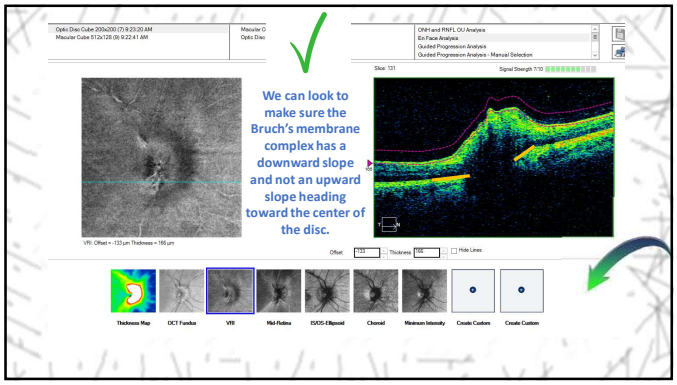
Patrick A. Sibony, MD, Mark J. Kupersmith, MD, Randy H. Kardon, MD, PhD

Sibony et al: *J Neuro-Ophthalmol 2021*; 41: 77-92

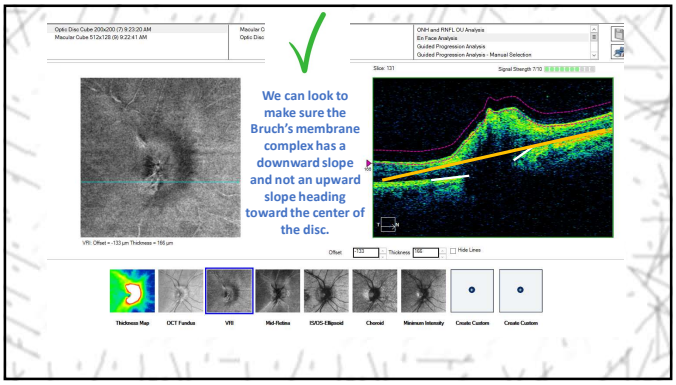
55



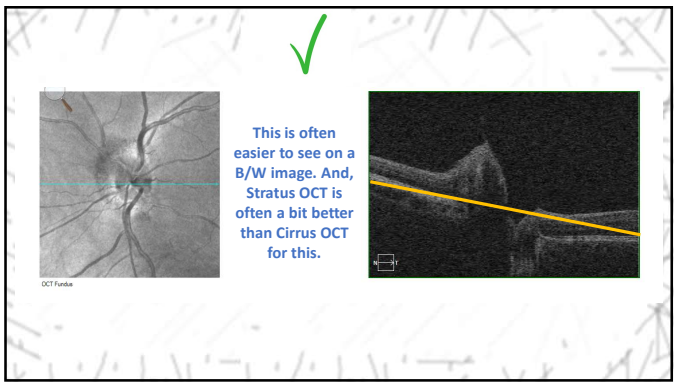
56



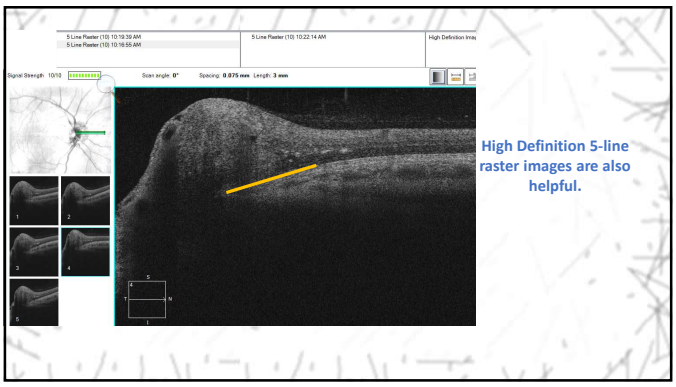
57



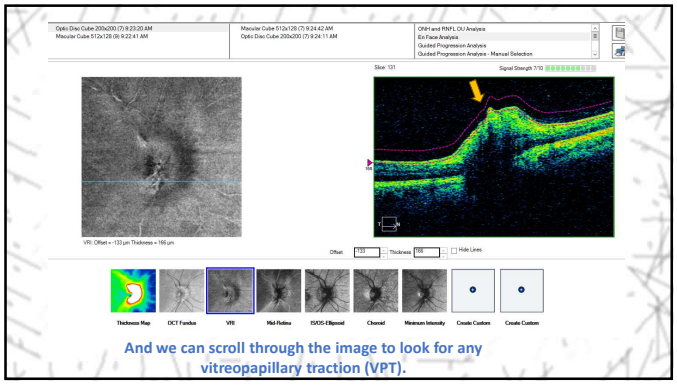
58



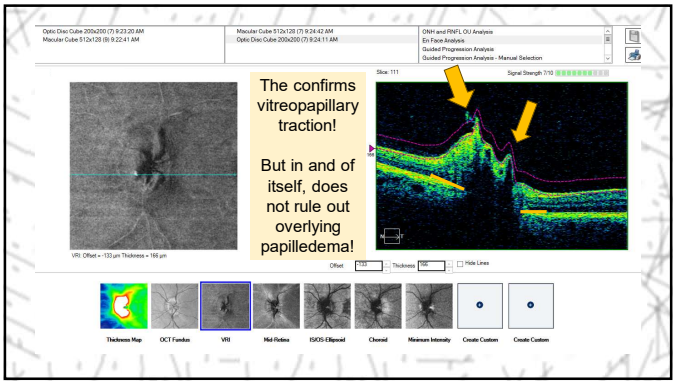
59



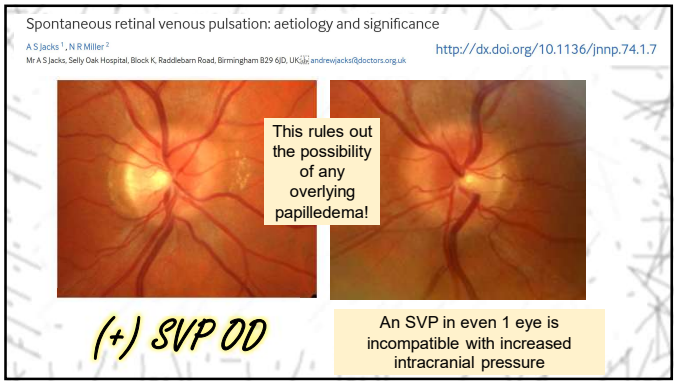
60



61

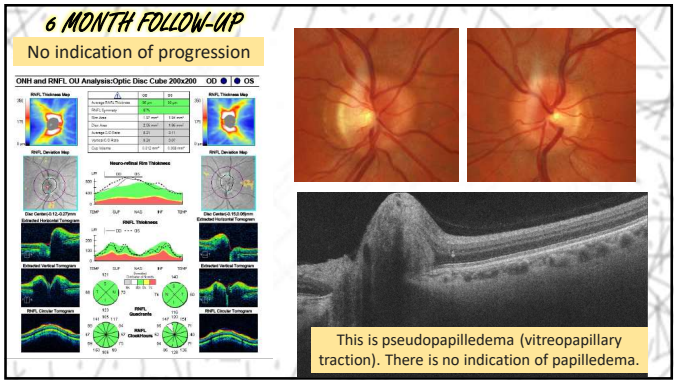


62

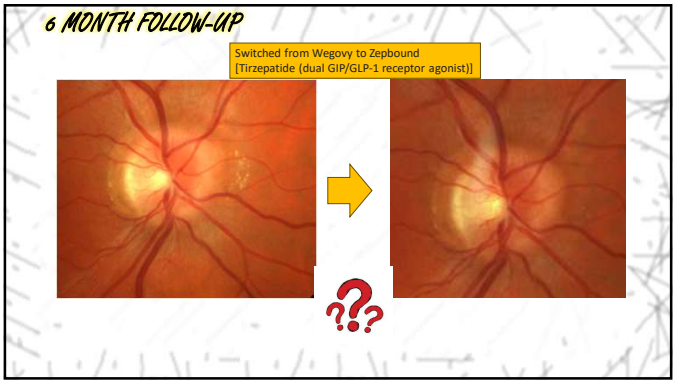


63

64



65



66

67

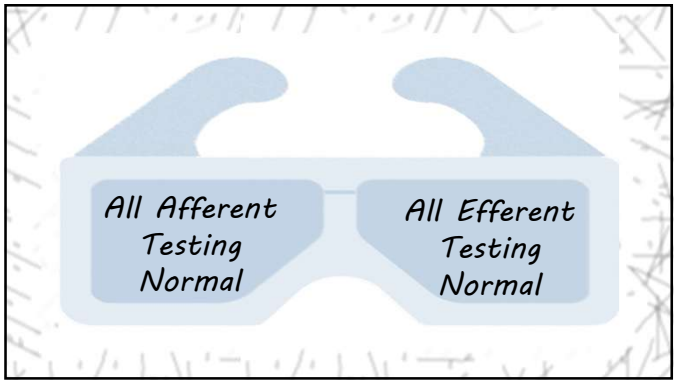
68

69

5 year-old girl

- Had routine eye exam 3 months ago, but was unable to stay for dilation.
-
- She is just here for the DFE
  - She has been getting occasional frontal headaches
  - They have not affected her daily activities
  - Already mentioned it to her pediatrician
  - Normally complains of headaches when at school (1x/month)
  - Only complained of headache once on a weekend, but she was in the mall and hungry

