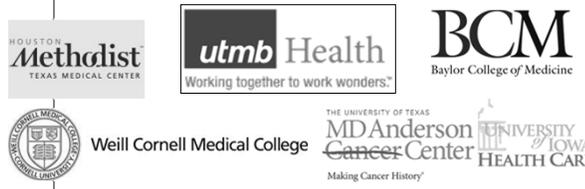


Five Neuro-Ophthalmic Triage Decisions That Can Save a Life in the Optometric Clinic

- Andrew G. Lee, MD
 - Chair Ophthalmology, Houston Methodist Hospital, Professor of Ophthalmology, Weill Cornell Medical College; Adjunct Professor of Ophthalmology, University of Iowa, Clinical Professor of Ophthalmology, UTMB Galveston, UT MD Anderson Cancer Center



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THE UNIVERSITY OF TEXAS MD Anderson Cancer Center Making Cancer History®

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1

I have no financial interest in the contents of this talk



2

I will not be discussing any off label uses of drugs

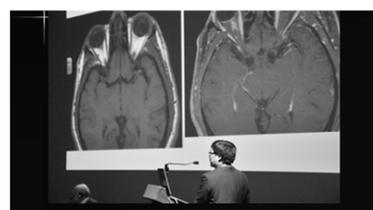


3

I am not here just to teach you ...

I am here to inspire you!

It is inspiration that will teach you.



4

**On July 20, 1969, I was 5 years old,
the moon landing was on tv....**



5

**Houston was the first word
spoken from the moon**



6

**Houston is home to the
Texas Medical Center**



7

Texas Medical Center

- Annual Patient Visits: 7.1 million
- Employees: 92,500
- Full-time Students: 34,000
- Volunteers: 12,000
- Residents/Fellows: 4,000
- Researchers: 7,000
- Total Hospital Beds: 6,900 beds
- Annual Surgeries: 350,000

8

**1978: I wanted to be a doctor...
2nd NASA & 3rd choice Jedi knight**



9

Overview

- List five potentially life threatening diagnosis in neuro-op
- Define "rule of the pupil"
- Define best imaging study for the 5 dx
- Show key clinical or radiographic features for the above 5 dx

10

Overview: Lee's "A"s: The six chances to save the life/vision of your next neuro-ophthalmology patient

1. Arteritis (Giant cell)
2. Apoplexy (Pituitary)
3. Abscess (Mucor)
4. Aneurysm (pupil involved third nerve palsy)
5. Arterial (carotid or vertebral) dissection
6. Acute fulminant idiopathic intracranial hypertension (IIH)



11

Overview: Lee's "A"s: The five chances to save the life of your next neuro-ophthalmology patient

1. Arteritis (Giant cell)
2. Apoplexy (Pituitary)
3. Abscess (Mucor)
4. Aneurysm (pupil involved third nerve palsy)
5. Arterial (carotid or vertebral) dissection



12

Dad's definition of a great lecture



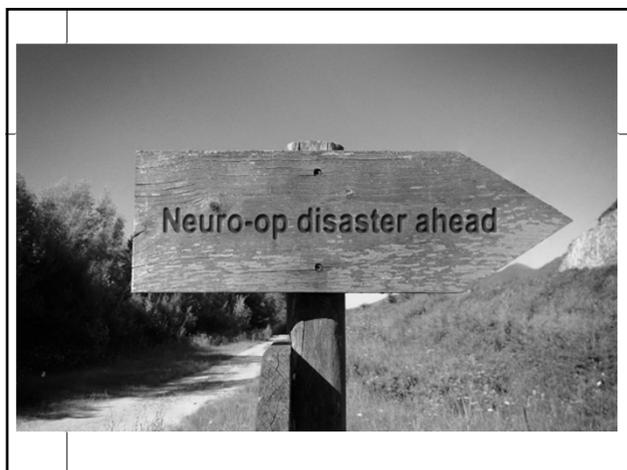
Good lecture: You make a list of things to do differently next week in clinic

13

It's ok to ask for help but you have to be able to read the signs



14



15

Five triage pearls in neuro-ophthalmology

1. Have "the triage list" in ADVANCE not ad hoc
2. Beware **red flag**: "acute painful" (insert any neuro-ophthalmic sign!)
3. "**How long** has it been there?" (this is your time clock for working it up)
4. **How bad** is your pain or visual loss? (worst HA of life, LP or NLP vision = "Come now!")
5. Are your **pupils different** sizes (Go look in the mirror now!)

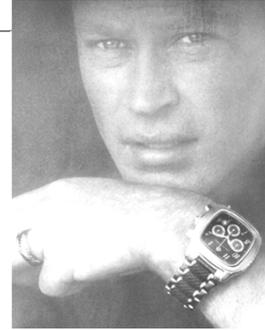
16

Five big red flags to worry about (even on Sunday AM)...

1. Acute headache in elderly especially with visual loss (also jaw claudication & scalp pain)
2. Acute painful ophthalmoplegia or orbital apex
3. Acute painful anisocoria (small or big pupil)
4. Acute no light perception
5. Acute bilateral visual loss or ophthalmoplegia

17

Pattern recognition



18

Pattern recognition



19

Is the pattern emerging?



20



21

Giant cell arteritis: What everyone knows....

- Elderly patient (often female)
- Acute onset headache, jaw claudication, temporal artery pain, neck or ear pain
- Loss of vision (typically due to ischemic optic neuropathy)
- Elevated erythrocyte sedimentation rate (ESR) & C-reactive protein

22

Yes, temple, but also neck, ear, jaw, occipital, scalp pain

23

Initial symptoms in GCA (n = 100)

Symptom of complaint	Presenting symptom	Finding at diagnosis
Headache	32	68
Polymyalgia rheumatica	25	39
Fever	15	42
Visual symptoms without loss of vision	7	30
Weakness, malaise, fatigue	5	40
Tenderness over arteries	5	27
Myalgias	4	30
Weight loss, anorexia	2	50
Jaw claudication	2	45
Permanent loss of vision	1	14
Tongue claudication	1	6
Sore throat	1	9
Vasculitis on angiogram	1	NA
Stiffness of hands and wrists	1	NA
Decreased temporal artery pulse	NA	46
Erythematous, nodular, swollen arteries	NA	23
Central nervous system abnormalities	NA	15
Synovitis	NA	NA
Dysphagia	NA	15
Limb claudication	NA	NA

Adapted with permission from Haender GG. Temporal arteritis and polymyalgia rheumatica. In: Kelley WN, et al. Textbook of rheumatology. 4th ed. Philadelphia: Saunders, 1993:101-12.

24

Delay in GCA diagnosis common

- Br J Rheumatol. 1997 Feb;36(2):251-4. **Clinical features in patients with permanent visual loss due to biopsy-proven giant cell arteritis. Font et al.**
- 146 biopsy + GCA
- 23 (16%) lost vision
- GCA Sx for average of 1.3 months
- 35% PMR x 10.8 months
- 65% premonitory visual Sx for 8.5 days
- Clear delay in diagnosis in 65% (15)



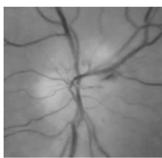
25

Some things you don't know about things you know well (GCA)

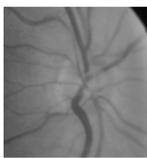
- Anterior ischemic optic neuropathy
- Posterior ischemic optic neuropathy 
- Transient visual loss
- Transient diplopia in the elderly
- The distinctive hx = premonitory visual symptoms & constitutional S/Sx

26

Which is worse AION or PION of elderly?



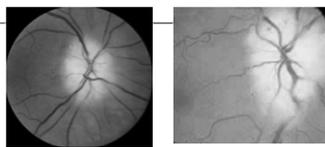
Swollen disc in anterior ischemic optic neuropathy

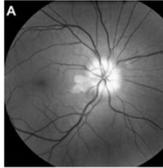


Normal appearing disc in posterior ischemic optic neuropathy

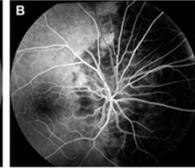
27

Beware "pallid edema"





A



B

<http://webeye.ophth.uiowa.edu/dept/aion/13-AION-A-AION.htm>

28

And the MRI of head was normal.....

■ **WHY?**

29

Beware "optic neuritis" in elderly....likely GCA

- Wicked good pearl: retrobulbar optic neuritis in elderly might be PION due to GCA....Pallid edema sometimes looks like no edema (dead nerve cant swell)

30

Big Red Flags in GCA

- Severe visual loss (e.g. LP or NLP)
- Bilateral simultaneous visual loss
- Transient visual loss (not seen in non-arteritic form of ischemic optic neuropathy)
- PMR with visual symptoms

31

Giant cell arteritis can kill people....

