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شعبة الإمارات لطب الأسرة

Neurology

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Lecture topics

- Stroke
- Neuropathy
- Tremor
- Headache
- Vision loss

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A 68 yo female presents with 6 hours of right arm weakness and mild slurring of the speech. It has started to improve. Her BP is 166/94, LDL 145/TC 236, and recent FBS 107 with A1c = 6.2. Which of the following is the best intervention to decrease future stroke risk?

A. Atorvastatin 80 mg daily
B. Add/intensify BP meds to BP goal < 130/80
C. Start metformin and titrate to 1000 mg bid
D. Start a high-intensity exercise program as tolerated

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Correct answer is D
Relative risk reductions with behavioral modifications

Intervention	Relative Risk Reduction (%)
High-intensity physical activity	64
BP reduction	30 - 40
Antiplatelet agents	18 - 37
Statin therapy	16 - 33

Simmons B, Gadegbeku A, Cirignano B, Transient Ischemic Attack: Part II. Risk Factor Modification and Treatment, AFP, Sept 2012: 86(6); 527-532.

Stroke

- 6th most common cause of death in USA
  - CAD #1, cancer #2, COVID #3, injury #4, COPD/CLRD #5
- 87% of strokes are ischemic
- 13% are hemorrhagic
  - Subarachnoid hemorrhage
  - Intracerebral hemorrhage

Stroke – risk factors

- Increasing age
- Hypertension
- Diabetes mellitus
- Chronic kidney disease
- Sleep apnea
- Atrial fibrillation
- Smoking
- Symptomatic carotid disease
- Sickle cell disease

Stroke – risk factors

- For stroke patients outside the usual demographic, pursue a workup
  - Moyamoya disease example
  - Vasculitides
  - Polycystic kidneys and cerebral aneurysms

Stroke - diagnosis

- An acute neurologic deficit occurring in the distribution of a cerebral artery(s)
- Acute manifestations
  - Arm and/or leg weakness – ipsilateral
  - Speech deficit: slurring, aphasias
- FAST acronym for patients
  - **F**acial drooping
  - **A**rm weakness
  - **S**peech difficulties
  - **T**ime to call EMS

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Which risk calculator is best for predicting recurrent TIA/stroke?

A. ABCD2
B. CHADS2-VASC
C. ASCVD
D. HAS-BLED

Correct answer is A
$ABCD^2$ Scoring System for the Evaluation of Transient Ischemic Attack

Clinical characteristics	*Points*
• Age ≥ 60 years	1
• Blood pressure ≥ 140/90 mm Hg	1
• Clinical features	
◦ Unilateral weakness	2
◦ Speech impairment without weakness	1
• Duration of transient ischemic attack	
◦ ≥ 60 minutes	2
◦ 10 to 59 minutes	1
• Diabetes mellitus	1

NOTE: *According to the guideline, it is reasonable to hospitalize patients with transient ischemic attack if they present **within 72 hours** and have an $ABCD^2$ score of ≥ 3, indicating high risk of early recurrence, or if the evaluation cannot be rapidly completed on an outpatient basis.*

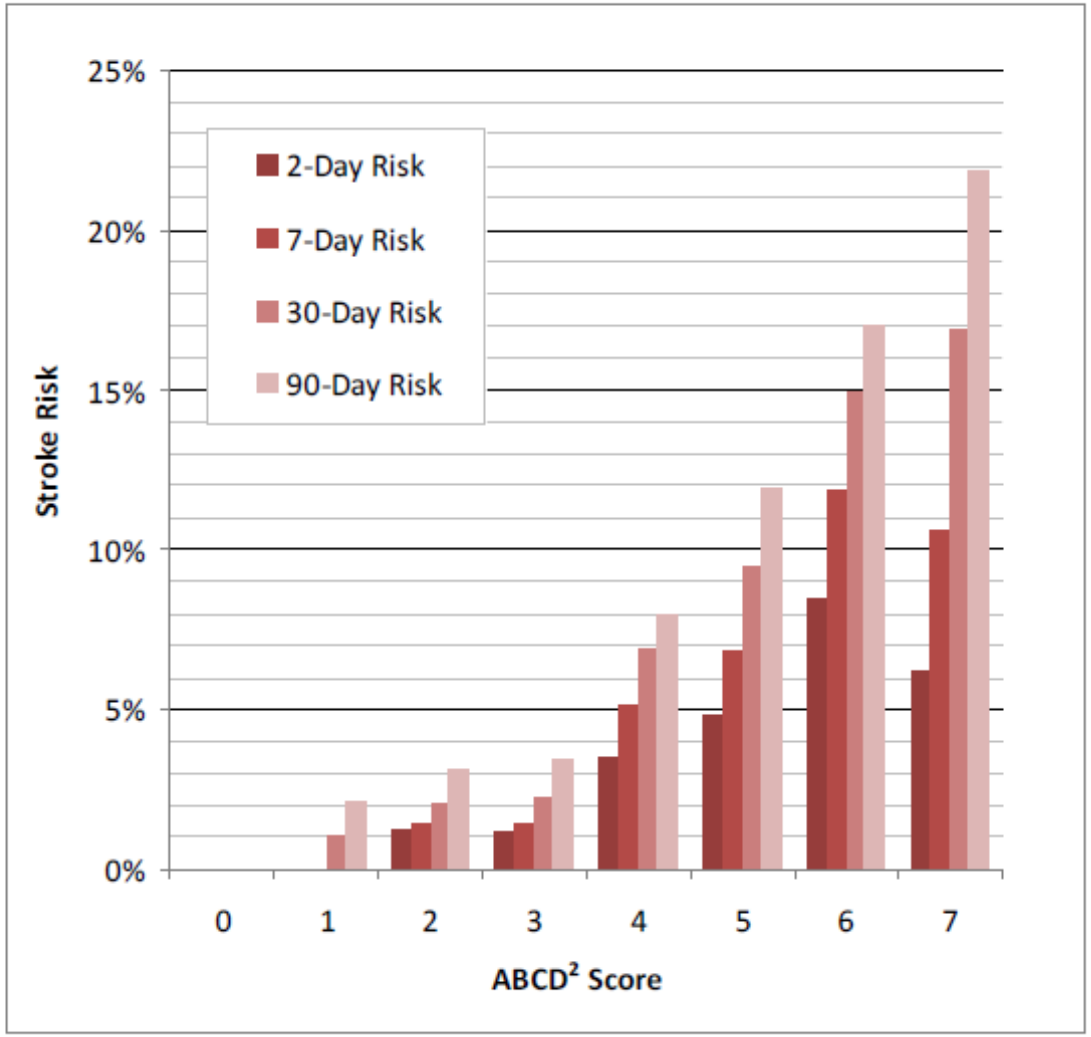
Risk of stroke based on $ABCD^2$

- $ABCD^2$ score — Risk of Stroke at 2 days
  - 0-3 — 1%
  - 4-5 — 4.1%
  - 6-7 — 8.1%
- Risk of stroke continues to climb at 30 and 90 days
- Risk = 22% at 90 days in the highest category (1 in 5)

Higher $ABCD^2$ scores are associated with greater risk of stroke during the 2, 7, 30, and 90 days after a TIA (Figure). The authors of the $ABCD^2$ score made the following recommendations for hospital observation:[1]

$ABCD^2$ Score	2-day Stroke Risk	Comment
0-3	1.0%	Hospital observation may be unnecessary without another indication (e.g., new atrial fibrillation)
4-5	4.1%	Hospital observation justified in most situations
6-7	8.1%	Hospital observation worthwhile

[1] Johnston SC, Rothwell PM, Huynh-Huynh MN, Giles MF, Elkins JS, Sidney S, "Validation and refinement of scores to predict very early stroke risk after transient ischemic attack," *Lancet*, 369:283-292, 2007.