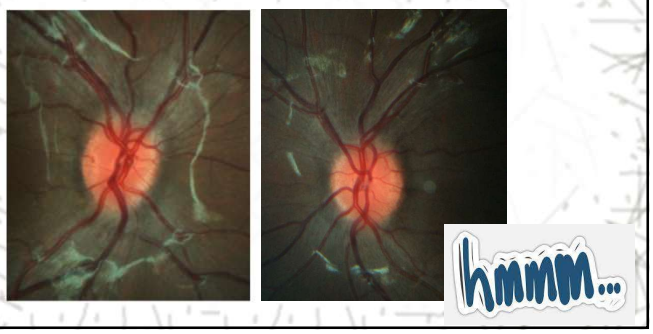
70



71

72

ONH Appearance (no SVP)



73

The Lack of SVP does NOT confirm increased intracranial pressure

An SVP in even 1 eye is incompatible with increased intracranial pressure

74

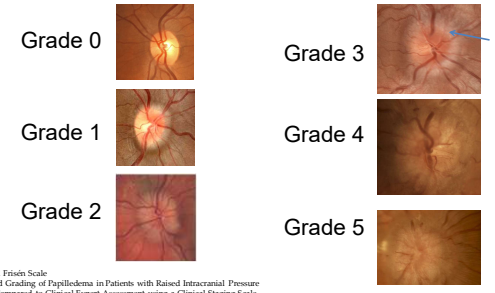
ONH Appearance (no SVP)

How concerning could this be? You may be thinking…

- She is 5
- She has a lot of sheen
- There are no Paton's lines or obscuration of vessels at the disc margin
- I don't want to put her through unnecessary testing

75

Modified Frisén Papilledema Scale



The Modified Frisén Scale
Diagnosis and Grading of Papilledema in Patients with Raised Intracranial Pressure Using OCT Compared to Clinical Expert Assessment using a Clinical Staging Scale
Scott CJ, Kardon RH, Lee AG, Frisén L, Wall M. Arch Ophth (in press).

76

CAUSES OF INDISTINCT OPTIC DISC MARGINS

Papilledema	LHON
AAION	Diabetic Papillopathy
NAION	Disc Drusen
Optic Neuritis	Vitreopapillary Traction
Perioptic Neuritis	Hypoplastic Disc
Neuroretinitis	Other Anomalous Disc
Emboli / Ischemia	

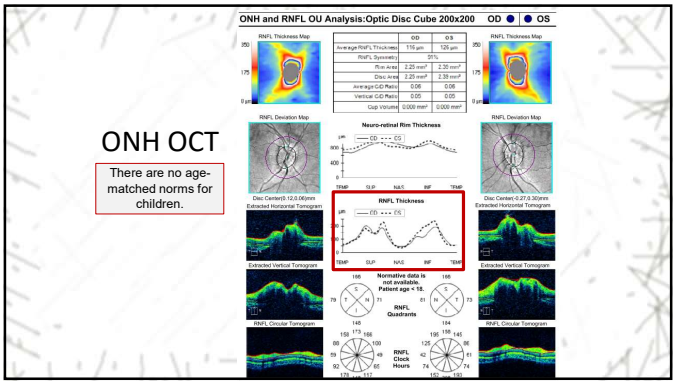
77

CAUSES OF INDISTINCT OPTIC DISC MARGINS

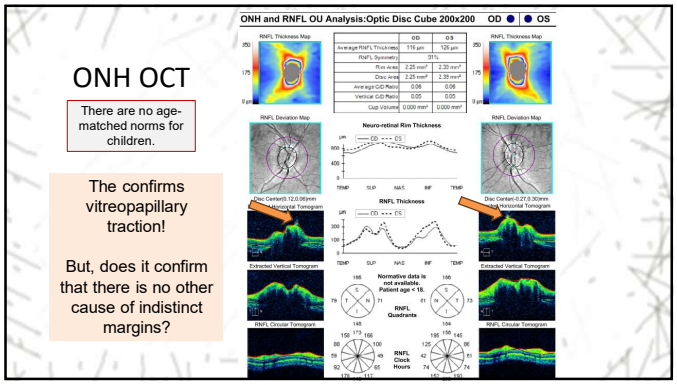
Papilledema REAL!	~~LHON~~
~~AAION~~	~~Diabetic Papillopathy~~
~~NAION~~	Disc Drusen NO
~~Optic Neuritis~~	Vitreopapillary Traction BIG
~~Perioptic Neuritis~~	Hypoplastic Disc
~~Neuroretinitis~~	Other Anomalous Disc DEAL!
~~Emboli / Ischemia~~	