- Aortitis
- Systemic vasculitis
- Crow et al. J Gerontol A Biol Sci Med Sci 2009.
- Mortality in GCA: 5-year survival: 67% for controls vs 35% for GCA cases ($p < .001$)

32

Aortitis can kill you



33

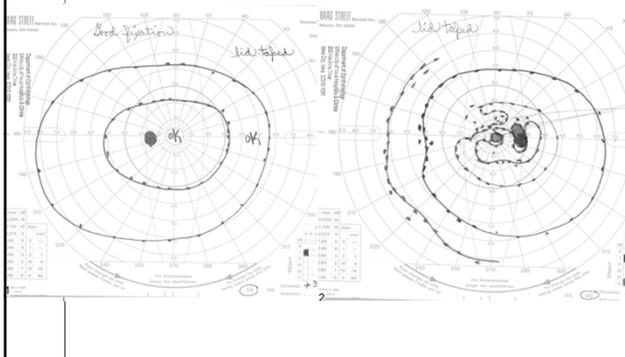
There are five things to remember about acute visual loss in the elderly

- One is GIANT CELL ARTERITIS....
- And the other four are Giant Cell Arteritis



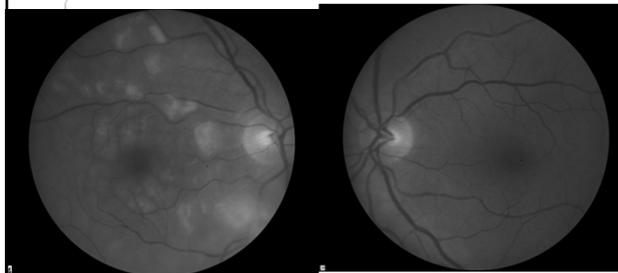
34

75 year old woman with acute loss of vision OD



35

Beware "ischemic" loss of vision without disc edema



Multifocal cotton wool patches can be GCA

36

FFA: Peripapillary choroidal perfusion delay

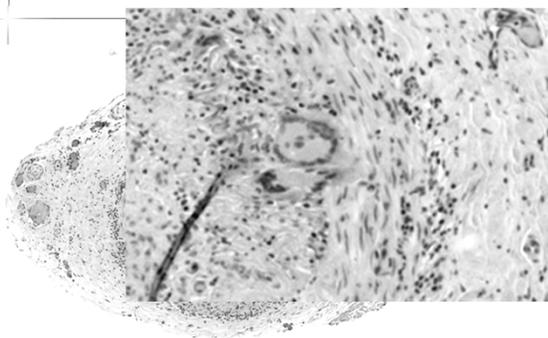


37



38

Biopsy proven giant cell arteritis



39

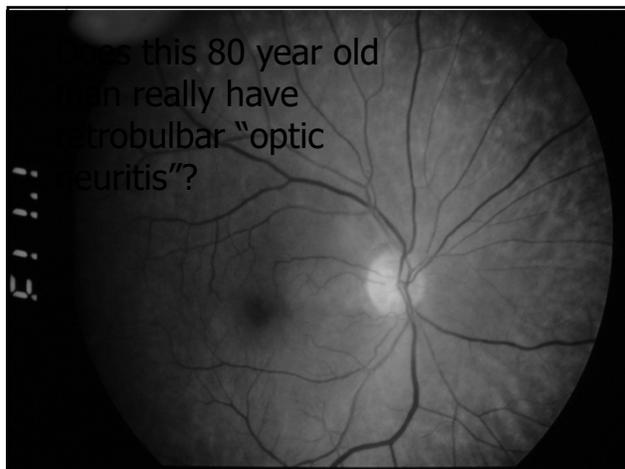
Wicked good pearl: TA Biopsy report

- Impression: No giant cells seen, no evidence for active arteritis
- READ THE BODY OF THE REPORT
 - Focal disruption of the internal elastic lamina (could still be healed arteritis)
 - Areas of fibrosis
 - A few lymphocytes seen in adventitia
 - No artery identified in specimen (vein or nerve or connective tissue)

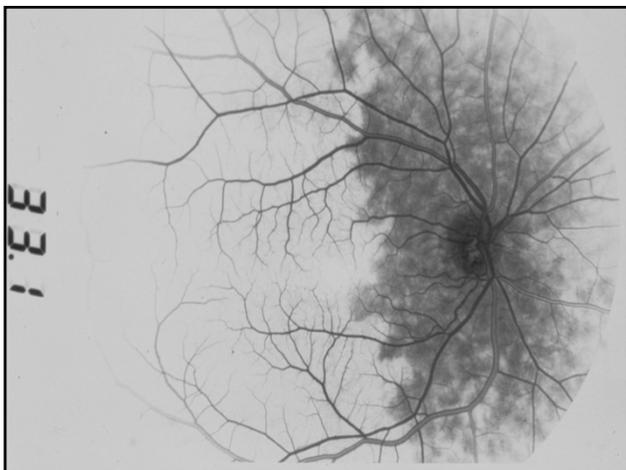
40

	<h3>Beware of Unusual Ocular Presentation of GCA</h3>
	<ul style="list-style-type: none"> ■ Multifocal cotton wool patches ■ Posterior ischemic optic neuropathy (normal appearing optic nerve) ■ Non-embolic central retinal artery occlusion ■ Transient visual loss (amaurosis fugax) ■ Transient diplopia ■ Simultaneous choroidal or retinal artery occlusion with AION

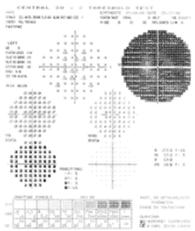
41



42



43

	<h3>Holiday Headache</h3>
	<ul style="list-style-type: none"> ■ 22 y/o woman ■ Severe headache ■ 20/50? Effort (blurred vision) ■ Fundus normal OU ■ HVF: "unreliable" ■ Friday 4:45 PM 

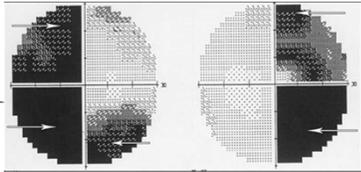
44

Perform a confrontation field

- Beware acute bitemporal field loss
- "Unreliable HVF" = "I have no visual field on this patient!"



45



Life threatening diagnosis?

9-11
EMERGENCY ONLY
URGENTES SEULEMENT



46

Pituitary tumors common

- Incidence of pituitary tumors = 7 per 100K population per year
- As high as 1 in 500 > 65 years
- "The average ophthalmologist should see about one pituitary tumor per year....are you missing your quota?" ----B. Katz MD



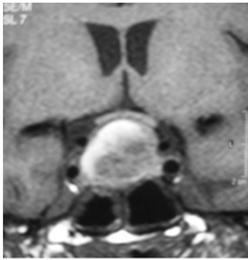
www.abl.curmbs.colostate.edu
www.clinical-blood-testing.com

47

Pituitary apoplexy



- Acute onset
- Usually severe headache
- Bitemporal hemianopsia
- Apoplexy can kill (8%)
- Hypopituitarism (cortisol)
- Emergent scan




biocomp.stanford.edu

48

	<h2>Pituitary apoplexy</h2>
	<ul style="list-style-type: none"> ■ Semple et al. Neurosurgery. 56(1):65-73, 2005. ■ 62 patients (Average age 51.1 years) ■ Average time presentation: <u>14 days</u> after ictus ■ 81% no previous history of pituitary tumor ■ Headache (87%) with diminished visual acuity in 56% (bitemporal hemianopia 34%) ■ <i>73% hypopituitarism; 8% diabetes insipidus</i> ■ <i>Apoplexy is a CLINICAL not radiographic dx</i>

49

	<h2>Unreliable visual field</h2>
	<ul style="list-style-type: none"> ■ Wicked good pearl: Do a confrontation visual field especially in patients with an "unreliable" HVF (same as saying I have no visual field and it could be a brain tumor and I aint doin' a damn thing about it)

50

	<h2>The reaper is coming....</h2>
	<div style="display: flex; align-items: center;">  <div> <p>For your patient's eyes For your patient's life</p> <p>He is coming for you too... For your very soul....</p> </div> </div>

51

	<h2>Every day we battle the reaper....your superpower is keeping him at bay</h2>
	

52

He goes by many names....



53

He comes in many forms & one of his names is physician "burnout"



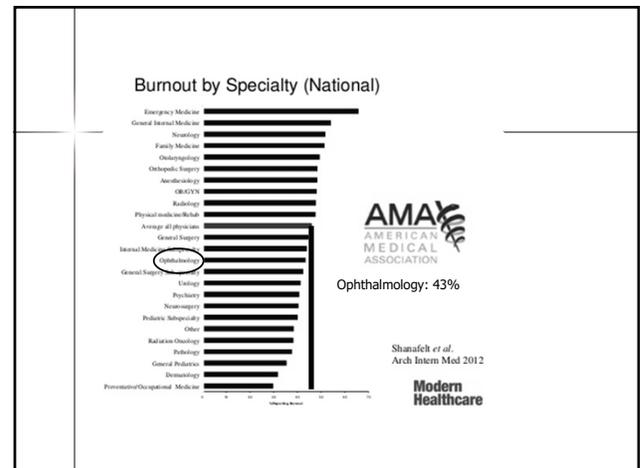
54

Medscape

**OPHTHALMOLOGIST
BURNOUT &
HAPPINESS
REPORT**

2021

55

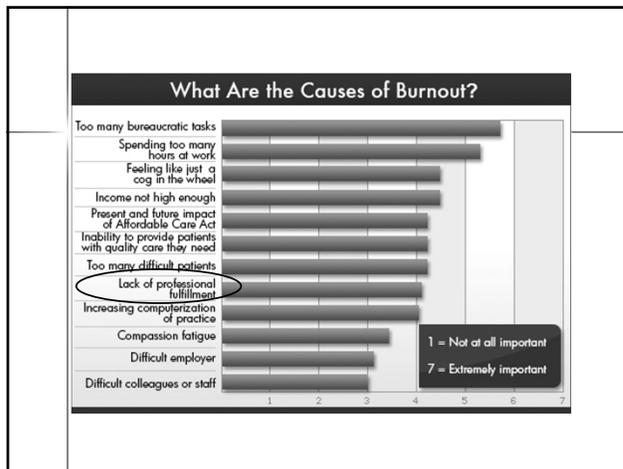


56

Maslach Burnout Inventory

- **Emotional exhaustion (EE)** – feelings of being emotionally overextended by one's work; no longer able to give of themselves at a psychological level
- **Depersonalization (DP)** – unfeeling and impersonal response toward recipients of one's service, care, treatment, or instruction; negative, cynical attitudes and feelings about one's clients; dehumanizing perception of others that can result in viewing clients as somehow deserving of their troubles
- **Personal accomplishment (PA)** – feelings of competence and successful achievement in one's work with people

57



58

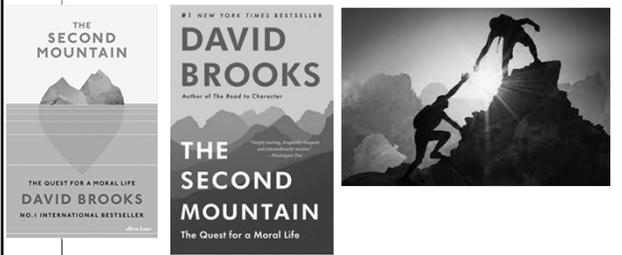
The reaper is coming and his name is Burnout

59

Your dream is my dream....making a difference...enabling your dream is my dream

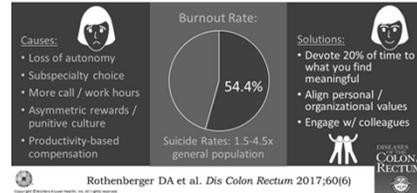
60

Second mountain



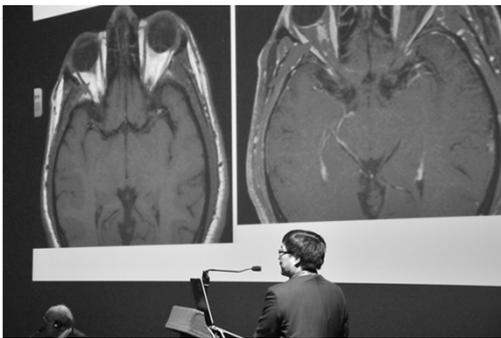
61

Physician Burnout: Systematic Review & Framework For Action



62

How my Mom thinks I teach residents...