National Stroke Association
https://www.stroke.org/sites/default/files/resources/tia-abcd2-tool.pdf

TIAs – the harbinger of doom

TIA – current definition is …

TIA

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- 2009 guideline revised the definition of TIA
- "A brief episode of neurologic dysfunction caused by focal brain or retinal ischemia, with **clinical symptoms typically lasting less than one hour** and without evidence of acute infarction."
- MRI should be performed within 24 hours in patients presenting with TIA
- The $ABCD^2$ (age, blood pressure, clinical features, duration, diabetes mellitus) score should be used in the evaluation of TIA

Easton JD, Saver JL, Albers GW, et al. Definition and evaluation of transient ischemic attack: a scientific statement for healthcare professionals from the American Heart Association/American Stroke Association Stroke Council; (and others). Stroke. 2009;40(6):2276–2293.

TIA

- **1/3 of patients whose symptoms abate within 1 hour have evidence of stroke on MRI.**
- Thus the recommendation that all patients have brain MRI urgently
  - Head CT still indicated to r/o bleed/SAH

Easton JD, Saver JL, Albers GW, et al. Definition and evaluation of transient ischemic attack: a scientific statement for healthcare professionals from the American Heart Association/American Stroke Association Stroke Council; (and others). Stroke. 2009;40(6):2276–2293.

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Stroke Mimics

- Seizure – postictal state
- Conversion disorder
- Migraine headache
- Hypoglycemia

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A 63 yo male with HTN and T2 DM presents with acute onset of the worst headache of his life for 1 hour. It came on “like a thunderclap.” Which is the most likely diagnosis?

A. Subdural hemorrhage
B. Acute ischemic stroke
C. Intracerebral hemorrhage
D. Subarachnoid hemorrhage

Subarachnoid Hemorrhage

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Subdural hematoma

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Early
CT changes:
Loss of gyri and gray white boundary

Ischemic Stroke CT Without Contrast

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Intracerebral Hemorrhage

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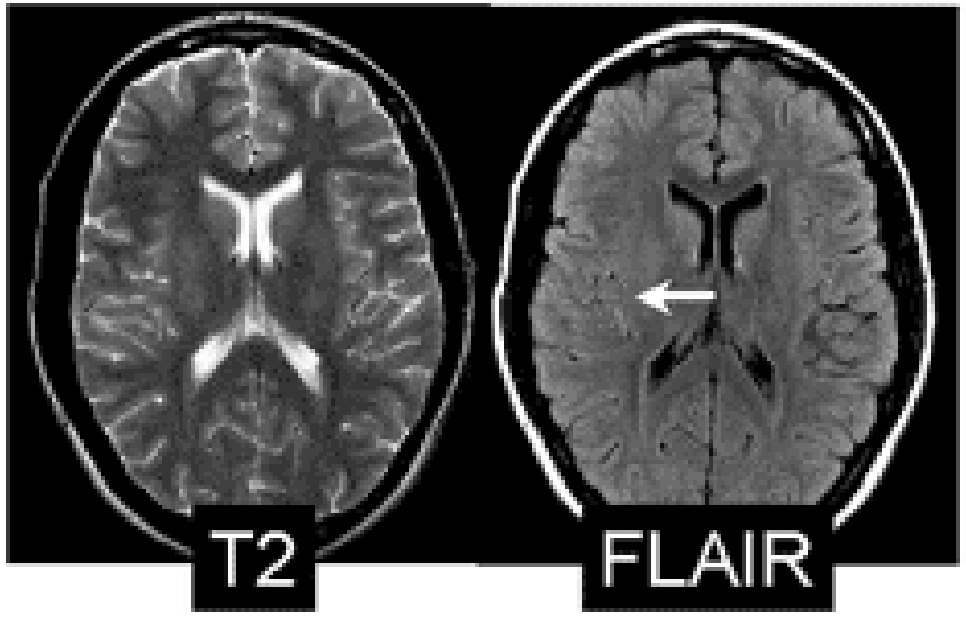
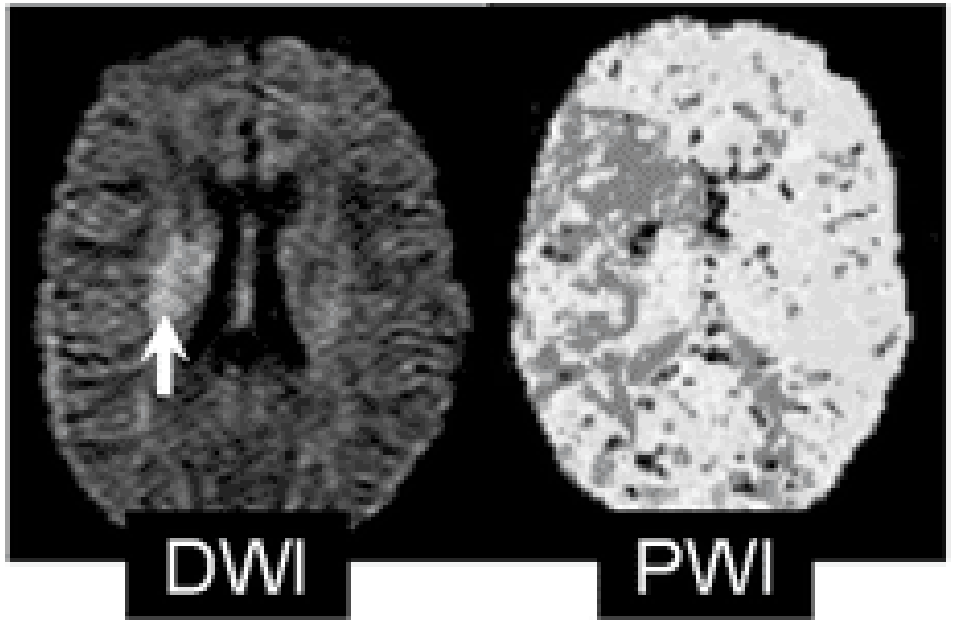
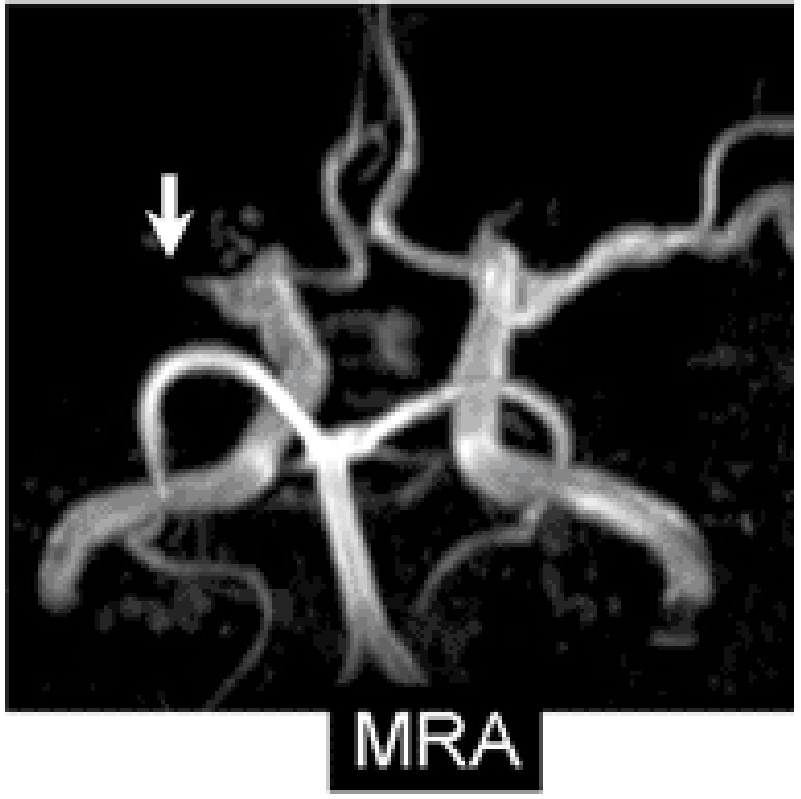
Ischemic Stroke. MRI With Diffusion Weighted Imaging (DWI)