78

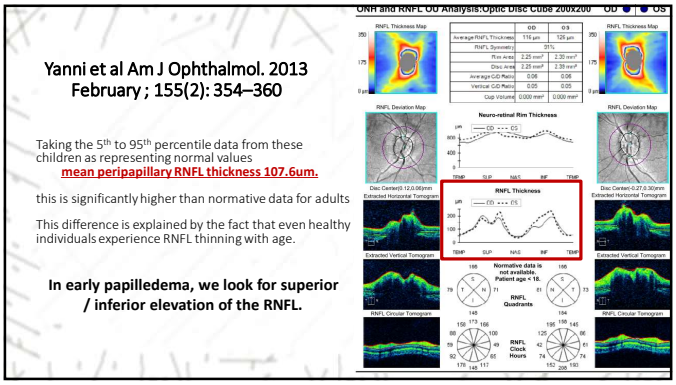
79



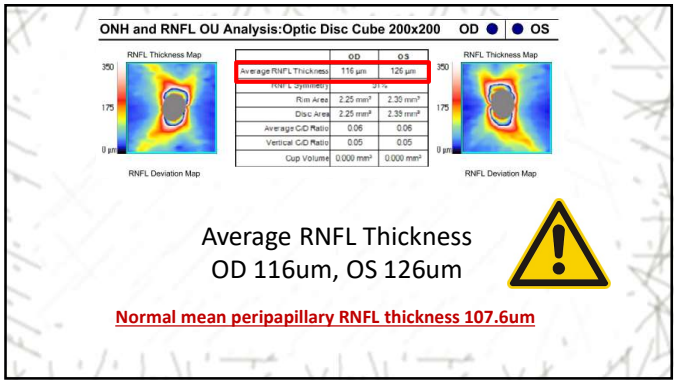
80



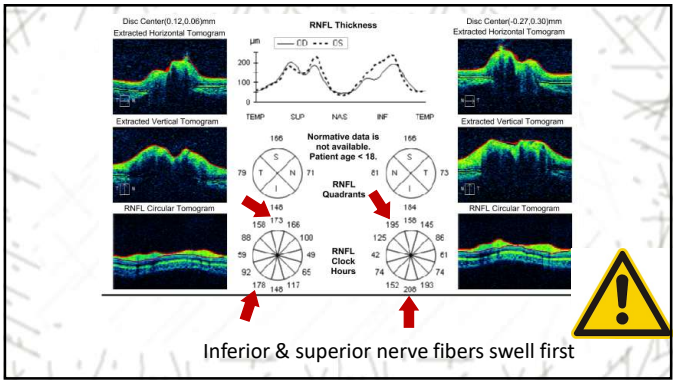
81



82

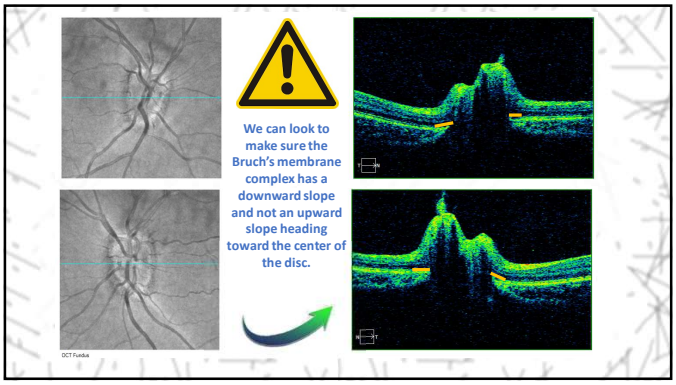


83

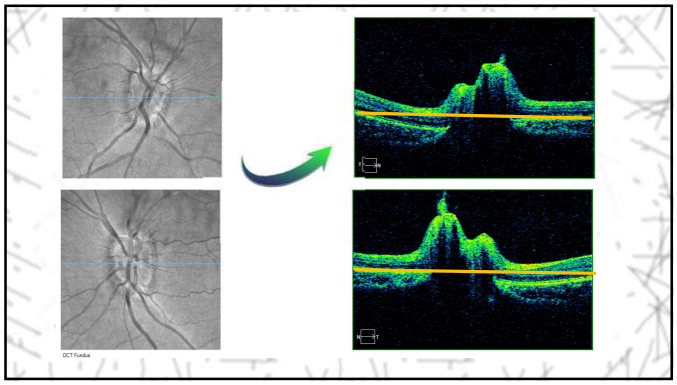


84

85

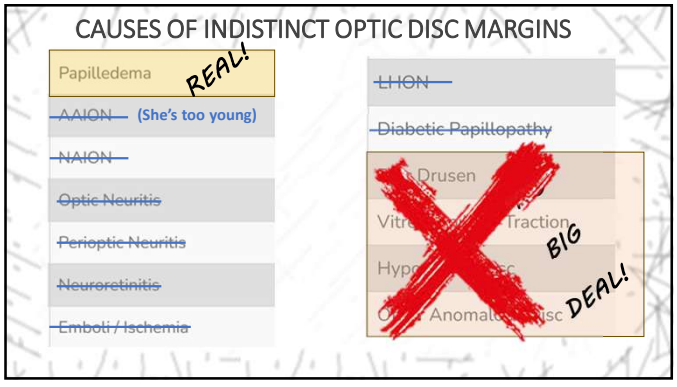


86



87

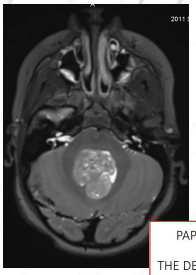
88



89

90

Medulloblastoma with Drop Mets

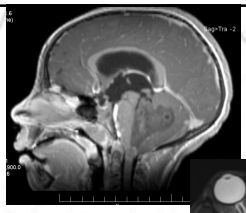


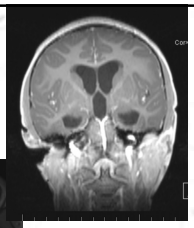
PAPILLEDEMA IS PAPILLEDEMA

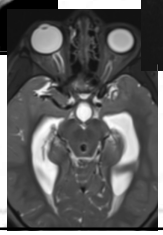
THE DEGREE OF SWELLING GIVES NO INDICATION OF THE ETIOLOGY

SO, EVEN MILD PAPILLEDEMA IS A MEDICAL EMERGENCY

91





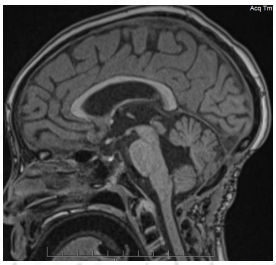


Obstructive Hydrocephalus

Enlargement of lateral ventricles, 3rd ventricle, and cerebral aqueduct

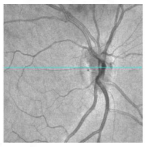
92

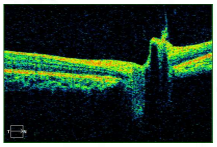
5 year-old: One year post-surgery, radiation and chemo

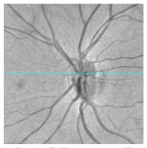


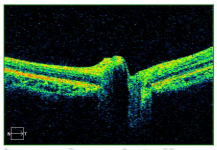
93

5 year old: One year post-surgery, radiation & chemo



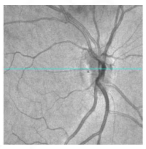


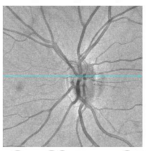




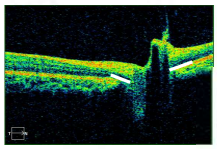
94

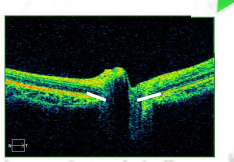
5 year old: One year post-surgery, radiation & chemo





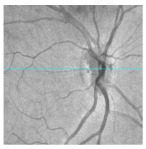
We can look to make sure the Bruch's membrane complex has a downward slope and not an upward slope heading toward the center of the disc.

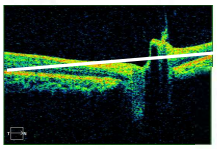


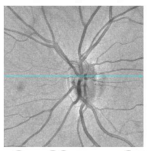


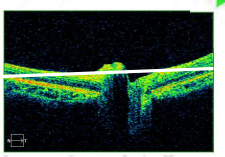
95

5 year old: One year post-surgery, radiation & chemo

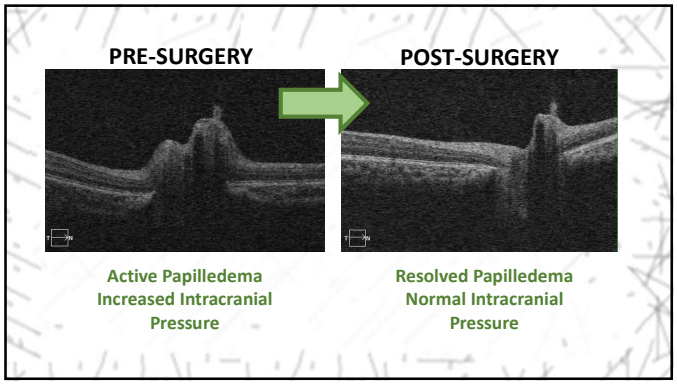




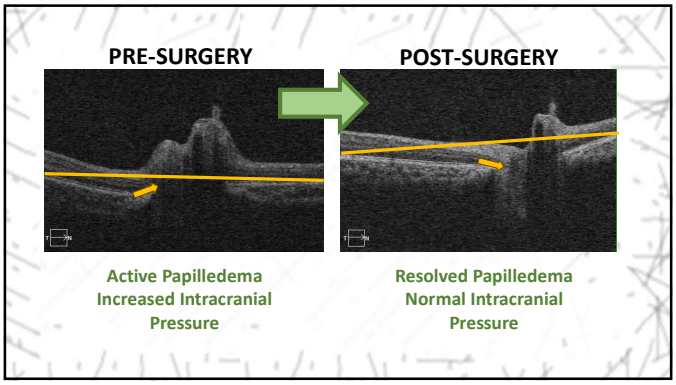




96



97



98

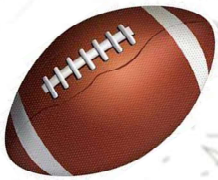
99

100

15 YEAR-OLD BOY

Referred for irregular eye movements in the setting of two recent concussions

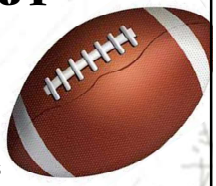
1. Three months ago
   - Helmet to helmet
   - Made a few more plays and then pulled out
   - Headache, neck pain
   - Initial eye shaking that resolved



101

15 YEAR-OLD BOY

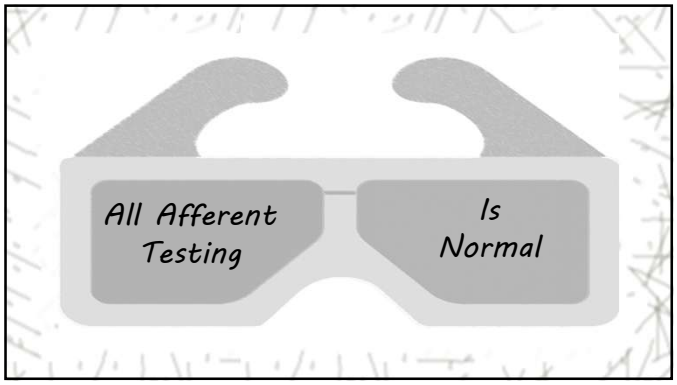
2. Two months ago
   - During practice, a teammate hit his helmet with their helmet



The next day at the game, his teammates were concerned because he was slurring his speech and not acting normal

- He was pulled from the game, and has not played since

102



103

Mild Traumatic Brain Injury (mTBI)

- An acute brain injury resulting from mechanical energy to the head from external physical forces.

Concussion = Mild TBI

- Can be associated with confusion, amnesia, and loss of consciousness

Does NOT have to be associated with loss of consciousness

104

SECOND IMPACT SYNDROME

Suffering a second traumatic brain injury in close time proximity to a primary brain injury

Exacerbates neuronal injury in cells made vulnerable by the initial TBI

Diffuse cerebral swelling develops in the setting of a second concussion, which has occurred when a patient is still symptomatic from an earlier concussion.

Disordered cerebral autoregulation causing cerebrovascular congestion and malignant cerebral edema with increased intracranial pressure

Rare, but potentially FATAL

This is why it is so important for an athlete to be immediately removed from play after head trauma!

Athletes will hide symptoms to try to stay in the game.

105

TBI and VISUAL SYMPTOMS

- visual symptoms occur in MOST (75%) individuals with concussion
- blurred vision, poor visual focus, difficult reading, diplopia, rarely shaking vision (i.e., oscillopsia), photophobia, intolerance of visual activities, headaches, and dizziness.
- Poor tolerance of visual activities such as screen use and scrolling on smart phones is common

106

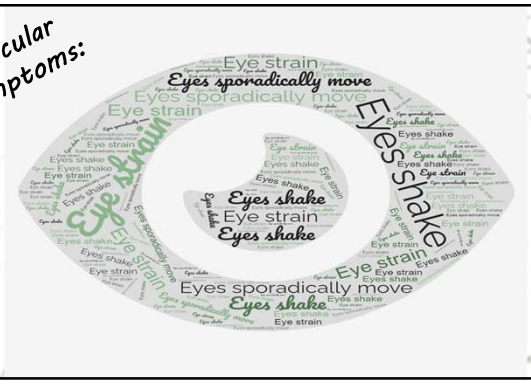
TBI Symptoms / Post-Concussion Syndrome

- Eyestrain
- Headache
- Blur
- Diplopia
- Loss of concentration
- Sleepiness
- Dizziness
- Balance Issues
- Light Sensitivity
- Noise Sensitivity
- Anxiety
- Depression
- Difficulty Making Decisions
- Sleep Disturbance

Although most symptoms will resolve with time, 15% of mTBI patients have disabling symptoms after 1 year!