63

How I think I am teaching



64

How my residents think I teach them....



65

How residents really learn



66

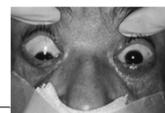
Acute ophthalmoplegia in a diabetic

- 35 y/o WM with diabetes
- History of diabetic ketoacidosis
- Complete left ptosis
- Acute onset almost complete left sided ophthalmoplegia
- What should be the evaluation?



67

Life threatening diagnosis?



9-1-1
EMERGENCY ONLY
URGENCES SEULEMENT



68



69

	Yes, DKA is book answer but don't procrastinate on seeing ophthalmoplegia if....
	<ul style="list-style-type: none"> ■ Acute painful ophthalmoplegia ■ The ICU or post-surgical cases ■ Cancer patients on chemotherapy ■ Long term immunosuppression or corticosteroid use ■ Chronic renal dialysis ■ Chronic antibiotic treatment ■ Bone marrow or organ transplant

70

	Cavernous sinus lives close to other structures

71

	Case from Iowa
	<ul style="list-style-type: none"> ■ 76-year-old woman with acute myelogenous leukemia (AML) ■ Induction chemotherapy (day 13) ■ Two day history of worsening right-sided periorbital swelling & erythema <p>http://webeye.ophth.uiowa.edu/eyeforum/cases/108-Orbitorhinocerebral-Mucormycosis.htm</p>

72

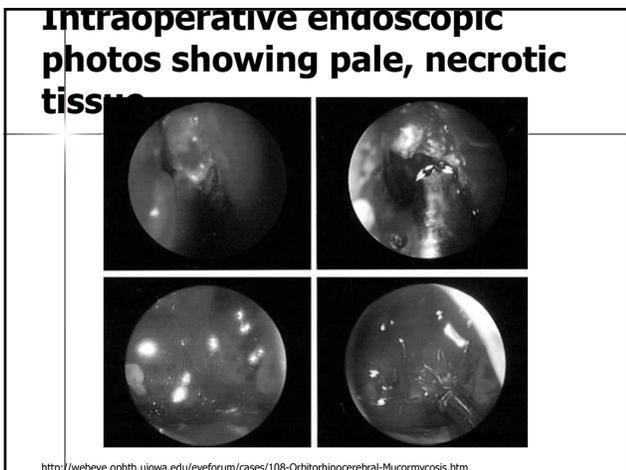


73

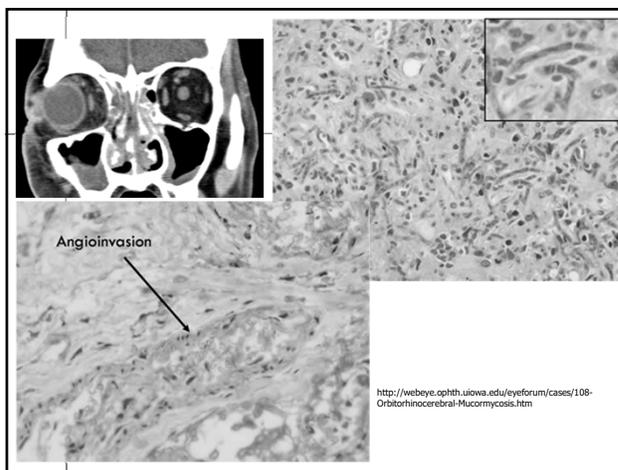
Is this orbital inflammatory pseudotumor? Tolosa Hunt?

- Wicked good pearl: Don't give patients who are immunosuppressed the diagnosis of autoimmune disease!
- For example "optic neuritis in 45 y.o. M on chemotherapy for Stage IV lung cancer

74

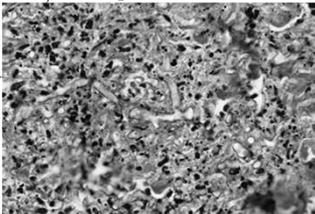


75



76

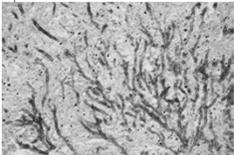
From: <http://medic.med.uth.tmc.edu/edprog/Path/InfDis.htm>



Mucor



Does not have to show black eschar



Can be Aspergillus too!

77

How could a fungal orbital apex lesion be missed on MRI?

- Need contrast to see enhancement
- Fungi are dark on MRI
- No fat suppression can miss lesion
- Super-dangerous because tempting to give steroids to...
 - Presumed retrobulbar optic neuritis
 - Presumed Tolosa Hunt syndrome

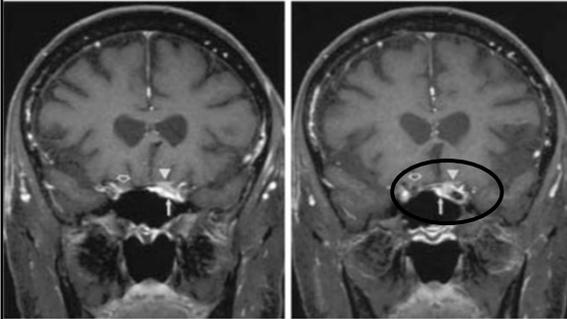
78

And the MRI of head was normal.....

■ WHY?

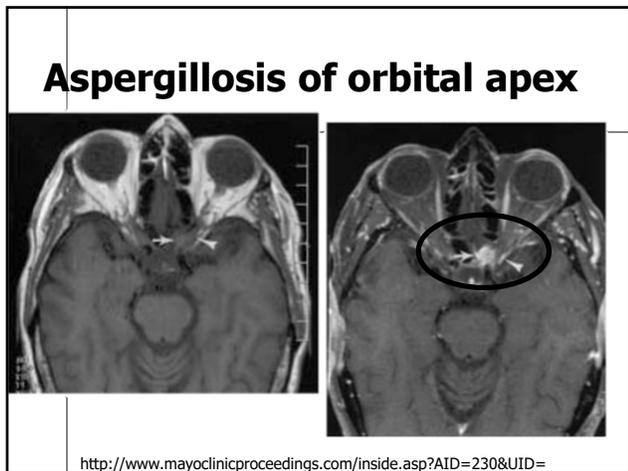
79

**YOU NEED CONTRAST.
DISTINCTIVE SIGN = SINUS ENHANCEMENT!**

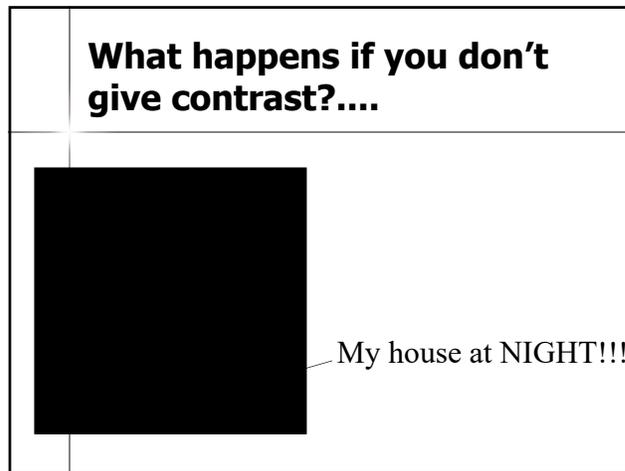


<http://www.mayoclinicproceedings.com/inside.asp?AID=230&UID=>

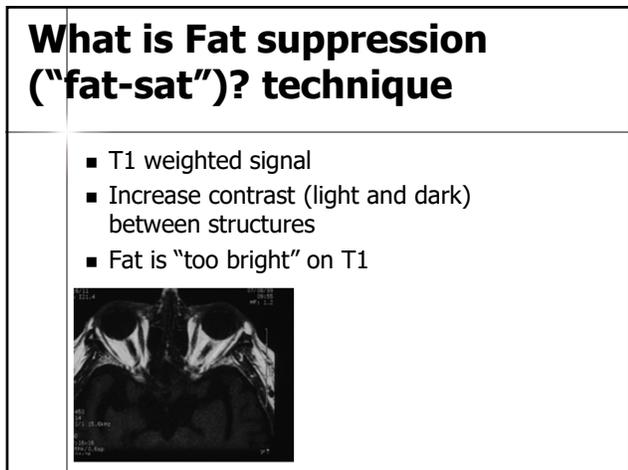
80



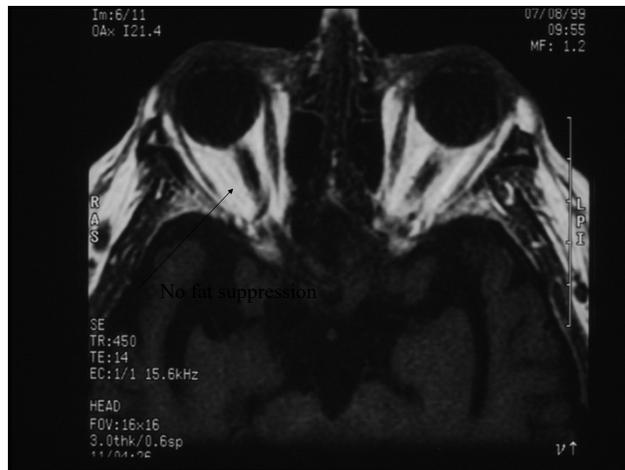
81



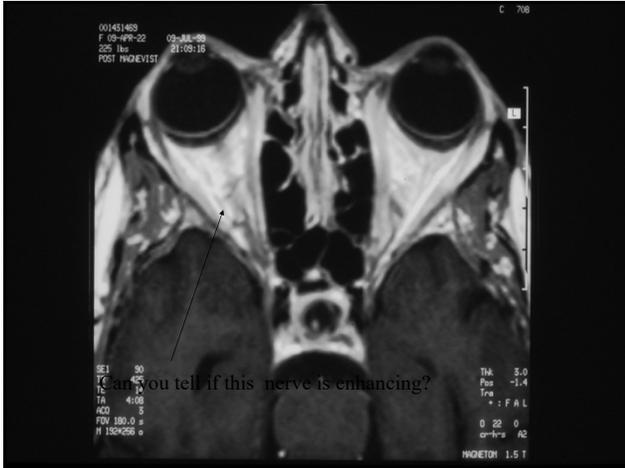
82



83



84



85

And the MRI of head was normal.....