Hyperacute Stroke



Xavier AR, Qureshi AI, Kirmani JF, et al. **Neuroimaging of stroke: a review.** South Med J. 2003 Apr;96(4):367-79. https://dx.doi.org/10.1097/01.SMJ.0000063468.11503.C1

Flipped T waves with acute stroke

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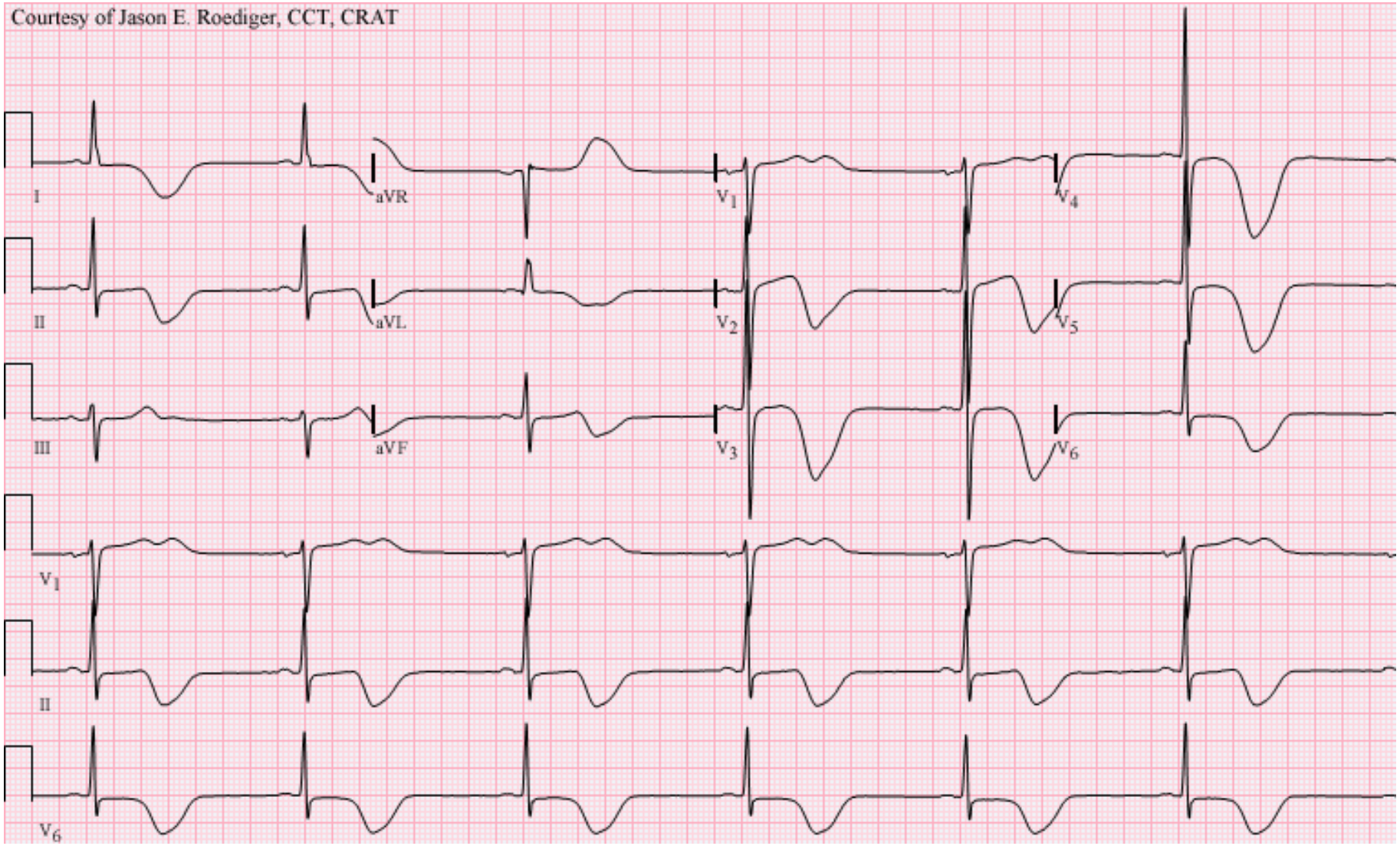

Imaging studies

- Acute
  - CT head to rule out hemorrhage/tumor
  - MRI within 24 hours (especially with diffuse weighted imaging)
  - MRI with DWI demonstrates stroke before CT
- Subacute
  - Consider carotid ultrasound
  - Consider MRA or CTA
  - Consider echocardiography (TTE first, TEE)
  - Consider diagnostic labs as indicated