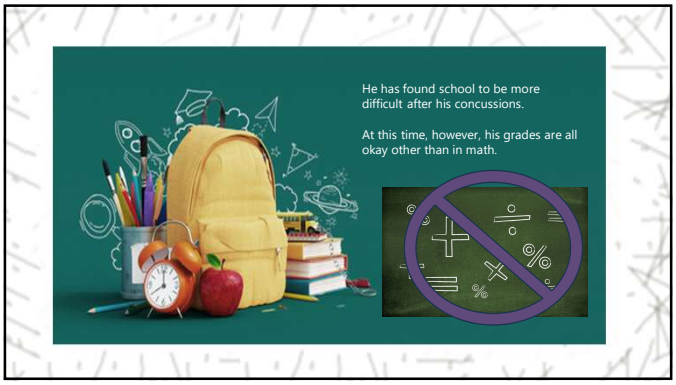
107

His Ocular Symptoms:

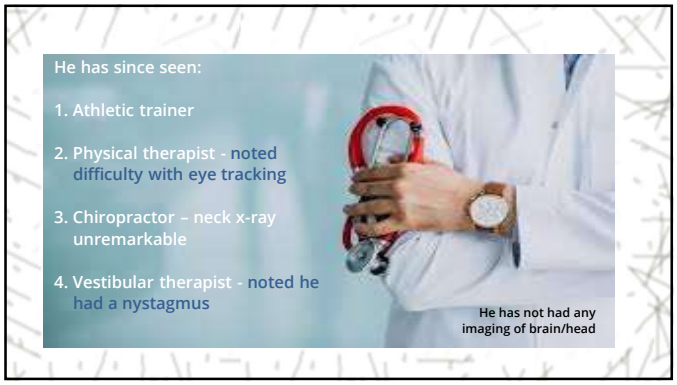


108

109

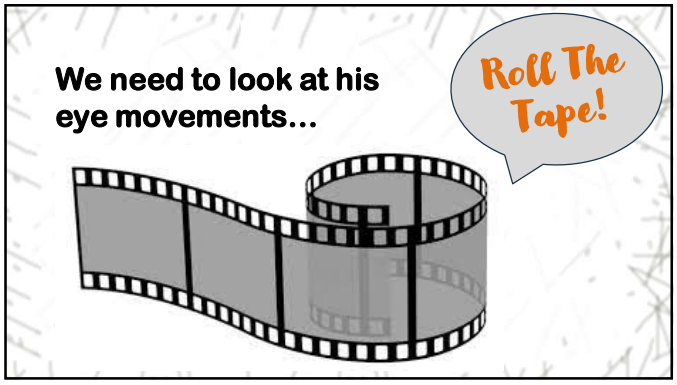


110



111

112

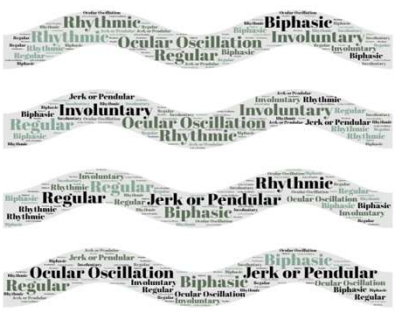


113

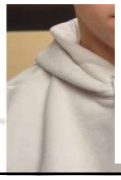
114

What is Nystagmus?

Does He Have Nystagmus?



115



116

117

Findings Not Typically Associated With Nystagmus

ATYPICAL!!

- Excessive Blinking
- Mouth Movements
- Audible Sounds
- Fatiguability (Not Sustained)

118

Conversion Disorder?

- A condition in which a patient shows psychological stress in physical ways.
- A health problem that starts as a mental or emotional crisis — a scary or stressful incident of some kind — and converts to a physical problem.

119

Risk Factors for Conversion Disorders

- Stress or emotional trauma
- Female
- Adolescent or young adult
- Mental health conditions
  - mood /anxiety disorders, dissociative or personality disorders
- Family member with conversion disorder
- History of physical or sexual abuse
- Financial problems

120

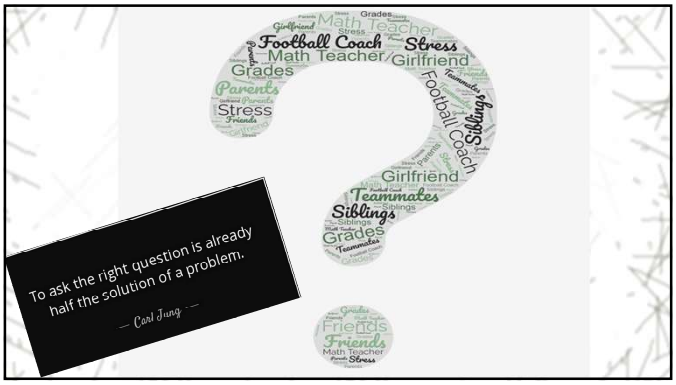
FUNCTIONAL VISION DISORDER (FVD)

– Manifestations **(USUALLY AFFERENT)**

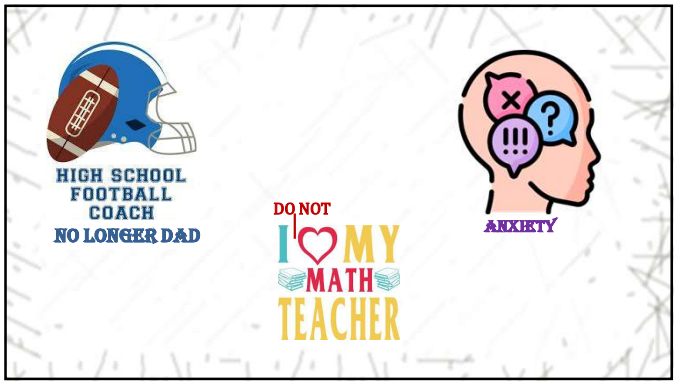
- **Visual field loss**
  - – Generalized constriction
  - – Homonymous hemianopia
- **Reduced visual acuity** (wide variability)
  - – Blur
  - – To blindness
- **Abnormal eye movements (EFFERENT - less common)**