■ WHY?

86

Polar bear in a snowstorm

87

Complementary roles for CT & MR in fungal orbital apex disease (T2 dark)

<http://endoscopicsinussurgery.co.uk/chapternine.html>

88

What's wrong with this picture?

- 60 y/o diabetic man
- New onset ptosis right
- Right adduction, elevation, & depression deficit
- 45 exotropia (XT)
- Diagnosis: "Ischemic third nerve palsy"
- Plan: "Return 6 weeks"




89

Tell your technicians....

- If the patient's complaint is diplopia or ptosis or....
- If you have to lift a ptotic lid to put in the dilating drops then....
- STOP, come get the doctor before dilating



90



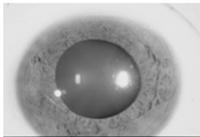
Acute pupil involved third n. palsy Life threatening diagnosis?




91

Rule of the pupil

- A pupil involved third nerve palsy
- Aneurysm of posterior communicating artery until proven otherwise




92

And the MRI of head was normal.....

■ WHY?

93

What is the imaging study of choice for isolated third nerve palsy?

- Because you need an "A" (angiogram) to find an "A" (aneurysm)
- CTA, MRA
- CTA/MRI/MRA combination

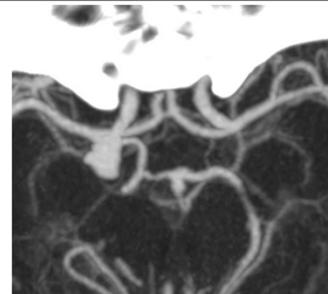
94

There is no "I" in "TEAM" and....

■ There is no "A" in "MRI"

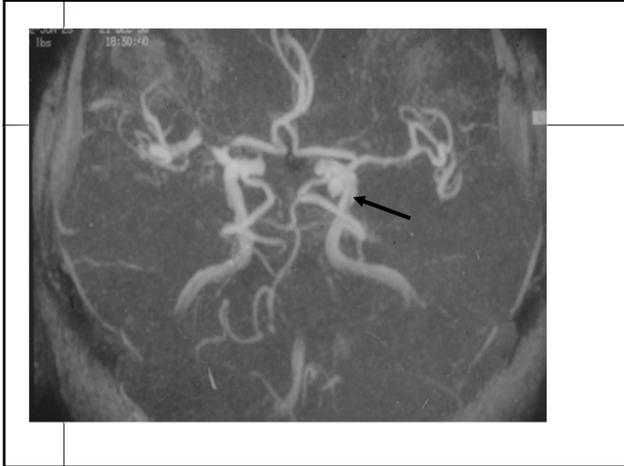
95

CTA: R posterior communicating a. aneurysm

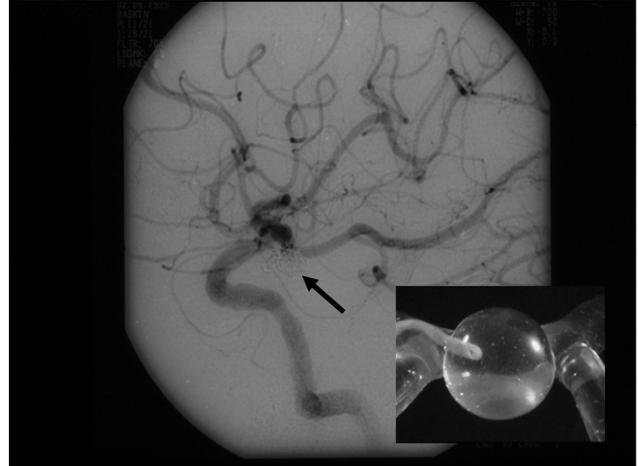


<http://www.cedars-sinai.edu>

96



97



98

	<p>Choice of imaging strategy in third nerve palsy</p>
	<ul style="list-style-type: none"> ■ CT/CTA first to look for SAH/aneurysm in pupil involved third nerve palsy ■ MRI/MRA first to look for non-aneurysmal etiologies or do MRI second if CTA negative first ■ Catheter angiography if MRI/MRA and CTA not of sufficient quality or insufficient confidence level to rule out aneurysm

99

	<p>As if death weren't enough....</p>
	<p>A black and white photograph of a warning sign. The sign reads "TOUCHING WIRES CAUSES INSTANT DEATH" in large, bold, capital letters. Below this, it says "\$200 FINE" flanked by two skull and crossbones symbols. At the bottom, it says "Newcastle Tramway Authority" with small circles on either side. The website "Buzzardbros.com" is visible in the top left corner of the sign's image.</p>

100



101

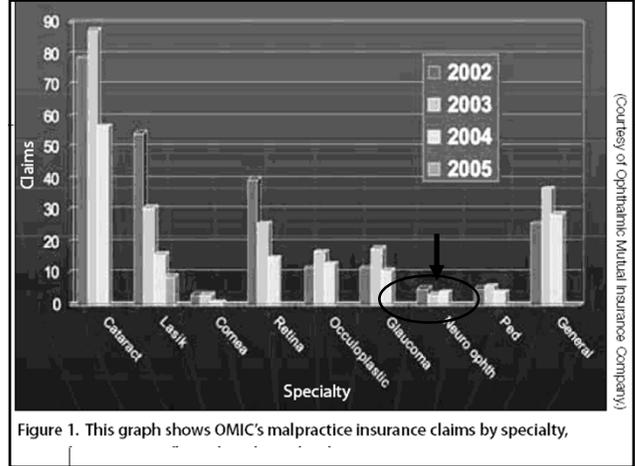


Figure 1. This graph shows OMIC's malpractice insurance claims by specialty,

102

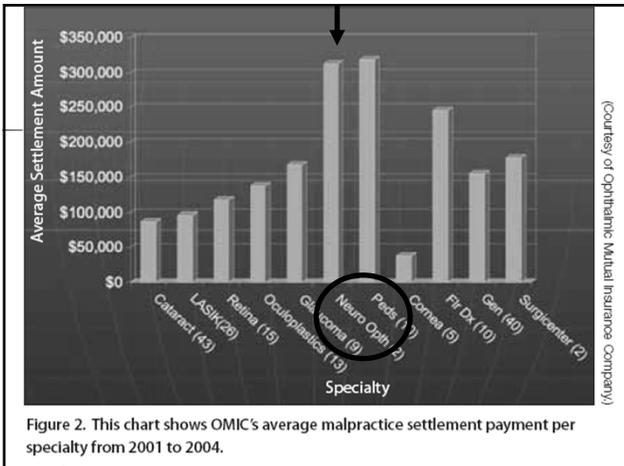


Figure 2. This chart shows OMIC's average malpractice settlement payment per specialty from 2001 to 2004.

103

Horner syndrome

- Wicked good pearl: In acute setting just image sympathetic axis for Horner syndrome

104

Acute painful anisocoria after car accident



105

Life threatening diagnosis?



106

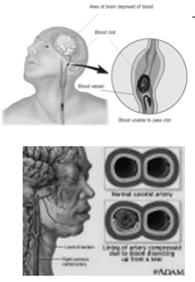
And the MRI of head was normal.....

■ WHY?

107

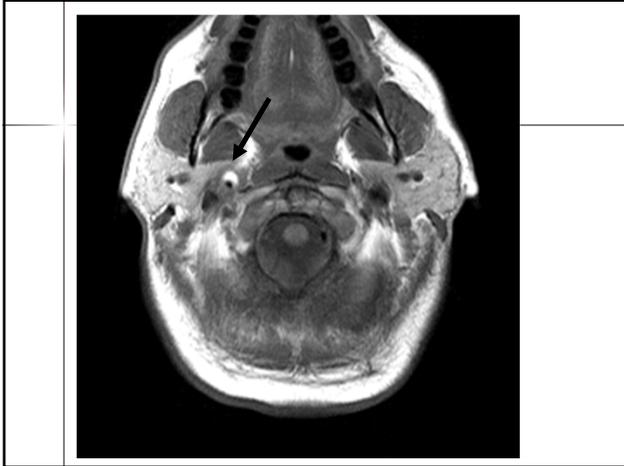
Carotid dissection

- History of trauma
- Neck pain
- Ipsilateral Horner syndrome
- Transient visual loss
- Branch or central retinal artery occlusion
- Don't waste time localizing...just image (drops not available anyway)



www.nlm.nih.gov

108



109



110

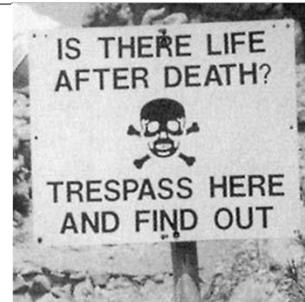
Amaurosis fugax



- 70 year old woman judge
- Curtain over vision RE x 10" resolved
- Normal eye exam
- Dx: "ocular migraine"

111

Life threatening diagnosis?



112

And the MRI of head was normal.....

■ WHY?