Ancillary imaging studies

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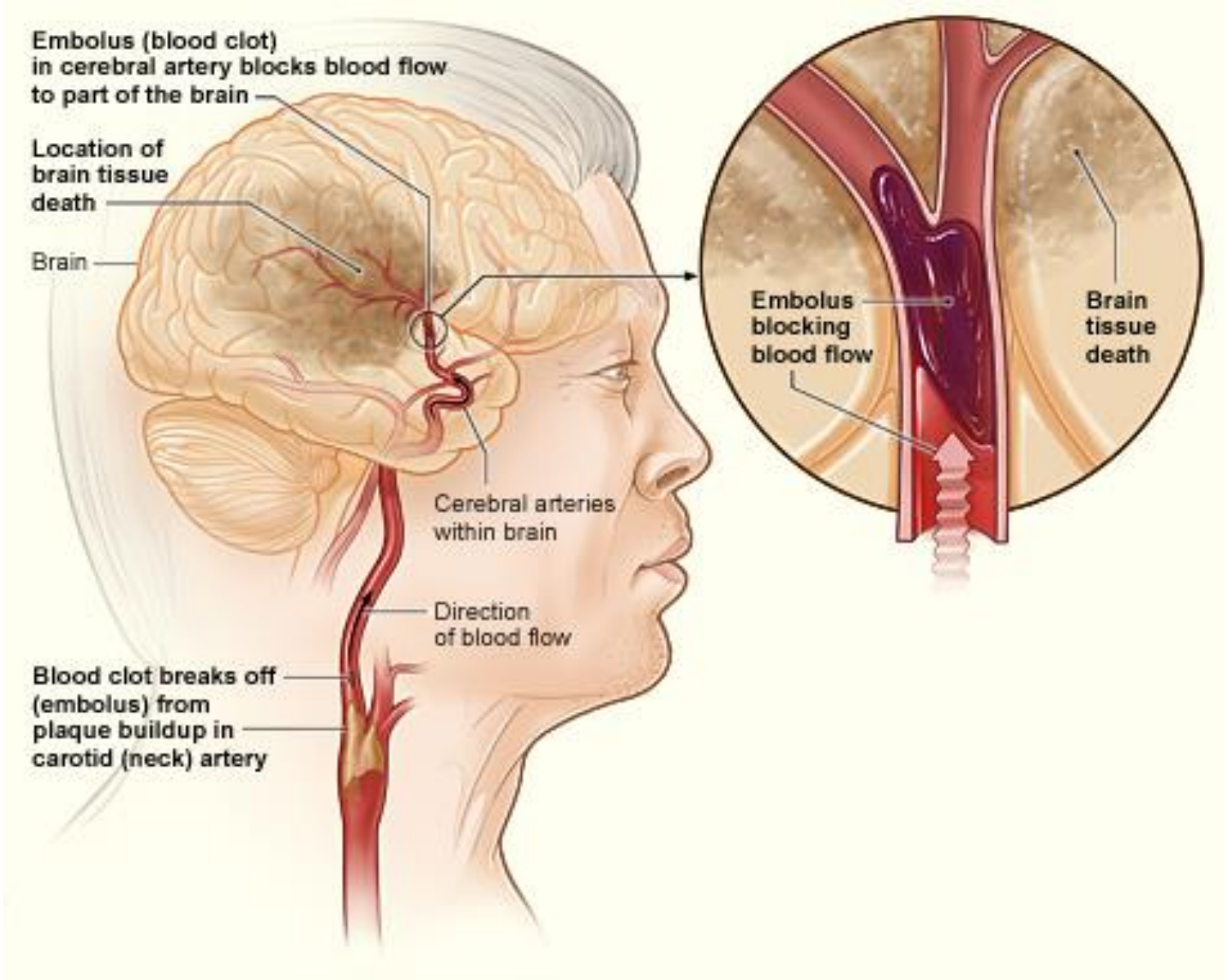
- Evaluation of extracranial arteries
  - Doppler flow studies of carotid
  - MR angiogram
  - Avoid catheter angiograms due to risk of stroke
- Echocardiography:
  - Transthoracic – no clear indication in low risk pt
  - Transesophageal – if TTE negative and risk of embolus high

Morris J, Duffis E, Fisher M. Cardiac Workup of Ischemic Stroke - Can We Improve Our Diagnostic Yield? Stroke. 2009;40:2893-2898



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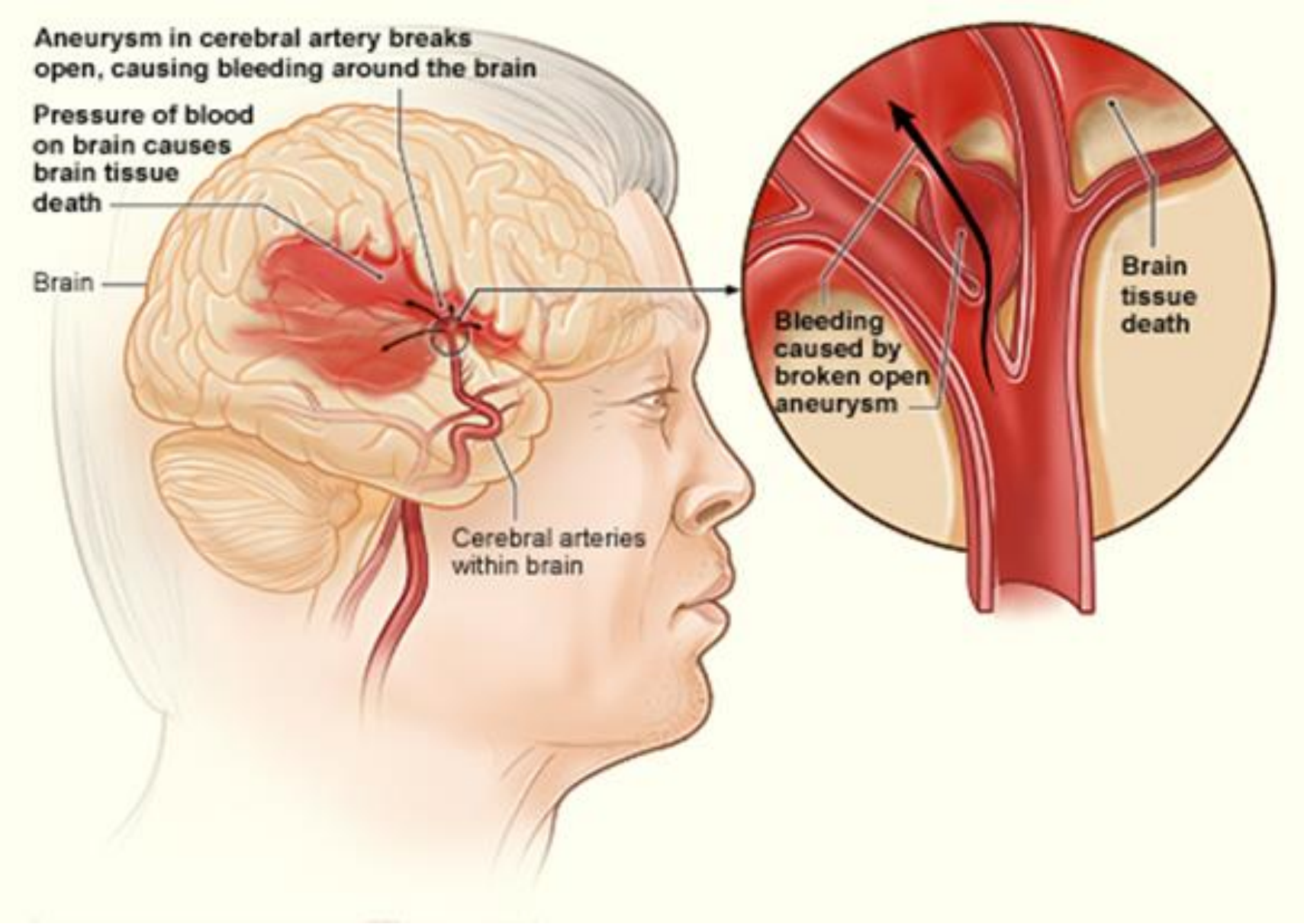
Ischemic stroke - 87%

NHLBI - https://www.nhlbi.nih.gov/health/health-topics/topics/stroke/types



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Hemorrhagic Stroke – 13%

NHLBI - https://www.nhlbi.nih.gov/health/health-topics/topics/stroke/types

Stroke

AHA/ASA GUIDELINE

Guidelines for the Early Management of Patients With Acute Ischemic Stroke

A Guideline for Healthcare Professionals From the American Heart Association/American Stroke Association