subjective vs. objective

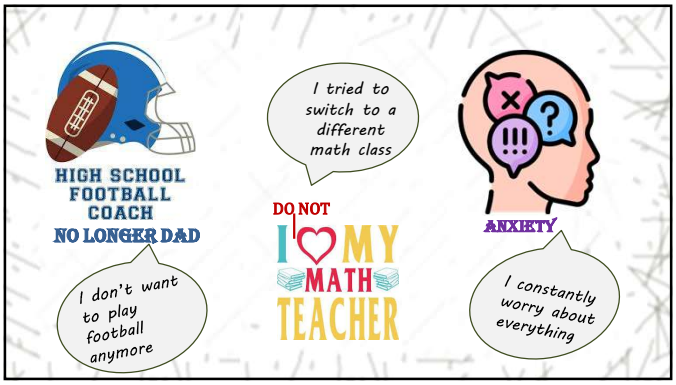
121



122



123

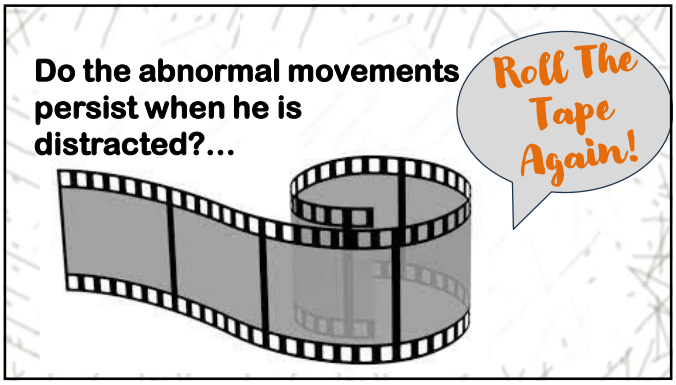


124

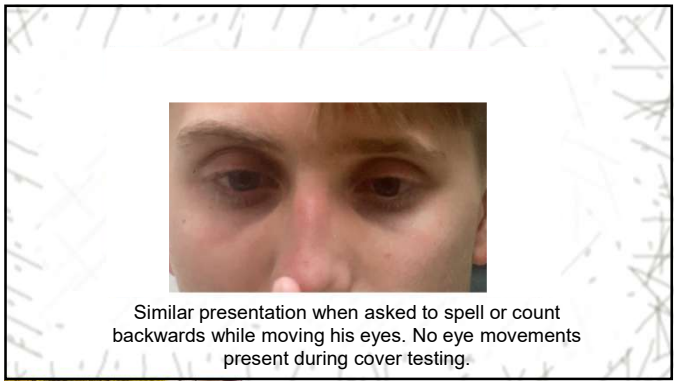
125

126

127



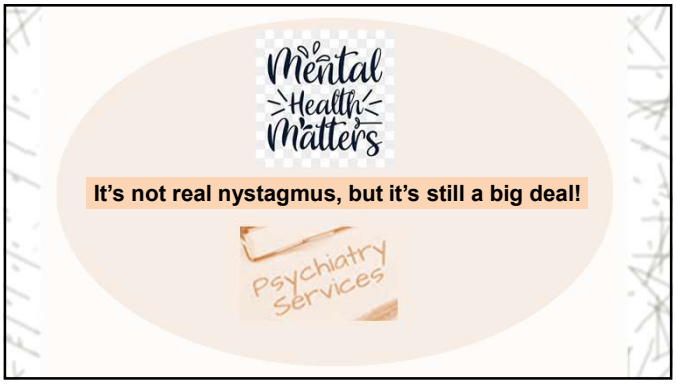
128



129

130

131



132

133

134

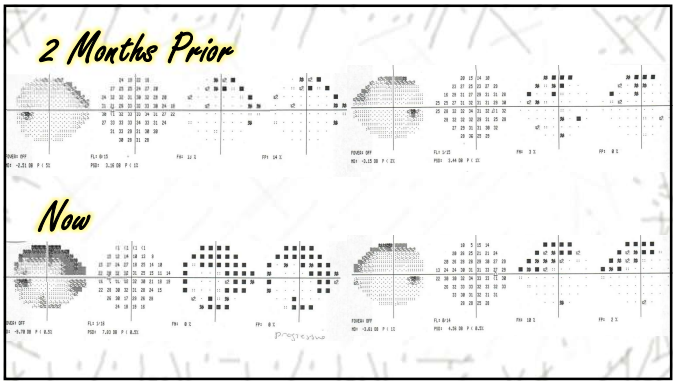
31 YEAR-OLD WOMAN

Referred by local optometrist
- She works in his office

1. Unexplained vision loss
   - reduced VA OS
   - progressive VF loss OS

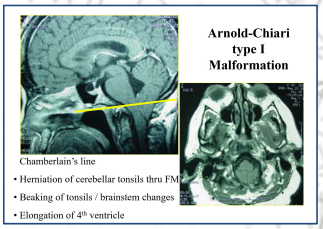
2. Abnormal eye movements

135



136

- Migraines since 1st grade
- 1 year ago
  - increase in migraines
  - Episodes of nearly passing out



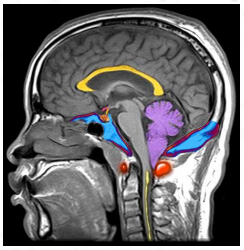
- Went to ER after bad migraine episode
  - Had 1st MRI of brain ever
  - Dx with Arnold Chiari malformation

137

Chiari I Malformation

In this photo, the **blue** represents bones that make up the opening of the foramen magnum. The spinal cord is the only part of the CNS that should go through the foramen magnum. Here, we see the cerebellum in **purple**, and the cerebellar tonsils are herniating through the foramen magnum.

This constitutes a Chiari I Malformation.



https://www.neurosendomke.com/brain-tumors-other-brain-disorders-and-brain-surgery/chiari-malformation/

138

Chiari I Malformation Symptoms

- Headache (suboccipital)
- Neck pain
- **Pain behind eyes**
- **Visual disturbances**
- **Diplopia**
- **Photophobia**
- **Nystagmus**
- Dizziness
- Hearing disturbances
- Weakness
- Paresthesias
- Ataxia
- Dysphagia
- **CN Palsies**
- Syncope

Chiari I malformation can have many visual signs and symptoms!

139

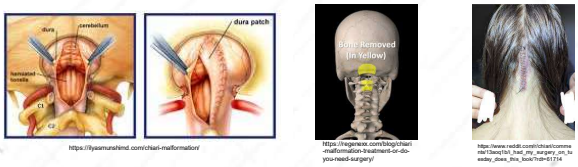
Chiari I Malformation Symptoms

- Pain behind eyes
- Visual disturbances
- Diplopia
- Photophobia
- CN Palsies
- **Nystagmus**
  - **DOWNBEAT**
    - **Worse in down gaze and in lateral gazes**
  - **PERIODIC ALTERNATING**

The likelihood of becoming symptomatic is proportional to the degree of descent of the tonsils. Patients with greater than 12 mm of descent are usually symptomatic, whereas approximately 30% of those whose descent measured between 5 and 10 mm remained asymptomatic.

140

- She reports that she had nystagmus (? type)
- Underwent Chiari Malformation Decompression surgery



She reports that headaches and nystagmus resolved after surgery

141

- Migraine headaches returned 4 months later
- For past 5-6 weeks, transient visual blur OS
  - 1-2 x / day for up to 4 hours at a time
- For past 10 days
  - Constant blur OS
  - Pain OS when looking to the left
  - When covering OD, horizontal diplopia with OS

Blur…
Pain…
Diplopia ?

142

Do we need to refer back to neurosurgery?

Keep looking until you find evidence you can "bank" on!

143

AFFERENT	EFFERENT
VA: 20/20 OD VA: 20/80 OS 20% reduced brightness OS 30% red desat OS Color: 14/14 OD Color: 13/14 OS Pupils: (-) RAPD	No ptosis or proptosis Abnormal eye movements ? Nystagmus Ductions: Full No anisocoria

144

- Because of recent symptoms, went to ER
  - Had repeat MRI & was told of "changes"
- We obtained MRI report
  - indicated no changes as compared with past MRI

Always get the neuroimaging report and/or the images to review!

145

FUNCTIONAL VISION DISORDER (FVD)

– Manifestations (**USUALLY AFFERENT**)

? • **Visual field loss**
  - Generalized constriction
  - Homonymous hemianopia

? • **Reduced visual acuity** (wide variability)
  - Blur
  - To blindness

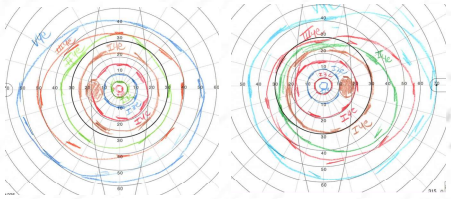
? • **Abnormal eye movements** (**EFFERENT - less common**)

subjective vs. objective

146

In phoropter, + 3 D fogging lens added to OD, and patient read 20/20

…*UNTIL she realized the right eye was fogged!!*



Ocular health is normal

147

FUNCTIONAL VISION DISORDER (FVD)

– Manifestations (**USUALLY AFFERENT**)

X • **Visual field loss**
  - Generalized constriction
  - Homonymous hemianopia

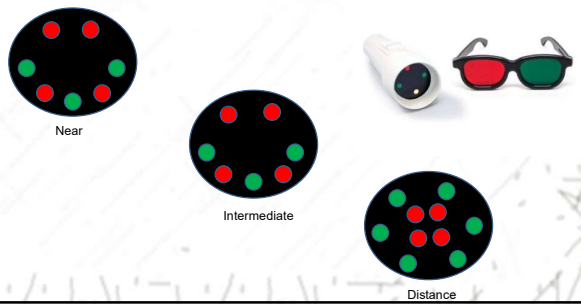
X • **Reduced visual acuity** (wide variability)
  - Blur
  - To blindness

? • **Abnormal eye movements** (**EFFERENT - less common**)

subjective vs. objective

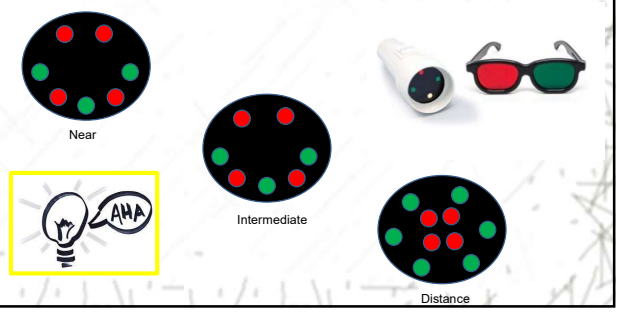
148

What about the diplopia??



149

What about the diplopia??

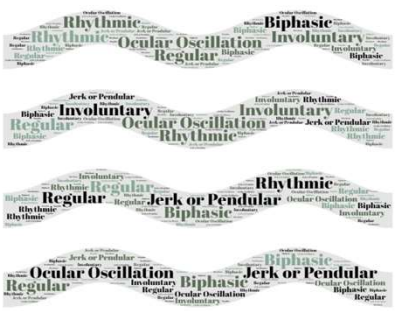


150

What about the Nystagmus?

Does She Have Nystagmus?

Could that also be functional?



151

Findings Not Typically Associated With Nystagmus

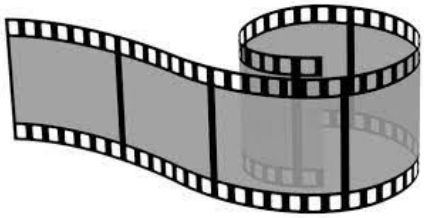
ATYPICAL!!

- Excessive Blinking
- Mouth Movements
- Audible Sounds
- Fatiguability (Not Sustained)

152

We need to look at her eye movements…

Roll The Tape!



153

154

Findings Not Typically Associated With Nystagmus

ATYPICAL!!