113

High grade stenosis ICA

114

Vertebral dissection & top of the basilar syndrome

- Acute onset homonymous hemianopsia
- Acute onset bilateral progressive ophthalmoplegia
- Initial structural MRI may be normal but DWI might show evolving acute infarct
- May be spontaneous dissection: no trauma
- Dissection can propagate or embolize

115

Vertebral artery dissection

T1 - Fat Sat
Right vertebral artery dissection

DWI
Lateral medullary infarct

WWW.Uwo.ca

116

His name is Andrew....

- 33-year-old WM
- Transient dizziness, blurry vision, followed by loss of consciousness after watching bungee jumpers at Iowa St. Fair
- On regaining consciousness, bilateral ptosis, exotropia: Noncontrast cranial CT in ER was "normal" MRI with contrast : "normal"
- About to be discharged from ER

117

MRI head negative



118

Course

- Top of the basilar syndrome
- Intravascular tPA
- Locked in syndrome
- Recovered slowly
- Rehab, walked out of hospital
- Writing a book about his experience called "One Fine Day"....

119

Wrote it up....



120

	<h2>Years later...</h2>
	<ul style="list-style-type: none"> ■ Receive a phone call from this patient ■ "Hey, Dr. Lee...you don't remember me probably but I had a stroke at age 33 and you helped me at Iowa" ■ Me: "Sure, I remember you" ■ "I was just calling to let you know that I went back to college, I got married, and now I have a new baby, his name is Andrew" ■ Me: "That is so great, congratulations" ■ "No, Dr. Lee you don't understand...his name is ANDREW!"

121

	<h2>Chief complaint: NONE</h2>
	<ul style="list-style-type: none"> ■ 73-year-old WF ■ Chief complaint: NONE now (2010) ■ PMH: Paraneoplastic optic neuropathy, recovered ■ CXR: Small cell carcinoma of lung ■ Resected, chemotherapy, radiation in 1997 <p>■ Published: Luiz JE, Lee AG, Keltner JL, Thirkill CE, Lai EC. Paraneoplastic optic neuropathy and autoantibody production in small-cell carcinoma of the lung. J Neuroophthalmol. 1998;18:178-181.</p>

122

	<h2>Follow up 2010</h2>
	<ul style="list-style-type: none"> ■ Pt: "You don't remember me do you Dr. Lee?" ■ Me: "Well,...I um....sure...maybe" ■ Pt: "I had lung cancer & you found it thru my eye" ■ Me: "Really" ■ Pt: "Yeah, you wrote it up in a journal" ■ Me: "Oh, yeah, sure, now I remember. How are you, why are you coming today?" ■ Pt: "I just wanted to tell you that I was still alive and it is been 14 years, so thanks."

123

	<h2>Longest known survivor</h2>
	<p style="text-align: center;">Long-Term Survivor of Paraneoplastic Optic Neuropathy</p> <p>Small cell lung cancer carries a very poor long-term prognosis. In a survey performed at the Mayo Clinic from 1997 to 2003, the 5-year survival rate was only 9% (1). In addition, to our knowledge, the longest published survival duration for paraneoplastic optic neuropathy secondary to small cell lung cancer has been 8 years (2). We wish to provide an update on a patient previously reported by one of us (A.C.L.) in this Journal in 1998 (3) who remained 14 years later without evidence of tumor recurrence and believed to be in clinical remission. The earlier detection of the tumor from her neuro-ophthalmologic examination followed by timely systemic treatment may have contributed to her favorable outcome. To the best of our knowledge, she is the longest survivor of paraneoplastic optic neuropathy secondary to small cell lung cancer. At the time of her diagnosis, she underwent surgery, chemotherapy, and radiation therapy and was believed to be in remission at the last follow-up.</p> <p>The patient, a 73-year-old white woman, was first seen in the neuro-ophthalmology clinic on July 20, 2000. She was complaining of blurred vision in the left eye that had worsened since sustaining a fall in March 1, 2000. She was seen by her neurologist who obtained a brain MRI that showed no focal lesions.</p> <p>in March 2000 showed no evidence of recurrence or metastatic disease. The patient returned to The Methodist Hospital after 10 years of follow-up as specifically report on her progress and survival from small cell carcinoma of the lung.</p> <p style="text-align: right;">Derrick Poon, MD Sachana Yalamanchili, MD Department of Ophthalmology, The Methodist Hospital Houston, Texas</p> <p style="text-align: right;">Andrew G. Lee, MD The Methodist Hospital Houston, Texas</p> <p style="text-align: right;">Department of Ophthalmology, Neurology, and Neurosurgery, Weill Cornell Medical College New York, New York</p> <p style="text-align: right;">Department of Ophthalmology, University of Iowa Hospitals and Clinics Iowa City, Iowa</p> <p style="text-align: right;">Department of Ophthalmology, UTMB-Galveston Galveston, Texas</p>

124

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



125

PubMed.gov

My first and second mountains in PubMed (You are my second mountain in academics)

MY NCBI FILTERS

RESULTS BY YEAR

TEXT AVAILABILITY

- Abstract
- Free full text
- Full text

ARTICLE ATTRIBUTE

- 1 Update on Ocular Myasthenia Gravis. Smith SJ, Lee AG. *Neurool Clin.* 2017 Feb;35(1):115-123. doi: 10.1016/j.noc.2016.08.008. PMID: 27888889 Review.
- 2 Ethambutol optic neuropathy. Chamberlain PD, Saldut A, Berry S, Lee AG. *Curr Opin Ophthalmol.* 2017 Nov;30(5):545-551. doi: 10.1097/ICU.0000000000000416. PMID: 28795959 Review.
- 3 Update the Miller Fisher variants of Guillain-Barré syndrome. Al-Othman B, Raabe J, Kim A, Lee AG. *Curr Opin Ophthalmol.* 2019 Nov;32(5):462-466. doi: 10.1097/ICU.0000000000000811. PMID: 31934827 Review.
- 4 Space flight-associated neuro-ocular syndrome (SANS). Lee AG, Mader TH, Gibson CK, Buxtoner TJ, Siver WJ. *Curr Opin Ophthalmol.* 2019 Jul;32(7):1166-1167. doi: 10.1097/ICU.0000000000000779. PMID: 29227011 Free PMC article. Review.

126

There is only one thing to say to the Devil of Physician burnout...You are my second



127

Not today, not on my watch



128

	<p>Churchill Downs (Kentucky Derby)</p>
	 <p>BARBARO</p>

129

	<p>30 yo AAF (BMI 40) with acute, bilateral visual loss and HA</p>
	<ul style="list-style-type: none"> ■ 20/30 OD and 20/40 OS ■ HVF -14 dB and -16 dB with bilateral arcuate defects (sup and inf) ■ Grade 4 papilledema OU ■ BP 140 mm Hg ■ MRI/MRV WNL ■ LP 50 cm of water OP with normal CSF contents

130

	<p>Too little, too late</p>
	

131

	<p>Fulminant IIH</p>
	<hr/> <ol style="list-style-type: none"> 1. Diagnostic criteria for IIH fulfilled (Table 1) including papilledema 2. Less than 4 weeks between symptom onset and severe loss of visual acuity or field 3. Rapid worsening of vision over days <hr/>

132

Stay on target: Preserve vision



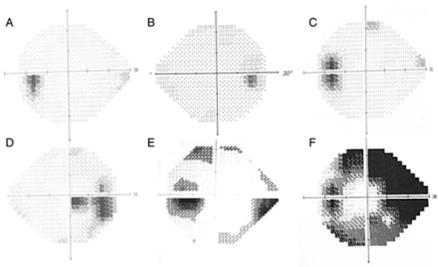
133

Which of the following is next most appropriate step?

- Admit to hospital
- Lumbar drain
- s/p VP shunt with Strata 1.2 setting
- Marked improvement in HVF MD -8 dB

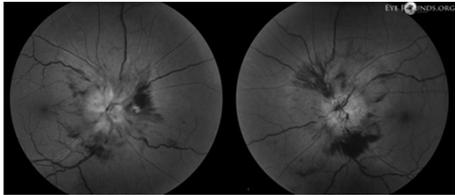
134

All of these IIH patients have 20/20 OU but who needs the knife?



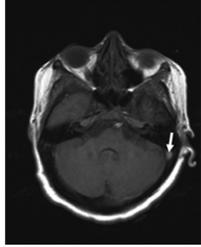
135

25 yo obese female with HA, TVO, PST



136

MRI high signal in left TST



141

Double track sign on T1 post contrast



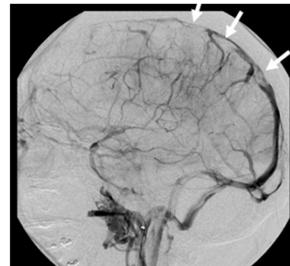
142

MR venogram

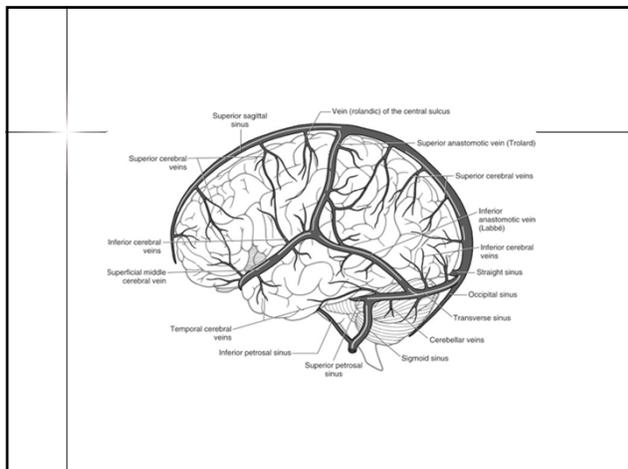


143

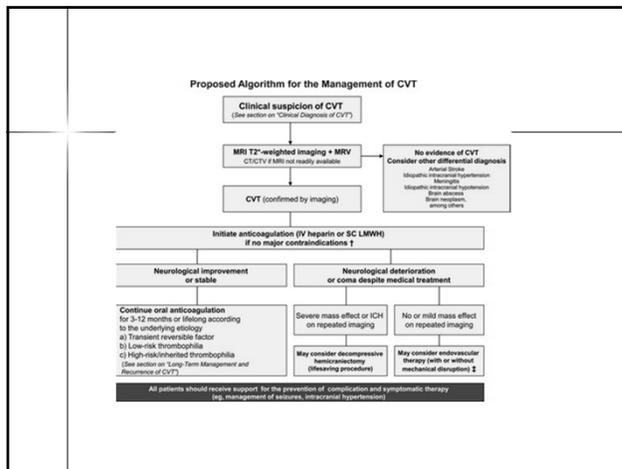
**Catheter angiogram
SSST**



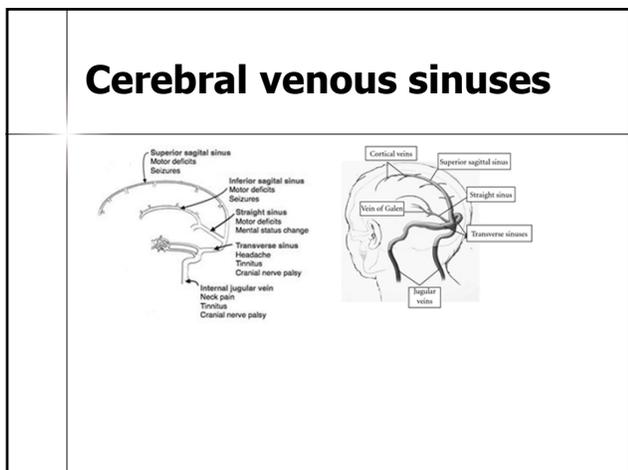
144



145



146



147

Isolated intracranial hypertension as the only sign of cerebral venous thrombosis