Edward C. Jauch, Jeffrey L. Saver, Harold P. Adams, Askiel Bruno, J.J. (Buddy) Connors, Bart M. Demaerschalk, Pooja Khatri, Paul W. McMullan, Adnan I. Qureshi, Kenneth Rosenfield, Phillip A. Scott, Debbie R. Summers, David Z. Wang, Max Wintermark, Howard Yonas

and on behalf of the American Heart Association Stroke Council, Council on Cardiovascular Nursing, Council on Peripheral Vascular Disease, and Council on Clinical Cardiology

DOI https://doi.org/10.1161/STR.0b013e318284056a
Stroke. 2013;44:870-947
Originally published February 25, 2013

http://stroke.ahajournals.org/content/44/3/870

Stroke – Initial Management

- Consider thrombolytics
  - t-PA may be given up to 4.5 hours after the onset of symptoms
- Calculate the NIH Stroke Scale
  - https://www.mdcalc.com/nih-stroke-scale-score-nihss/

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Stroke – Contraindications to Thrombolytics

- INR > 1.7
- Use of heparin in the previous 48 hours and a prolonged partial thromboplastin time
- A platelet count < 100 000/mm^3
- Another stroke or a serious head injury in the previous 3 months
- Major surgery within the preceding 14 days
- **Pretreatment systolic blood pressure greater than 185 mmHg or diastolic blood pressure greater than 110 mmHg**
- Rapidly improving neurological signs
- Isolated, mild neurological deficits, such as ataxia alone, sensory loss alone, dysarthria alone, or minimal weakness
- Prior intracranial hemorrhage
- Blood glucose less than 50 mg/dL or greater than 400 mg/dL
- Seizure at the onset of stroke
- Gastrointestinal or urinary bleeding within the preceding 21 days
- Recent myocardial infarction

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Stroke – Initial Management

- Control blood pressure if significantly elevated
- Otherwise, allow 24-48 hours of permissive hypertension to decrease watershed ischemia in ischemic stroke
- In hemorrhagic stroke, aggressively manage the BP

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A 73 yo female presents with 1 hour of left arm weakness and left facial drooping. Head CT shows a 1.5 cm intracerebral bleed. Appropriate management includes all of the following except:

A. Rapid control of blood pressure
B. IV t-PA (thrombolytics)
C. Review of end-of-life plans
D. Control of hyperglycemia

Correct answer is B

- This is a hemorrhagic stroke, not ischemic stroke
  - Urgent neurosurgical consultation
  - Aggressive blood pressure control
  - Consideration of both IV mannitol and overdrive hyperventilation with a ventilator
  - End-of-life issues should be reviewed.
- IV t-PA is a consideration for ischemic stroke but is contraindicated in hemorrhagic stroke.

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A 65 yo male has had a stroke. He has no h/o A. fib nor GI bleeding. Which drug(s) should be considered for secondary prevention of stroke?

A. Warfarin with INR 2.0-3.0
B. Aspirin
C. Rivaroxaban (Xarelto)
D. Clopidogrel (Plavix) + Aspirin/Extended-Release Dipyridamole (Aggrenox)

Correct answer is B

- Aspirin is the correct answer.
- Warfarin is used to prevent stroke in patients with atrial fibrillation but not sinus rhythm.
- Similar to warfarin, direct thrombin and Factor X inhibitors are not approved for stroke prevention in patients in sinus rhythm.
- Clopidogrel and Aggrenox are both acceptable choices *by themselves.* However, they are not approved for use together.

How to prevent stroke?

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- Control HTN < 140/90 (130/80? ACC Nov. 2017)
- Stop smoking
- Lipid goals
- Obesity:
  - Momentum vs Omentum

- Exercise regularly – 150 minutes/week
- Treat atrial fibrillation
  - Ablation of pathways, anticoagulants, etc…

Post Stroke care and Hyperlipidemia

- Post stroke/TIA – start atorvastatin 80 mg daily (high intensity statin)
- LDL goal < 70
- After starting high intensity atorvastatin and the LDL is still > 70, add ezetimibe 10 mg daily.
- No indication to start statin and ezetimibe at the same time.
- If the LDL remains > 70 on high intensity statin and ezetimibe, consider starting PCSK9 inhibitor
  - Proprotein convertase subtilisin/kexin type 9 inhibitor
- Of note, post stroke BP goal is < 130/80

Secondary Stroke Prevention

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- Aspirin
  - Inexpensive at 50-325 mg daily
  - Caution in GI bleeding and other side effects
- Aspirin + dipyridamole (Aggrenox)
  - More effective than aspirin itself but more expensive and more side effects (headache especially)
- Clopidogrel
  - Is as effective as aspirin by itself
  - Should not be used in combination with aspirin unless patient has cardiac indications, s/p PCI (This statement is no longer accurate → next slide)
  - Affordable now to many/most patients

AHA/ASA GUIDELINE

Guidelines for the Early Management of Patients With Acute Ischemic Stroke: 2019 Update to the 2018 Guidelines for the Early Management of Acute Ischemic Stroke: A Guideline for Healthcare Professionals From the American Heart Association/American Stroke Association

2019 Stroke Guidelines

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2. In patients presenting with minor noncardioembolic ischemic stroke (NIHSS score ≤3) who did not receive IV alteplase, treatment with dual antiplatelet therapy (aspirin and clopidogrel) started within 24 hours after symptom onset and continued for 21 days is effective in reducing recurrent ischemic stroke for a period of up to 90 days from symptom onset.	**I**	**A**	New recommendation.

This is a new/big recommendation

DAPT was previously not done unless the patient was s/p cardiac stent

DAPT = dual antiplatelet therapy, usually with ASA and Clopidogrel

DAPT for 21 days can reduce recurrent stroke for 90 days

If patient has CAD s/p PCI/stent, would continue DAPT for prevention of recurrent MI, not recurrent stroke

A fib and CHA_2DS_2-VASc

- CHF – 1 pt (Granted, the term “CHF” is dated)
- HTN – 1 pt
- Age:
  - 65-74 → 1 pt
  - >75 → 2 pts
- DM – 1 pt
- Stroke/TIA/VTE hx – 2 pts
- Vascular disease – 1 pt
- Sex – female = 1; male = 0

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Meds for prevention of stroke in nonvalvular A fib

- Warfarin (Coumadin, IA) – years of utility
- Dabigatran (Pradaxa, IA)
  - 150 mg bid, start when INR < 2
  - Renal dosing 75 mg bid with CrCl 15-30 mL/min; < 15 mL/min use not defined
- Rivaroxaban (Xarelto, IIA)
  - 20 mg po daily with evening meal, start when INR < 3
  - Renal dosing necessary 15 mg when CrCl 15-50 mL/min; <15 mL/min, avoid use
- Apixaban (Eliquis, IA)
  - 5 mg bid
  - 2.5 mg twice daily for 2 of the following risk factors
    - Age ≥80 years, weight ≤60 kg, or serum creatinine ≥1.5 mL/dL.
- Edoxaban (Savaysa): 60 mg daily, don't use with CrCl >95
- Consider use of HAS-BLED score for risk of bleeding

http://stroke.ahajournals.org/content/45/7/2160

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A 72 yo male presents with a left-sided stroke. He is stabilized and has 95% return of function. While hospitalized, his carotid u/s shows 90% stenosis of the right common carotid artery. What is the next best step?