- Excessive Blinking
- Mouth Movements
- Audible Sounds
- Fatiguability (Not Sustained)

155

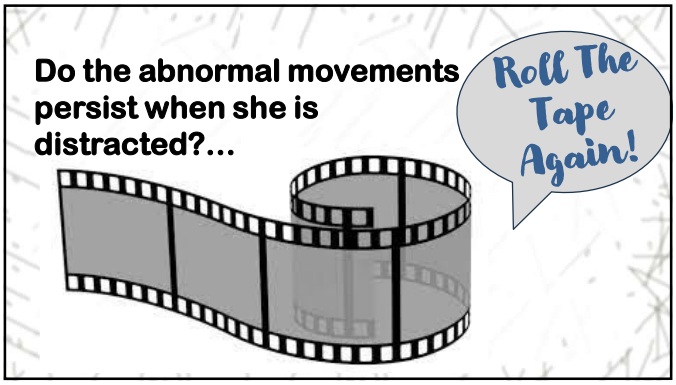
Is her nystagmus returning / worsening?

Keep looking until you find evidence you can "bank" on!

Do we need to refer back to neurosurgery?

156

157



158

159

FUNCTIONAL VISION DISORDER (FVD)

– Manifestations (**USUALLY AFFERENT**)

X • **Visual field loss**
  – Generalized constriction
  – Homonymous hemianopia

X • **Reduced visual acuity** (wide variability)
  – Blur
  – To blindness

X • **Abnormal eye movements** (**EFFERENT - less common**)

160

TYPES OF FUNCTIONAL VISION LOSS

Thompson HS. Functional Visual Loss. Amer J Ophthalmol. 1985;100:209-13.

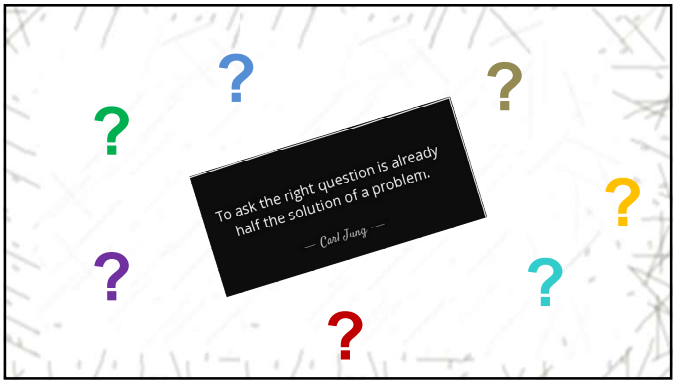
Suggestible Innocent
- Convinced self of a vision problem
- Very complacent – not very worried about problem

Impressionable exaggerator
- Thinks something wrong with eyes
- Wants to help the doctor and make the symptoms easy to recognize

Worrying imposter
- Knowingly exaggerating visual symptoms
- Worried has a serious problem
- Doesn't want problem to be overlooked / miss out on future benefits if needed

Deliberate Malingerer
- Faking of visual problem
  - » For monetary gain (lawsuit)
  - » For attention

161



162

- Pt reports much stress related to ex-husband and his relationship with her 2 older children
- Pt thinks she is depressed and anxious
- Has not yet seen psychologist or psychiatrist
- Tried Sertraline but d/c because of side effects

163

TYPES OF FUNCTIONAL VISION LOSS

Thompson HS. Functional Visual Loss. Amer J Ophthalmol. 1985;100:209-13.

Suggestible Innocent
- Convinced self of a vision problem
- Very complacent – not very worried about problem

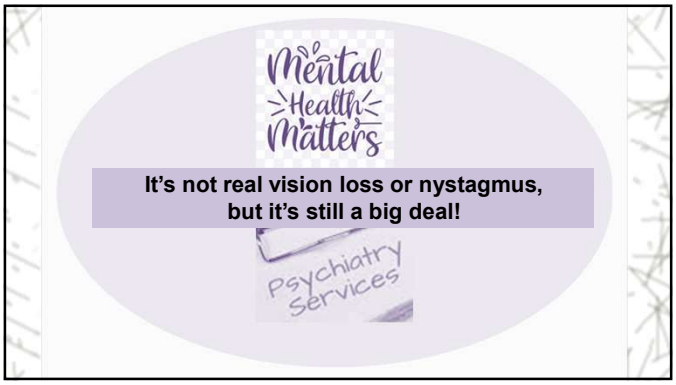
Impressionable exaggerator
- Thinks something wrong with eyes
- Wants to help the doctor and make the symptoms easy to recognize

Worrying imposter
- Knowingly exaggerating visual symptoms
- Worried has a serious problem
- Doesn't want problem to be overlooked / miss out on future benefits if needed

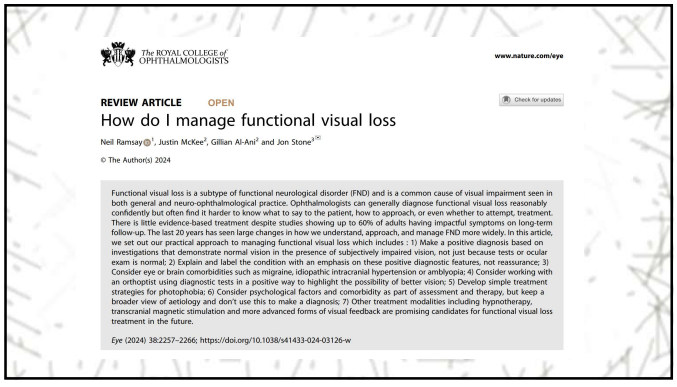
Deliberate Malingerer
- Faking of visual problem
  - » For monetary gain (lawsuit)
  - » For attention

164

165



166



The ROYAL COLLEGE of OPHTHALMOLOGISTS

www.nature.com/eye

REVIEW ARTICLE OPEN

How do I manage functional visual loss

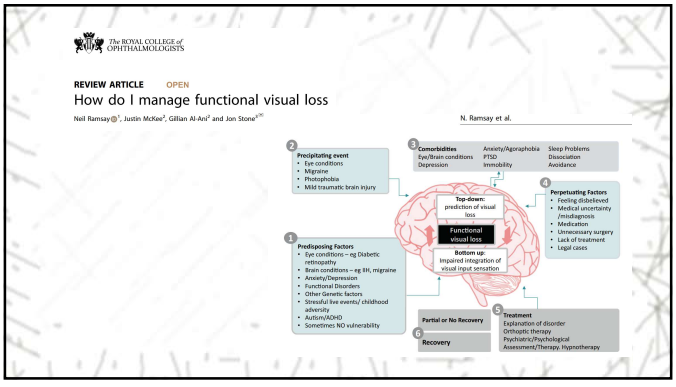
Neil Ramsay[1], Justin McKee[2], Gillian Al-Ani[2] and Jon Stone[2]✉

© The Author(s) 2024

Functional visual loss is a subtype of functional neurological disorder (FND) and is a common cause of visual impairment seen in both general and neuro-ophthalmological practice. Ophthalmologists can generally diagnose functional visual loss reasonably confidently but often find it harder to know what to say to the patient, how to approach, or even whether to attempt, treatment. There is little evidence-based treatment despite studies showing up to 60% of adults having impactful symptoms on long-term follow-up. The last 20 years has seen large changes in how we understand, approach, and manage FND more widely. In this article, we set out our practical approach to managing functional visual loss which includes : 1) Make a positive diagnosis based on investigations that demonstrate normal vision in the presence of subjectively impaired vision, not just because tests or ocular exam is normal; 2) Explain and label the condition with an emphasis on these positive diagnostic features, not reassurance; 3) Consider eye or brain comorbidities such as migraine, idiopathic intracranial hypertension or amblyopia; 4) Consider working with an orthoptist using diagnostic tests in a positive way to highlight the possibility of better vision; 5) Develop simple treatment strategies for photophobia; 6) Consider psychological factors and comorbidity as part of assessment and therapy, but keep a broader view of aetiology and don't use this to make a diagnosis; 7) Other treatment modalities including hypnotherapy, transcranial magnetic stimulation and more advanced forms of visual feedback are promising candidates for functional visual loss treatment in the future.

Eye (2024) 38:2257–2266; https://doi.org/10.1038/s41433-024-03126-w

167



The ROYAL COLLEGE of OPHTHALMOLOGISTS

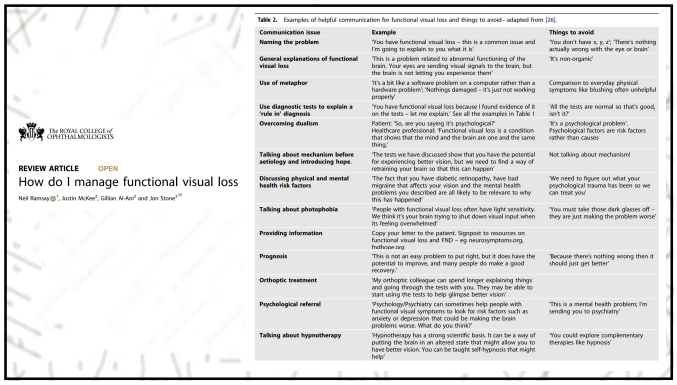
REVIEW ARTICLE OPEN

How do I manage functional visual loss

Neil Ramsay[1], Justin McKee[2], Gillian Al-Ani[2] and Jon Stone[2]✉

N. Ramsay et al.

168



The ROYAL COLLEGE of OPHTHALMOLOGISTS

REVIEW ARTICLE OPEN

How do I manage functional visual loss

Neil Ramsay[1], Justin McKee[2], Gillian Al-Ani[2] and Jon Stone[2,3]

Table 2. Examples of helpful communication for functional visual loss and things to avoid– adapted from [26].