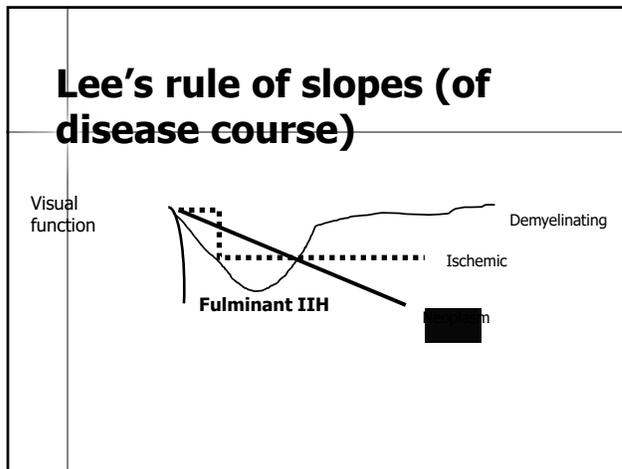
Article (PDF Available) in *Neurology* 53(7):1537-42 · November 1999 with 178 Reads
 DOI: 10.1212/WNL.53.7.1537 · Source: PubMed
 Cite this publication

- N = 160 consecutive CVT
- 59 (37%) presented with isolated increased ICP
- Neuroimaging: > 1 sinus in 35 patients (59%)
- Brain CT normal in 27/50 (54%)
- LP(n=44): elevated opening pressure in 25/32 (78%)
- Abnormal CSF content in 11 (25%)
- Conclusion: Isolated raised ICP from CVT differs in management from IIH and should be classified neither as "IIH" nor "pseudotumor cerebri"

148

Term	Definition
Adult	All patients above the age of 16 years old for the purpose of this statement.
Idiopathic intracranial hypertension (IIH)	Patients with raised ICP of unknown aetiology fulfilling the criteria set out in figure 1.
Fulminant IIH	Patients meeting the criteria for a precipitous decline in visual function within 4 weeks of diagnosis of IIH. ¹⁴
Typical IIH	Patients who are female, of childbearing age and who have a body mass index (BMI) greater than 30 kg/m ² .
Atypical IIH	Patients who are not female, or not of childbearing age or who have a BMI below 30 kg/m ² . These patients require more in-depth investigation to ensure no other underlying causes (table 2). ^{15,25}

149



150

AUGUST 21, 2019

\$3 Million Jury Verdict for Late Diagnosis of Idiopathic Intracranial Hypertension, Blindness

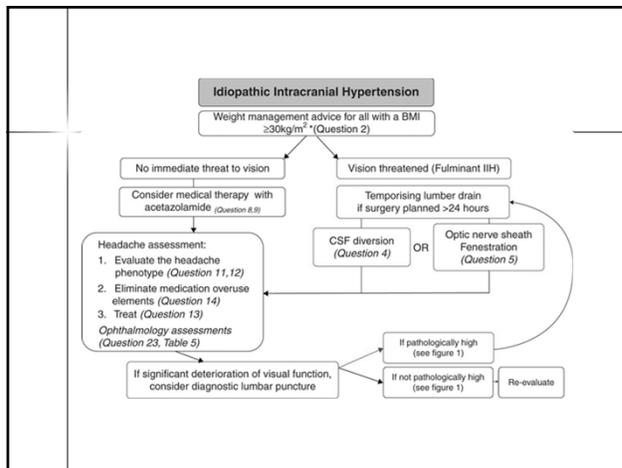
by Robert Kreisman

Melina Greer, 25, went to a hospital emergency room complaining of a severe headache, neck pain and decreased and blurred vision. She received a neurological consultation from neurology resident, Dr. Basad Essa, who noted that she was having difficulty performing an optic fundus examination.

An emergency physician later discharged Greer with a diagnosis of a complex migraine. Two days later, she returned to the hospital with complete vision loss. A lumbar puncture led to a diagnosis of idiopathic intracranial hypertension.

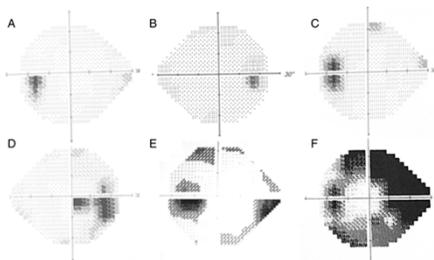
Greer sued neurologist Dr. Ruggero Serafini, whom she claimed had consulted on her case during the first hospital visit, alleging he chose not to timely diagnose intracranial hypertension. It was alleged had she undergone a simple fundus examination and lumbar puncture, Greer asserted she could have been timely treated with acetazolamide and an LP (lumbar peritoneal) shunt and avoided additional vision loss.

151



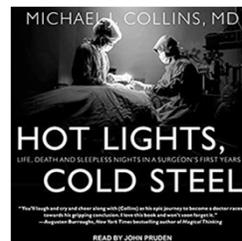
152

All of these IIH patients have 20/20 OU but who needs the knife (surgery: ONSF or VPS)?



153

Sometimes patients just need "hot lights and cold steel"



154

New Version Of 'Operation' Just Has Players Use Essential Oils Instead Of Performing A Medical Procedure

JUNE 27/05, 2015



155

United flight 232



- United flight 232 Denver to Chicago
- July 19, 1989
- Captain Al Haynes: 30,000 hour pilot
- First Officer Records & Engineer Dvorak
- Eight flight attendants
- 285 passengers on board DC-10



156

Uh Oh

- Somewhere over Iowa
- Fan broke apart, lost #2 engine
- No hydraulics
- Plane can not fly without hydraulics
- Sioux City had an open runway
- Capt. Haynes kept his cool
- Capt. Haynes formed a team

157

Team building

- Passenger on board: Dennis Fitch, a United training & check pilot
- 3,000 hours on DC-10
- They could only turn right
- They had no controls
- They used the engine thrust to steer
- This had been done once before in Japan (Fitch had studied it)

158

Capt Fitch meet Capt Haynes

- Transcript of meeting of Captains in cockpit
- Haynes: "My name's Al Haynes"
- Fitch: "Hi, Al. Denny Fitch"
- Haynes: "How do you do, Denny?"
- Fitch: "I'll tell you what. We'll have a beer when this is all done"
- Haynes: "Well, I don't drink, but I'll sure as hell have one."

159

Transcript for the approach

- Sioux City Approach: United two thirty-two ... You're cleared to land on any runway..
- Haynes: [Laughter] Roger. [Laughter] You want to be particular and make it a runway, huh?



160

Initially pointed to Des Moines then Sioux City, Iowa



161

The plane crash landed but landed

- 111 died
- But 185 survived
- Including Captain Haynes



162

After the accident...

- 57 flight crews could not replicate the landing in the simulator



163

Challenge question: What should we do now?

1. Congratulate Captain Haynes
2. Make a charitable donation in his name
3. Avoid flying
4. Perform a root cause analysis

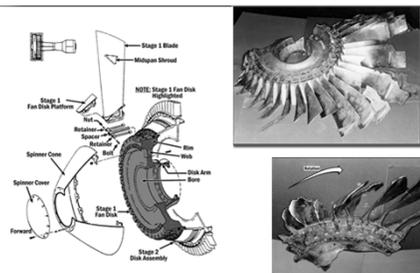
164

Root cause analysis

- Fracture of fan disk
- Failure of maintenance process to detect crack
- Metal 'inclusion' in disk
- Defect traced back to metal processing plant
- Defect in elimination of gaseous anomalies during purifying of (molten) titanium disk ingot
- Newer batches used a 'triple vacuum' process to eliminate these impurities.

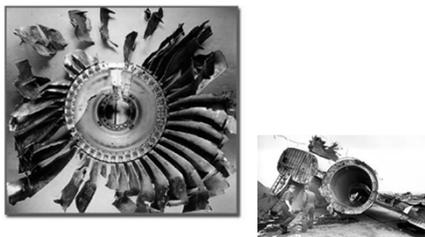
165

The fan failed



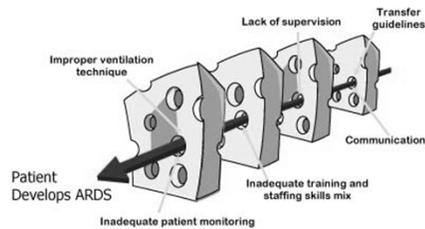
166

Fan reconstructed



167

Reason's Swiss cheese



168

	<h3>Root cause analysis</h3>
	<ul style="list-style-type: none"> ■ Fracture of fan disk ■ Failure of maintenance process to detect crack ■ Metal 'inclusion' in disk ■ Defect traced back to metal processing plant ■ Defect in elimination of gaseous anomalies during purifying of (molten) titanium disk ingot

169

	<h3>The rest of the story: United 232...why are we doing this?</h3>
	

170

	<h3>Mike Matz was on United 232 in 1989</h3>
	<ul style="list-style-type: none"> ■ He pulled three young children and a baby from the wreckage (ages 14, 12, 9—unaccompanied minors) ■ He stayed & played cards with the kids at the Sioux City airport, keeping them calm ■ He tracked down children's grandmother to tell her they were safe

171

	<h3>Mike Matz is a horse trainer</h3>
	<ul style="list-style-type: none"> ■ 132nd Kentucky Derby ■ Barbaro was winner of the Derby 2006 ■ Mike was the trainer
	

172

In the Grandstand at the Kentucky Derby...