A. Refer urgently for carotid endarterectomy
B. Start atorvastatin 80 mg daily with DAPT (aspirin 81 mg and clopidogrel 75 mg daily)
C. Prescribe high intensity exercise
D. Start atorvastatin 20 mg with DAPT and BP goal < 130/80

Correct answer is A
Carotid Endarterectomy

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- Carotid endarterectomy: Preferably within 2 weeks of cerebral or retinal TIA in those with TIA attributed to a high-grade internal carotid artery stenosis:
  - 70-99% internal carotid artery stenosis: Recommended if periop. comp. rate < 6% (IA)
  - 50-69% stenosis: Recommended for certain patients and only at centers with perioperative complication rate <6% (IB)
  - <50% stenosis: Not recommended (IIIA)

Stroke and Endovascular Repair

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- Pursue t-PA regardless of endovasc repair
- Obtain a noninvasive intracranial vascular study (MRA, CTA) prior
- Stent retrievers
- Mechanical thrombectomy
- Know your hospital resources

Helpful calculators

- Canadian TIA score
  - https://qxmd.com/calculate/calculator_815/canadian-tia-score
- NIH Stroke Scale
  - https://www.mdcalc.com/nih-stroke-scale-score-nihss/
- CHA_2DS_2-VASC
  - https://www.mdcalc.com/cha2ds2-vasc-score-atrial-fibrillation-stroke-risk/
- HAS-BLED
  - https://www.mdcalc.com/has-bled-score-major-bleeding-risk/
- $ABCD^2$
  - https://www.mdcalc.com/abcd2-score-tia/
- SPARCtool – compares CHA_2DS_2-VASC with HAS-BLED
  - https://www.sparctool.com/

Stroke Recommendations

- All patients should receive an emergent head CT to distinguish ischemic from hemorrhagic stroke
- Consider t-PA w/in 4.5 hrs of symptom onset
- Use $ABCD^2$/Canadian TIA Score in all patients and attenuate future risk
- Prescribe DAPT with ASA/clopidogrel for 21 days if not contraindicated
- Use warfarin or direct thrombin/factor X inhibitors in all patients with atrial fibrillation unless contraindicated

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Neurology

Neuropathy

A 34 yo female presents with tingling and mild discomfort in the right hand for three months. It is worse in the morning upon awakening. She "Shakes out" her hand and feeling returns. No recent trauma, no known PMHx (no DM or thyroid issues). Exam – tingling reproduced upon tapping on the volar wrist. No weakness with hand grip. What is the best choice below for initial treatment?

A. Refer to orthopedic hand surgery for decompression of the medial nerve
B. Place in a short arm cast x 3 weeks to put the wrist at rest.
C. Start naproxen 500 mg bid and wrist splint at night
D. Inject triamcinolone 20 mg (0.5 cc) into the carpal tunnel

Correct answer is C

- Classic case of carpal tunnel syndrome (CTS)
- Risk factors include pregnancy, overuse, obesity, and hypothyroidism.
- All of the listed options are potential treatments
- Preferred initial treatment is a course of an anti-inflammatory agent with a wrist splint
- If progressive, CTS can lead to weakness of the thumb adductor muscles and grip strength weakness

A 59 yo male presents with worsening low back pain. H/o car accident 5 years ago and chronic LBP since. Two days ago, the pain exquisitely worsened – he has trouble sitting and prefers to stand during the exam. He embarrassingly admits to leaking urine yesterday and feels like his legs are weaker going up his stairs at home. On exam, his DTRs at KJ and AJ are 3+. What is the best treatment plan?

A. Ibuprofen 800 mg tid, cyclobenzaprine 10 mg tid, and same day referral to PT
B. Referral same day for MRI and urgent neurosurgery evaluation
C. Add amitriptyline 25 mg qHS to his usual meds
D. Refer 1-2 weeks for MRI and follow up with you thereafter

Correct answer B

- This is a patient with cauda equina syndrome:
  - Bladder/bowel incontinence
  - Progressive lower extremity weakness
  - Saddle anesthesia
- It is a neurosurgical urgency in order to prevent progressive spinal cord damage
- These are the red flags for which we ask patients who present with LBP

A 48 yo female presents with electrifying pain shouting down the right side of her cheek in front of her right ear. No recent trauma (dental work), no recent URI, hearing is fine. The shocks come and go throughout the day for the past week. What is the most likely diagnosis?

A. Bell's palsy
B. Trigeminal neuralgia
C. Cluster headache
D. Incipient zoster outbreak

Correct answer is B

- All of these entities are in the DDx
- Trigeminal neuralgia is classically described as electric jolts in the cheek/jaw area
- They can be disabling, bringing the patient to tears
- Bell's palsy usually does not have a component of pain
  - Ipsilateral VII nerve weakness
  - Lower motor neuron lesion – patient cannot raise the eyebrow
  - 2/3's patient better in 2-3 months; the remaining 1/3 get better in another 2-3 months
- Cluster h/a – ipsilateral conjunctival injection, retro-orbital stabbing pain
- Zoster gives a tingling, burning sensation for 1-3 days before outbreak, not one week

Trigeminal neuralgia - treatment

- Carbamazepine is the best studied medication
- Oxcarbazepine is an option
- Gabapentin
- Lamotrigine
- (Refer to neurology, of course ☺)
- Surgery

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Tremor

A 37 yo police officer presents with c/o tremor – he is having trouble writing tickets due to his hands shaking. On exam, his hands shake with finger-to-nose testing. No tremor at rest. His strength and exam is o/w normal. No cogwheel rigidity. What is the best initial medication to prescribe?

A. Carbidopa/levodopa three times daily
B. Propranolol 20 mg up to tid
C. Baclofen 10 mg tid
D. Primidone 25 mg at bedtime

Correct answer is B

- This patient has essential tremor.
- This is an intention, or action tremor. It is usually not present at rest.
- Initial treatment is propranolol.
- Second line treatments include primidone.
- Muscle relaxants like baclofen are not standard of care.
- Carbidopa/levodopa is a Parkinson's medication.
- Of note, patients with ET may note that the tremor lessens when they drink alcohol.

A 63 yo male shares that he has fallen twice in the past three months. He states he can't seem to get his feet underneath him. Which of the following suggests a diagnosis of Parkinson's disease?

A. Cogwheel rigidity in the arms
B. Involuntary foot/leg motions at night
C. Inappropriate emotional responses to normal stimuli – crying when startled
D. Loss of short-term memory

Correct answer is A

- This patient has Parkinson's disease.
- Classic findings with PD include:
  - Cogwheel rigidity
  - Bradykinesia, with en bloc turns and masked facies – flat affect
  - Rest tremor
  - Postural instability
- Usual treatment includes:
  - Dopaminergic agent (Carbidopa/levodopa combinations)
  - Dopamine agonists
  - Monoamine oxidase inhibitors
  - Amantadine

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Headache

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A 23 yo male presents with significant headaches. Pain is 8-9/10, brings tears to his left eye. Headaches started 2 weeks ago and occur 2-3 times a day. No recent stressors, PMHx negative. Which is the best initial medication to prevent further headaches from occurring?