Communication issue	Example	Things to avoid
Naming the problem	'You have functional visual loss – this is a common issue and I'm going to explain to you what it is'	'You don't have x, y, z'; 'There's nothing actually wrong with the eye or brain'
General explanations of functional visual loss	'This is a problem related to abnormal functioning of the brain. Your eyes are sending visual signals to the brain, but the brain is not letting you experience them'	'It's non-organic'
Use of metaphor	'It's a bit like a software problem on a computer rather than a hardware problem'; 'Nothings damaged – it's just not working properly'	Comparison to everyday physical symptoms like blushing often unhelpful
Use diagnostic tests to explain a 'rule in' diagnosis	'You have functional visual loss because I found evidence of it on the tests – let me explain.' See all the examples in Table 1	'All the tests are normal so that's good, isn't it?'
Overcoming dualism	Patient: 'So, are you saying it's psychological?' Healthcare professional: 'Functional visual loss is a condition that shows that the mind and the brain are one and the same thing.'	'It's a psychological problem'. Psychological factors are risk factors rather than causes
Talking about mechanism before aetiology and introducing hope	'The tests we have discussed show that you have the potential for experiencing better vision, but we need to find a way of retraining your brain so that this can happen'	Not talking about mechanism!
Discussing physical and mental health risk factors	'The fact that you have diabetic retinopathy, have bad migraine that affects your vision and the mental health problems you described are all likely to be relevant to why this has happened'	'We need to figure out what your psychological trauma has been so we can treat you'
Talking about photophobia	'People with functional visual loss often have light sensitivity. We think it's your brain trying to shut down visual input when its feeling overwhelmed'	'You must take those dark glasses off – they are just making the problem worse'
Providing information	Copy your letter to the patient. Signpost to resources on functional visual loss and FND – eg neurosymptoms.org, fndhope.org	
Prognosis	'This is not an easy problem to put right, but it does have the potential to improve, and many people do make a good recovery.'	'Because there's nothing wrong then it should just get better'
Orthoptic treatment	'My orthoptic colleague can spend longer explaining things and going through the tests with you. They may be able to start using the tests to help glimpse better vision'	
Psychological referral	'Psychology/Psychiatry can sometimes help people with functional visual symptoms to look for risk factors such as anxiety or depression that could be making the brain problems worse. What do you think?'	'This is a mental health problem; I'm sending you to psychiatry'
Talking about hypnotherapy	'Hypnotherapy has a strong scientific basis. It can be a way of putting the brain in an altered state that might allow you to have better vision. You can be taught self-hypnosis that might help'	'You could explore complementary therapies like hypnosis'

169

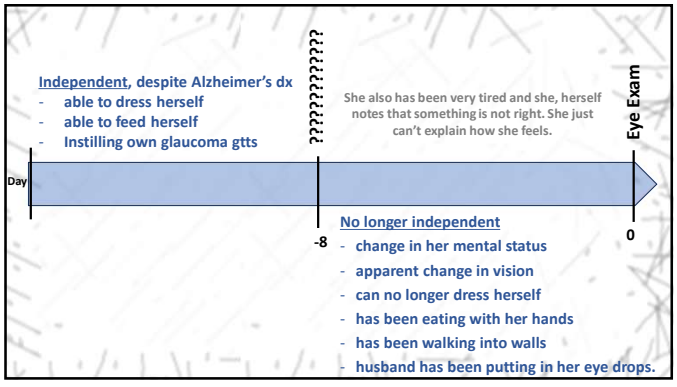
170

171

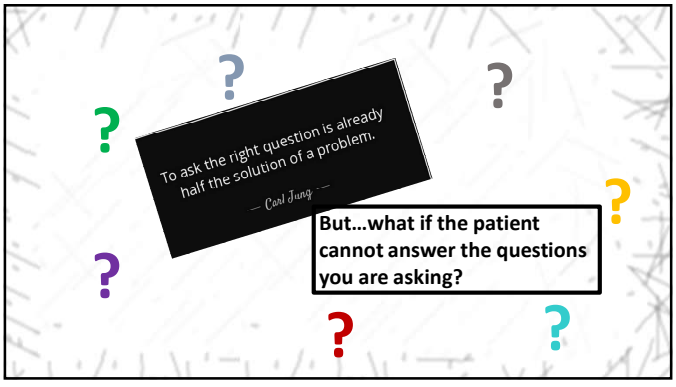
74 YEAR-OLD WOMAN

- Presents emergently with her husband and sister for vision loss OS x 8 days
- Systemic Hx:
  - Alzheimer's disease
  - Hypertension
  - Hypercholesterolemia
  - Type II NIDDM
  - Anxiety
- Ocular Hx:
  - Glaucoma
- Medications:
  - Systemic: Metformin, unknown meds for conditions above
    Ocular: Lumigan QHS OU, Combigan BID OU

172

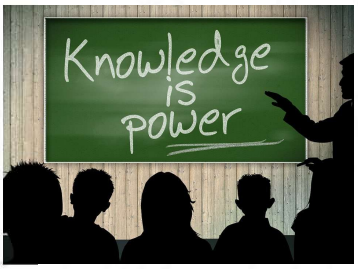


173



174

Rely on What You Know to Answer the Questions!!



175

Questions

Is she noticing her vision loss from glaucoma? Has her glaucoma worsened suddenly?

Is her Alzheimer's worsening?

Is this related to glaucoma or Alzheimer's or something else?

Is there anything concerning or urgent?

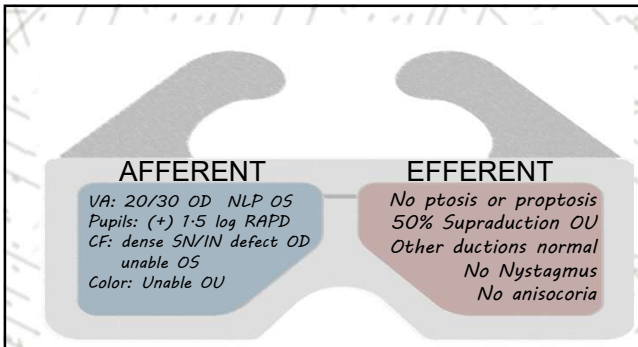
What is the best management plan?

176

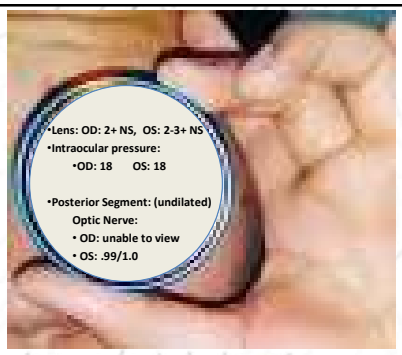
We know this will be something real...

But, how "real" (severe) will it be?!

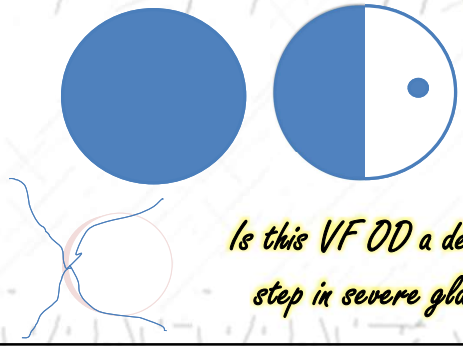
177



178



179



Seems possible based on the left optic disc appearance…

Is this VF OD a dense nasal step in severe glaucoma?

180

Keep looking until you find evidence you can "bank" on!

181

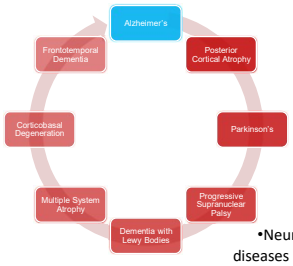
But, why did everything suddenly change 8 days ago?

What do we know / or *still need to figure out*:

1. Glaucoma is slowly progressive, but there can be fairly sudden "snuffing" of last remaining fibers.
2. There are cataracts, but they should not be causing sudden vision loss.
3. Even if blind from glaucoma, it should not affect mental status.
4. *How does Alzheimer's affect vision?*
5. *Could vision loss in someone with dementia make them less functional in other ways as well?*
6. *Could this is something unrelated, such as a stroke?* *(if can't rule out, need to treat as such)*

182

Neurodegenerative Diseases Causing Dementia



- Neurodegenerative diseases are both incurable and debilitating

183

Alzheimer's Disease

- Progressive neurodegenerative disease
- **Predominantly a disorder affecting memory**
- As the disease progresses, can affect
  - Orientation
  - Attention
  - Language
  - Executive function
  - Visuospatial

Memory impairment, specifically **short-term memory loss** is the most frequent feature of AD and is usually its first manifestation.

Executive dysfunction and impaired visuospatial skills tend to be affected relatively early, while deficits in **language function and behavioral symptoms often manifest later** in the disease course.