- Two brothers & their sister were in grandstand at Churchill Downs cheering just a little bit louder (thanks to Captain Haynes & Mike)

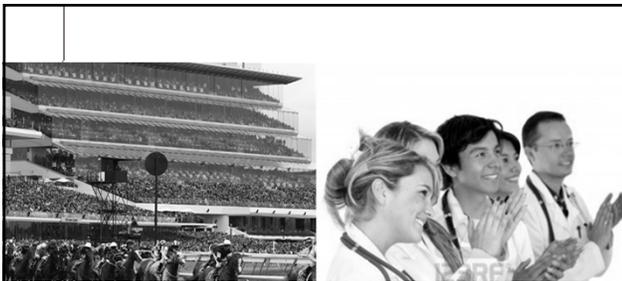


173

Sadly, there was no Triple Crown for Barbaro who broke his leg at the Preakness 2006 and was euthanized



174



Who will be clapping a little bit louder in your grandstand because of you?

175

Barbaro



176

	Summary
	<ul style="list-style-type: none"> ■ List five potentially life threatening diagnosis in neuro-op ■ Define "rule of the pupil" ■ Define best imaging study for the 5 dx ■ Show key clinical or radiographic features for the above 5 dx

177

	What does your "list" look like?
	<ol style="list-style-type: none"> 1. Acute HA in elderly with visual loss: Arteritis 2. Acute orbital apex syndrome in DM: Abscess 3. Acute painful anisocoria (big pupil): Aneurysm or (small pupil: Horner syndrome) Arterial dissection 4. Acute painful bitemporal Apoplexy 5. Acute painful homonymous: Arterial dissection 6. Acute fulminant papilledema Acute IIH

178

	What does your "list" look like?
	<ol style="list-style-type: none"> 1. Acute HA in elderly with visual loss: Arteritis 2. Acute orbital apex syndrome in DM: Abscess 3. Acute painful anisocoria (big): Aneurysm 4. Acute Horner syndrome (small) Arterial dissection 5. Acute painful bitemporal Apoplexy

179

	Bottom line: Its your job
	

180

End with a philosophical question & two really quick cases
Why are you here... because you believe as we all do that you can....?



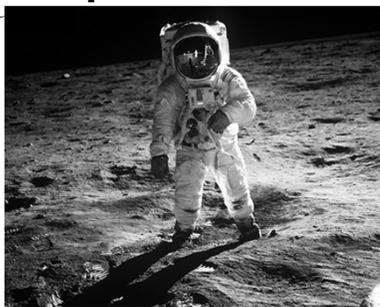
181

On July 20, 1969, I was 5 years old, the moon landing was on tv....



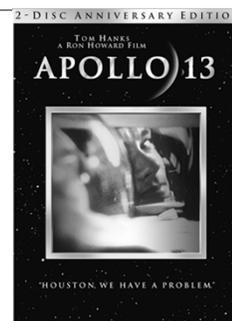
182

"Houston" was the first word spoken from the moon



183

April 1970:
"Houston, we've had a problem"—Jim Lovell



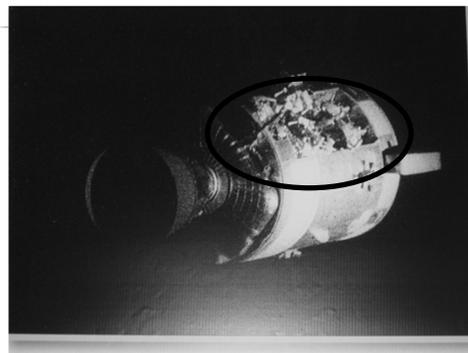
184

Jim Lovell



185

Half spacecraft panel lost



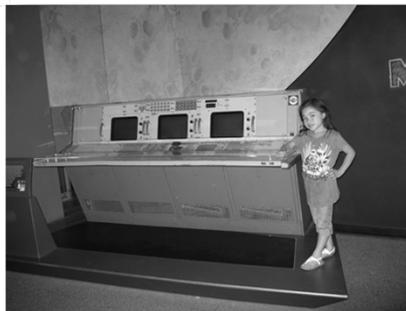
186

Apollo fuel cell



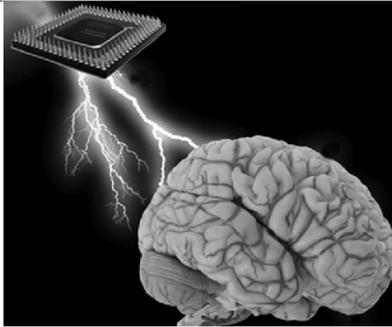
187

Most of the computing power was human brains at NASA



188

It was human brain power that brought Apollo 13 home....



189

JSC at NASA in Houston



190

Human Spaceflight



191



192

**1978: I wanted to be a doctor...
2nd NASA & 3rd choice Jedi knight**

193

Thank you for your time & attention

194

Acute unilateral loss of vision OD

- 20 y.o. woman
- Acute unilateral loss of vision with pain
- Relative afferent pupillary defect OD
- Visual field defect (central scotoma)
- Pain with eye movement
- Normal optic nerve (retrobulbar) O

195

Questions

- Most likely diagnosis
- Work up
- Treatment
- Prognosis

196



197

20 yo WF with acute loss of vision OD, RAPD. OS WNL.

A fundus photograph of the right eye. The optic disc is visible on the right side of the image. In the macular region, there is a large, pale, well-demarcated lesion with a granular or crystalline appearance, consistent with a macular lesion such as a macular hole or a large drusen.

198

Questions

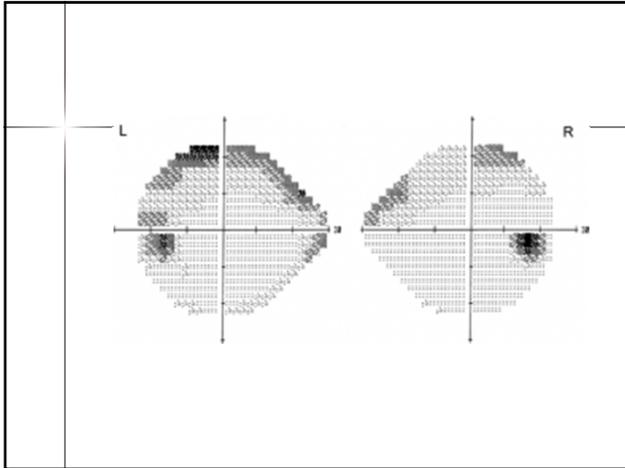
- Most likely diagnosis
- Work up
- Treatment
- Prognosis

199

30 yo WF with HA, TVOs, PST.

Two fundus photographs showing the right and left eyes. The right eye (left image) shows a large, pale, well-demarcated lesion in the macula. The left eye (right image) shows a similar, though smaller, pale lesion in the macula. There are also some retinal vascular changes visible, such as tortuosity and narrowing of the vessels.

200



201

	Questions
	<ul style="list-style-type: none"> ■ Most likely diagnosis ■ Work up ■ Treatment ■ Prognosis

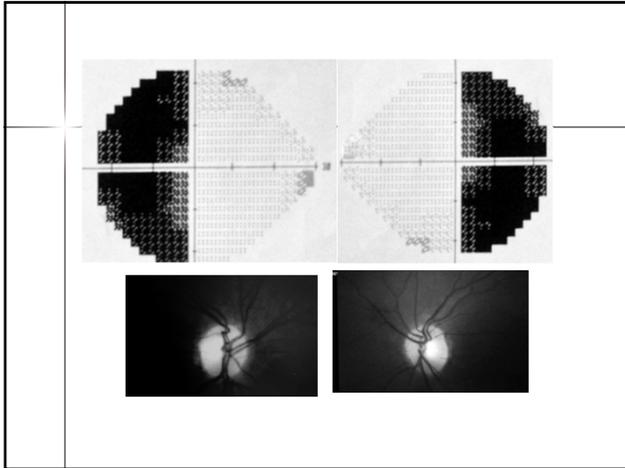
202

	<p>Acute unilateral disc edema in 60 year old woman OD</p>
	<div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <p>A</p> </div> <div style="width: 50%;"> <p>B</p> </div> <div style="width: 50%;"> <p>C</p> </div> </div>

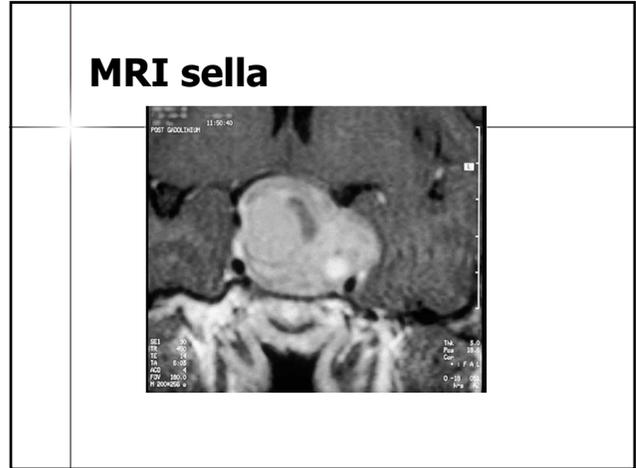
203

	Questions
	<ul style="list-style-type: none"> ■ Most likely diagnosis ■ Work up ■ Treatment ■ Prognosis