A. Prednisone 20 mg daily for one week with headache episodes
B. Amitriptyline 50 mg at bedtime
C. Verapamil 240 mg daily
D. Sumatriptan 6 mg subcutaneous daily

Correct answer C

- This patient is having cluster headaches
- More frequent in males at 4:1
- Described as unilateral, retro-orbital stabbing pain
- Accompanied by unilateral lacrimation and conjunctival injection
- The eyeball itself is not usually painful
- Verapamil is the best studied initial medication
- Prednisone is a good second line agent
- Other prophylactic agents include: topiramate, lithium, galcanezumab - a human monoclonal antibody that binds to the calcitonin gene-related peptide (CGRP)

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What is the best initial therapy to treat the pain of acute cluster headache?

A. 100% oxygen for 15 minutes in clinic
B. Sumatriptan 6 mg subcutaneous
C. Ketorolac 60 mg IM
D. Percocet 10 mg tid as needed

Correct answer is A

- Oxygen is efficacious in up to 78% of patients vs air placebo in 20%
- Oxygen short term has no side effects
- Triptans are excellent second line agents but do have side effects.
- Ketorolac, an injectable NSAID, can be considered as 2nd/3rd line agent. It can be stored and used in the clinic.
- Oral opioids are not best practice choices for headache pain. The risk of addiction is not insignificant.

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A 32 yo female describes headaches 1-2x/week that are 5-6/10. No N/V. Located over the temporal fossae bilaterally and occipital area. No photo-/phonophobia. What is the best initial therapy for this headache pattern?

A. Rizatriptan 10 mg with headache, no more than 3x/day
B. Cyclobenzaprine 10 mg tid prn
C. Naproxen 500 mg bid with meals as needed
D. Topiramate 50 mg bid

Correct answer is C

- This patient is having classic tension headaches.
- Pain is usually located at the insertion of the masseter muscles in the temporal fossae laterally and at the insertion of the occipital muscles at the base of the skull posteriorly.
- This is described as a hatband distribution.
- Tension headaches are initially treated with acetaminophen and NSAIDS.
- Stress reduction techniques and cognitive-behavioral therapy (CBT) can be of benefit.
- Rizatriptan is an acute migraine medication while topiramate is for migraine prevention.
- Muscle relaxants are generally not standard of care for headache treatment

A 35 yo female presents with headaches 1-2x/month. She initially sees a crinkly, silver-colored spot that gets larger, then fades over 20 minutes. She then has a dull, pounding headache on the right, pain 5/10, without nausea. Which of the following medications would be the best initial choice to treat these acute headaches?

A. Acetaminophen 325 mg 3x/day as needed
B. Topiramate 50 mg bid
C. Oxygen 100% per nasal cannula for 15 minutes
D. Ibuprofen 800 mg po tid as needed

Correct answer is D

- This patient is having classic migraine, preceded by aura/scotomata.
- For mild/moderate migraine w/o N/V, simple analgesics can be tried initially.
- For patients having N/V, metoclopramide can be added.
- Triptans are then added for pain that does not respond.

Migraine – moderate/severe

- For more painful migraines, triptans are used first line.
- They can be combined with NSAIDs.
- Calcitonin gene-related peptide (CGRP) antagonists are newer medications that have benefit.
- Anti-emetics can be prescribed as needed
  - May need to be given per rectal initially
- Injectable triptans can be used with severe N/V

Which of the following headache characteristics is a red flag?

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A. Headache occurring 3-4x/week for which patient takes regular triptan medication to break.
B. Headache that worsens during stressful situations at work
C. Headache that awakens the patient from sleep
D. Headache that is present when patient awakens

Correct answer is C

- Migraines headaches, while bothersome and sometimes disabling, can often be controlled with medications, to include triptans.
- For uncontrolled headaches, brain imaging is a consideration
- Headache patterns frequently worsen with stress.
- Headaches that awaken a patient from sleep are concerning and merit imaging.
- Awakening with a headache can simply be caffeine withdrawal, stress, poor sleep/OSA, and does merit imaging by itself.

Headache red flags → Brain imaging

- Neurologic deficits on exam
- Systemic findings: fever, papilledema
- Positional headache, or precipitated by sneezing, coughing, exercise, postcoital
- Change/worsening in h/a pattern
- PMHx – to include cancer (mets to brain), HIV (+)

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A 75 yo male presents with c/o worsening memory...as per his wife. During the exam, you note that he repeats himself. Which of the following pairings is most accurate?

A. MoCA score 27 (out of 30) supports the dx of Alzheimer's dementia
B. Touching and kissing strangers suggests frontotemporal dementia
C. A stepwise pattern of worsening suggests normal pressure hydrocephalus
D. A PHQ-9 score of 3 (out of 27) suggests pseudodementia

Correct answer is B

- Alzheimer's and vascular dementias are the most common types.
- AD is a progressive loss of memory over years.
  - The Montreal Cognitive Assessment (MoCA) ≥ 26 out of 30 is normal
- Vascular dementia classically follows as stepwise decrement but can also be gradual
- Frontotemporal dementia is often accompanied by disinhibitions from normal social behaviors: touching people, urinating in public, flatulence without concern
- Major depression can mascarade as dementia. A PHQ-9 can help clarify the diagnosis of major depressive disorder.


Thank you for your attention
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Special Sensory
Vision loss

Lecture Modules

- Acute Loss of Vision - Painful Causes
- Acute Loss of Vision - Painless Causes
- Gradual Loss of Vision

Acute Loss of Vision
Painful Causes

Question: A 35 y.o. woman complains of pain and flashes of light with eye movement in her right eye. You find decreased visual acuity and visualize swelling of the optic nerve in the right eye only. Which one of the following might be an appropriate next step?

A. Re-evaluate the patient in week; this condition will likely resolve spontaneously and no further evaluation or treatment will be needed
B. Begin oral methotrexate
C. Order an MRI to evaluate for white plaques consistent with multiple sclerosis
D. Check an ESR for temporal arteritis
E. Check an A1C for diabetic retinopathy

Correct Answer is C:

- Order an MRI to evaluate for white plaque consistent with multiple sclerosis
- Painful unilateral loss of vision with papillitis suggests an autoimmune optic neuritis.
- Thirty percent of patients who present with optic neuritis develop multiple sclerosis (MS).
- Vision recovery can be accelerated with intravenous methylprednisolone and onset of MS can be delayed with immuno-modulators in high-risk patients.
- Methylprednisolone doses 500-1000 mg IV for 3-7 days
- Can use oral methylprednisolone 1000 mg or prednisone 1250 mg for 3-7 days
- These are massive steroid doses c/w our usual practice in family medicine