184

AD and Afferent Function Symptoms

- Blur
- Difficulty seeing in twilight or in rain
- Colors are washed out
- Vision just is not right

- Reduced Visual Acuity
- Reduced Color Discrimination
- Reduced Contrast Sensitivity
- Visual Field Defects

Visual symptoms are very common in AD!

185

AD and Visual Acuity

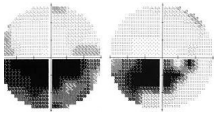
- Decreased visual acuity under conditions of low luminance

- Increased prevalence of cataract affecting visual acuity

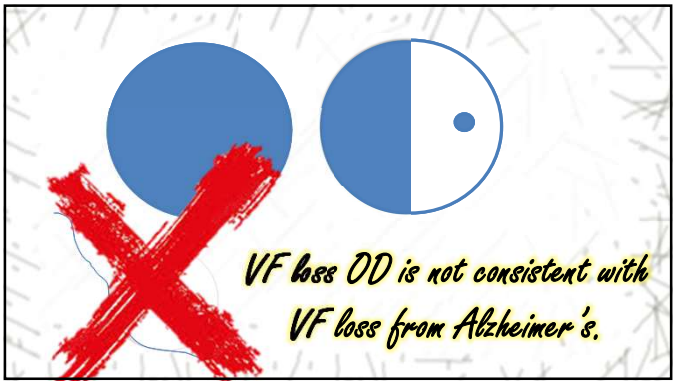
186

AD and Visual Field Defects

- **Field defects are mainly inferior**
  - Related to ganglion cell damage in superior retina
  - Characterized by accumulation of larger senile plaques and neurofibrillary tangles in the cuneal gyrus than lingual gyrus of visual cortex
- Degree of loss correlates with degree of dementia

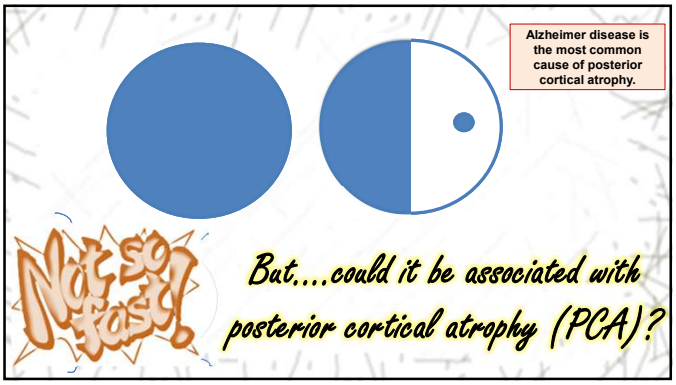


187



188

Alzheimer disease is the most common cause of posterior cortical atrophy.



189

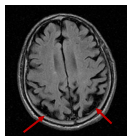
POSTERIOR CORTICAL ATROPHY

- Visual complaints may be vague
- Difficult to diagnose
- Associated with dementia
  - **Can be associated with Alzheimer's Disease**
  - Can also be caused by other Neurodegenerative Dz
- Progressive dementing syndromes characterized by higher visual disorders
- Progressive decline in visual processing

190

Posterior Cortical Atrophy (PCA)

- Neurodegenerative disorder most commonly associated with Alzheimer disease pathology
- Characterized by complaints of progressive visual changes
- A delay in diagnosis of PCA is common
- Search for ocular causes for visual complaints; brain MRI may be interpreted as normal



https://radiopaedia.org/images/4634739

191

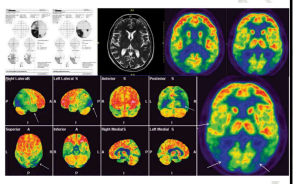
POSTERIOR CORTICAL ATROPHY

NEURO-OPHTHALMOLOGY
2017, VOL. 41, NO. 3, 154–158
http://dx.doi.org/10.1080/01658107.2016.1278556

PHOTO ESSAY

Homonymous Hemianopsia Due to Posterior Cortical Atrophy

Francesco Pellegrini[a], Andrew G. Lee[b,c,d,e,f,g,h], and Pietro Zucchetta[i]



- Affects parieto-occipital cortex
- **Can cause a homonymous hemianopia**
- MRI can appear NORMAL (no significant atrophy)
- Brain PET(positron emission tomography) or SPECT (single-photon emission computed tomography) scan shows an abnormality

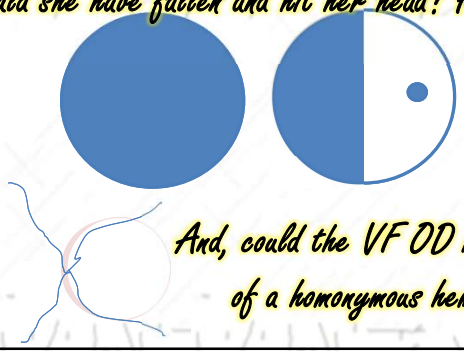
192

Back to AD… and Contrast Sensitivity

- Markedly reduced contrast sensitivity
  - Seen in early stages of AD
- Significantly affects quality of life
  - *Increased risks of falls and fractures*
  - Reduced reading speed
  - Increased reading latency

193

Could she have fallen and hit her head? Had stroke?



Could be; it respects the vertical meridian…

And, could the VF OD be suggestive of a homonymous hemianopia?

194

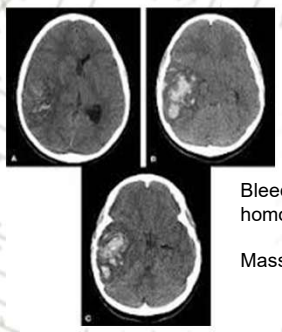
If so, what would you do about it?

a. Call / send to PCP
b. Call / send to Neurologist
c. Send to ED

195

- Sent patient to the ED for emergent CT scan of the brain without contrast to rule out acute intracranial pathology.
- Alzheimer's dementia / PCA should not progress so quickly.
- Alzheimer's pts are prone to falls…

196



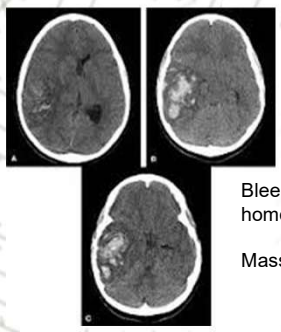
CT SCAN FINDING:
3 cm parenchymal bleed in the parietal and temporal lobes, with mass effect

Bleed on right side, consistent with left homonymous hemianopia

Mass effect, midline shift, concern for herniation

This is consistent with sudden change in mental status!

197



CT SCAN FINDING:
3 cm parenchymal bleed in the parietal and temporal lobes, with mass effect

Bleed on right side, consistent with left homonymous hemianopia

Mass effect, midline shift, concern for herniation

Underwent urgent surgical evacuation of hemorrhage

198

This was...

as real as it gets!!

199

If missed, this could have been fatal!

Alzheimer's dementia does NOT rapidly progress in 1 week!

We need to be sure NOT to attribute ALL new findings to a known underlying disease until certain of the association.

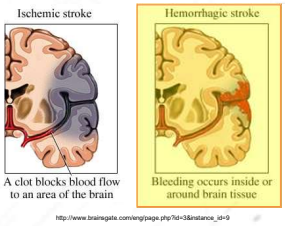
We need to be aware of clinical findings that suggest acute intracranial pathology.

Ask questions (of your pts and yourself!)
Listen to your pts (even if they cannot communicate with you!)

200

All MUST Be Treated as Medical Emergencies (sent to ED):

- Hemorrhagic Stroke
- All Intracranial Bleeding
- Ischemic Stroke
- Transient Ischemic Attack
- Acute Symptomatic Hollenhorst Plaque
- Acute CRAO, ,BRAO
- Sudden Unexplained Vision Loss (TVL)



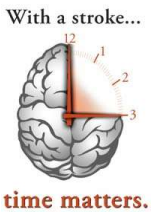
201

If you suspect an acute stroke

Time is Brain!

(for BOTH ischemic and hemorrhagic stroke)

- Do not complete eye exam
- Only do what you need to confirm your stroke suspicion
- Call 911 immediately
- Tell the dispatcher the patient has had an acute stroke



202

Time to brain death based on % normal blood flow

% NORMAL BLOOD FLOW	TIME TO BRAIN DEATH
NO flow	10 minutes
<30% normal flow	1 hour
30-40% normal flow	Hour to several hours
With collateral and residual flow	Up to 6 hours

Published in Neurology News - July 24, 2019

Initiating Stroke Tx 15 Minutes Earlier Can Improve Outcomes

203

Get The Patient to the RIGHT ED

- **Advanced Comprehensive Stroke Center**
- This differs from an Advanced PRIMARY Stroke Center

204

What needs to be done?

- CT, then DWI and ADC MRI within 24-48 hours of vision loss
- Imaging (CTA) of cervical and intracranial vessels.
- EKG and echocardiogram
- Laboratory testing
  - CBC with platelets
  - Coagulation studies
  - Fasting lipid profile

Do NOT send these patients to their PCP, cardiologist, neurologist, neuro-ophthalmologist, or retinal specialist.

Do NOT try to obtain the work-up yourself.

Send to an ED with an Acute Stroke Care Center!

205

206