204



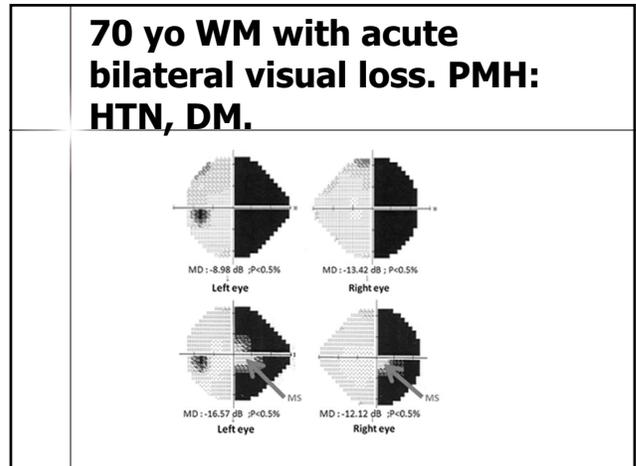
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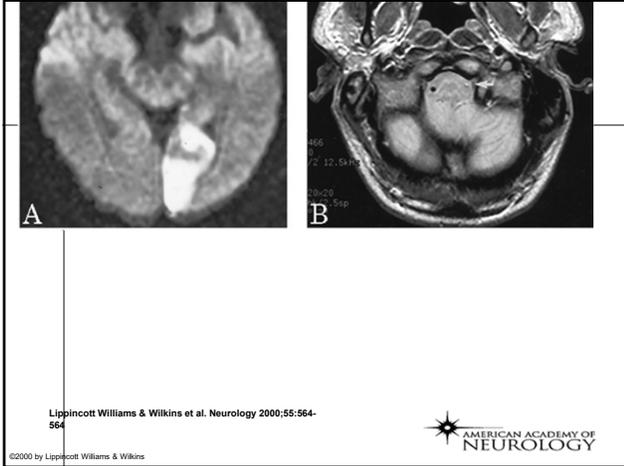
206

- Questions**
- Most likely diagnosis
 - Work up
 - Treatment
 - Prognosis

207



208



209



210

	<h2>Questions</h2>
	<ul style="list-style-type: none">■ Most likely diagnosis■ Work up■ Treatment■ Prognosis

211



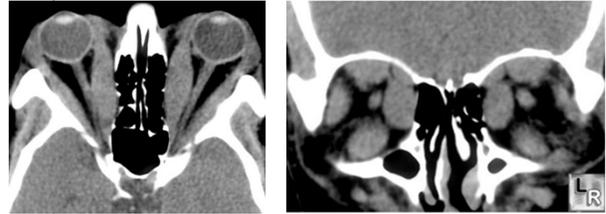
212

Questions

- Most likely diagnosis
- Work up
- Treatment
- Prognosis

213

CT orbit without contrast: What is the distinctive radiographic sign?



214

Questions

- Most likely diagnosis
- Work up
- Treatment
- Prognosis

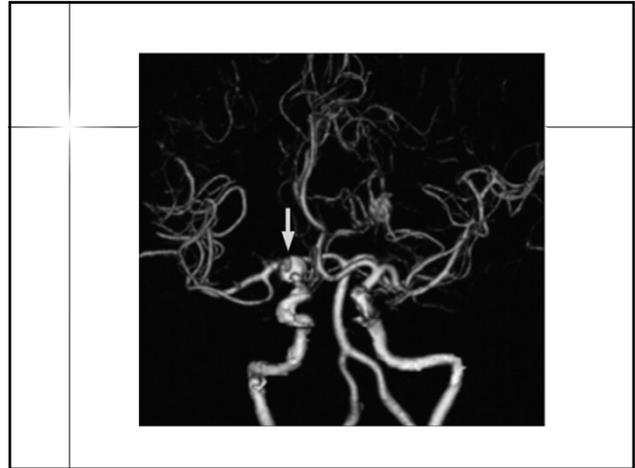
215



216

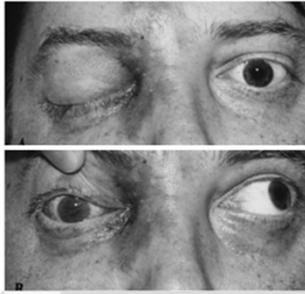
	<h2>Questions</h2>
	<ul style="list-style-type: none">■ Most likely diagnosis■ Work up■ Treatment■ Prognosis

217



218

Facial cellulitis + ophthalmoplegia



Two clinical photographs of a patient's face. The top photograph shows the patient's eyes closed, with significant swelling and redness of the eyelids and surrounding facial skin, consistent with facial cellulitis. The bottom photograph shows the patient's eyes open, demonstrating ophthalmoplegia (paralytic strabismus) with the eyes in an abnormal position.

Ophthalmic Plastic & Reconstructive Surgery
July/August 2006 - Volume 22 - Issue 4 - pp 290-291
doi: 10.1097/01.sop.0000225418.50441.ee
Article

219

	<h2>Questions</h2>
	<ul style="list-style-type: none">■ Most likely diagnosis■ Work up■ Treatment■ Prognosis

220



221

Questions	
■	Most likely diagnosis
■	Work up
■	Treatment
■	Prognosis

222

14 yo boy with diplopia after trauma	

223

Questions	
■	Most likely diagnosis
■	Work up
■	Treatment
■	Prognosis

224

37 yo WM with ptosis OS after MVA.

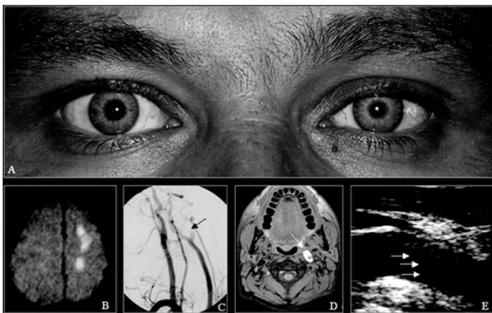


225

Questions

- Most likely diagnosis
- Work up
- Treatment
- Prognosis

226



227

Questions

- Most likely diagnosis
- Work up
- Treatment
- Prognosis

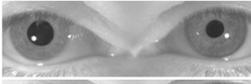
228

	<p>Life threatening diagnosis?</p> 

229

	<p>Anisocoria</p> 
--	---

230

Dark, light, near, pilocarpine	
Dark	
Room light	
Bright light	
Near	
After 0.1% Pilocarpine in the Dark	

231

	<p>Questions</p> <ul style="list-style-type: none"> ■ Most likely diagnosis ■ Work up ■ Treatment ■ Prognosis
--	--

232

Match the scan to the figure



233

Questions

- Most likely diagnosis
- Work up
- Treatment
- Prognosis

234



235

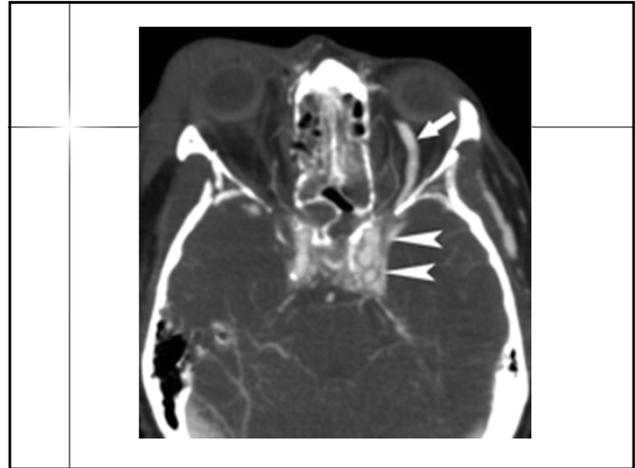
Match the scan to the figure.



236

	Questions
	<ul style="list-style-type: none"> ■ Most likely diagnosis ■ Work up ■ Treatment ■ Prognosis

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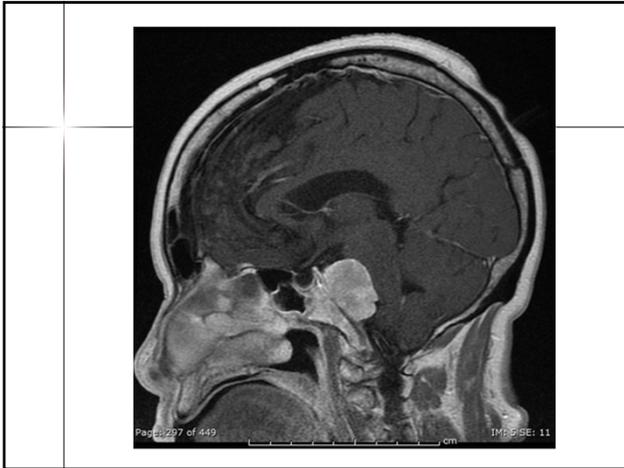
238

	<p>34 yo WF with bilateral abduction deficit and progressive weakness in r.</p>
	

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	Questions
	<ul style="list-style-type: none"> ■ Most likely diagnosis ■ Work up ■ Treatment ■ Prognosis

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34 yo WM with bilateral adduction deficit and diplopia x 1 week.

Five panels (A-E) showing eye movements. Panel A shows normal lateral gaze. Panel B shows normal medial gaze. Panel C shows normal lateral gaze. Panel D shows normal medial gaze. Panel E shows normal medial gaze.

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Questions

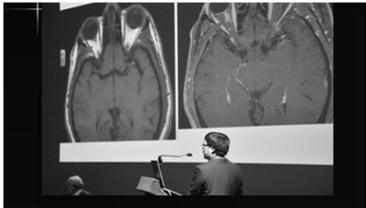
- Most likely diagnosis
- Work up
- Treatment
- Prognosis

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Milea D et al. J Neurol Neurosurg Psychiatry 2001;70:252-255

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<p>I am not here just to teach you ...</p> <p>I am here to inspire you!</p>
<p>It is inspiration that will teach you.</p>  A black and white photograph showing a person from behind, sitting at a desk and presenting two large MRI scan images on a screen. The person is looking at the screen, and the images are clearly visible.

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<p>ONE PERSON CAN MAKE A DIFFERENCE, AND EVERYONE SHOULD TRY</p> <p>-JOHN F. KENNEDY-</p>

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