Painful vs. Painless Causes of Acute Vision Loss

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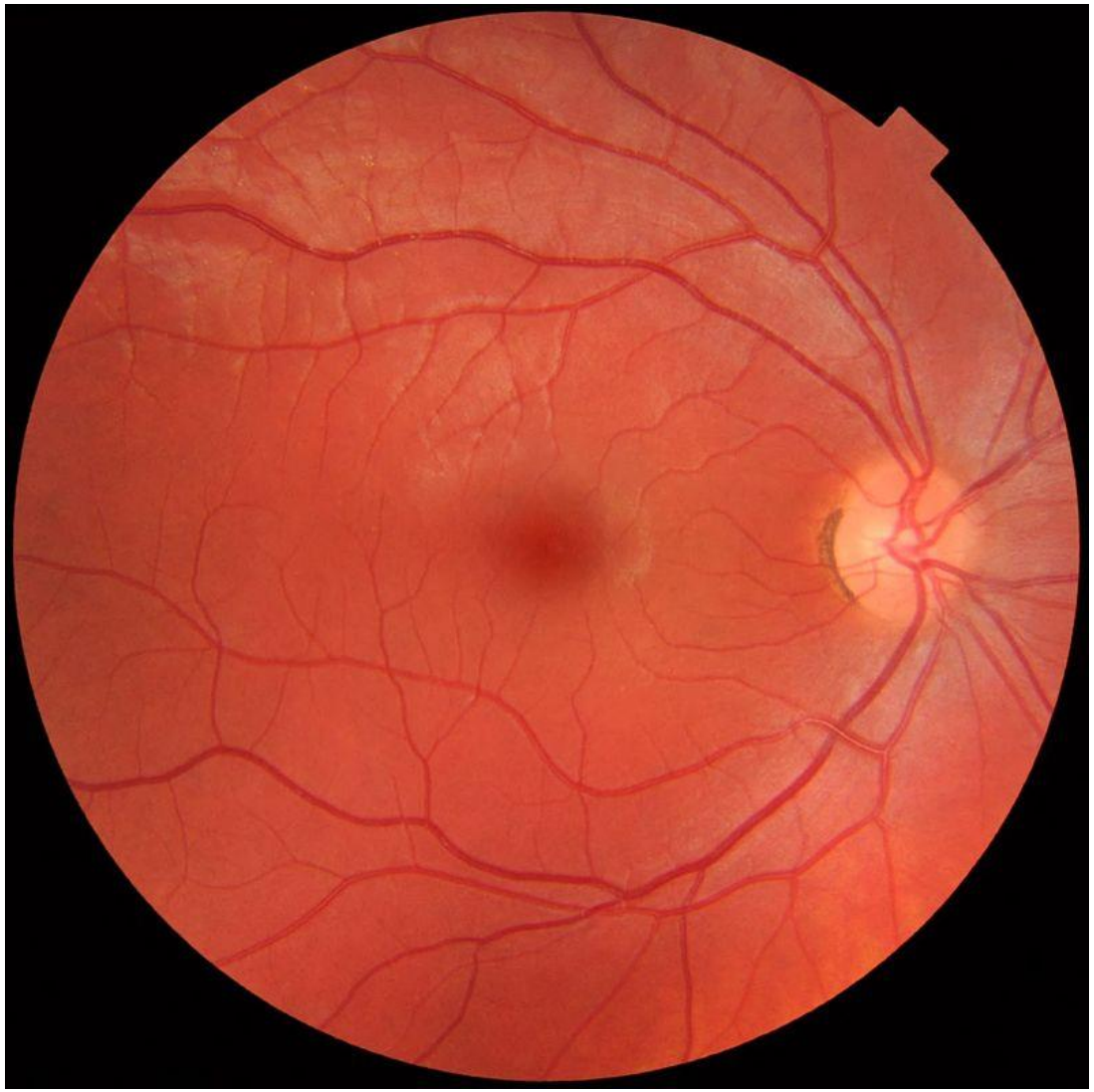
- Painful
  - Acute optic neuritis
  - Acute glaucoma
  - Temporal arteritis
- Painless
  - Retinal detachment
  - Transient monocular blindness (TIA)
  - Transient cortical blindness*
  - Age-related macular degeneration-(neovascular)

* Note: only transient cortical blindness is typically binocular

Acute Optic Neuritis

- Optic neuritis
  - Symptoms are painful, worse with eye movement, flickering or flashes of light in about 30%, loss of vision over days
  - Signs include papillitis, swelling and blurring of disk margins, distended veins (but only ⅓); decreased visual acuity
  - Usually monocular (90%)

Normal Retina



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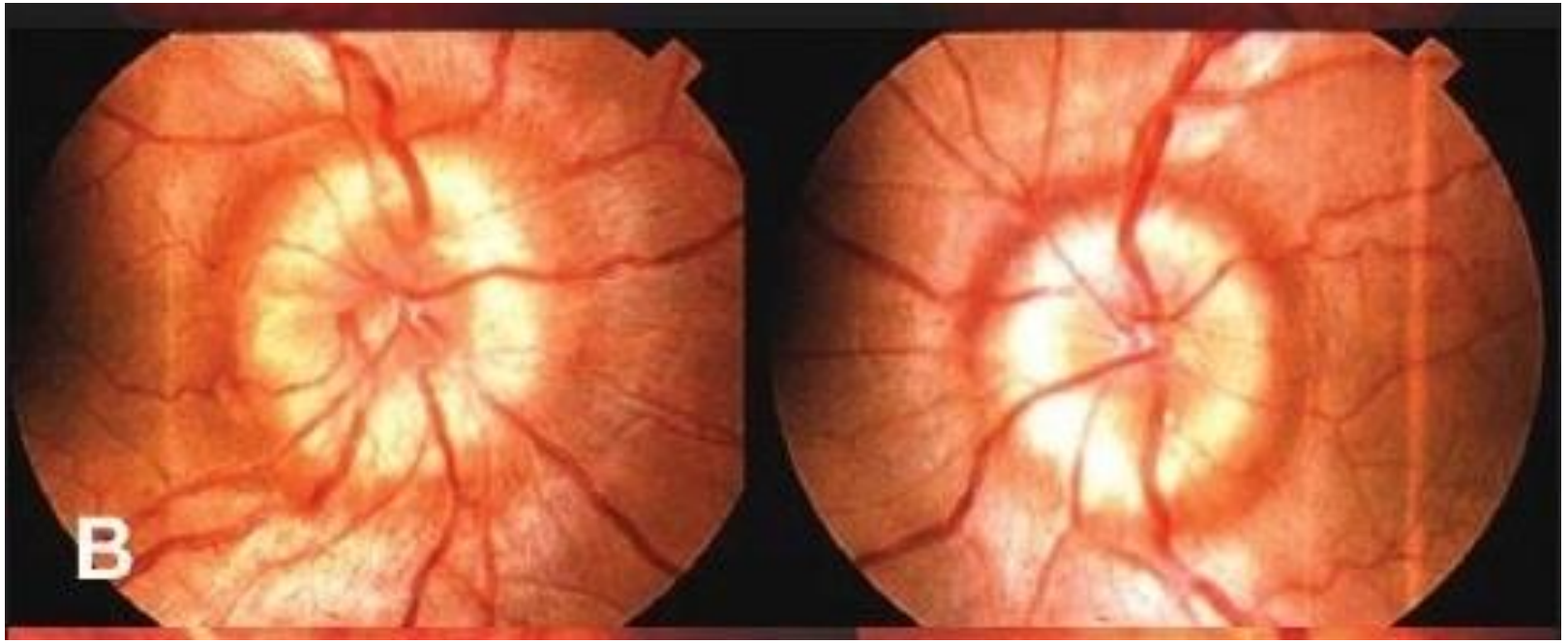
Papilledema in optic neuritis



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Optic Neuritis: Evaluation and Prognosis

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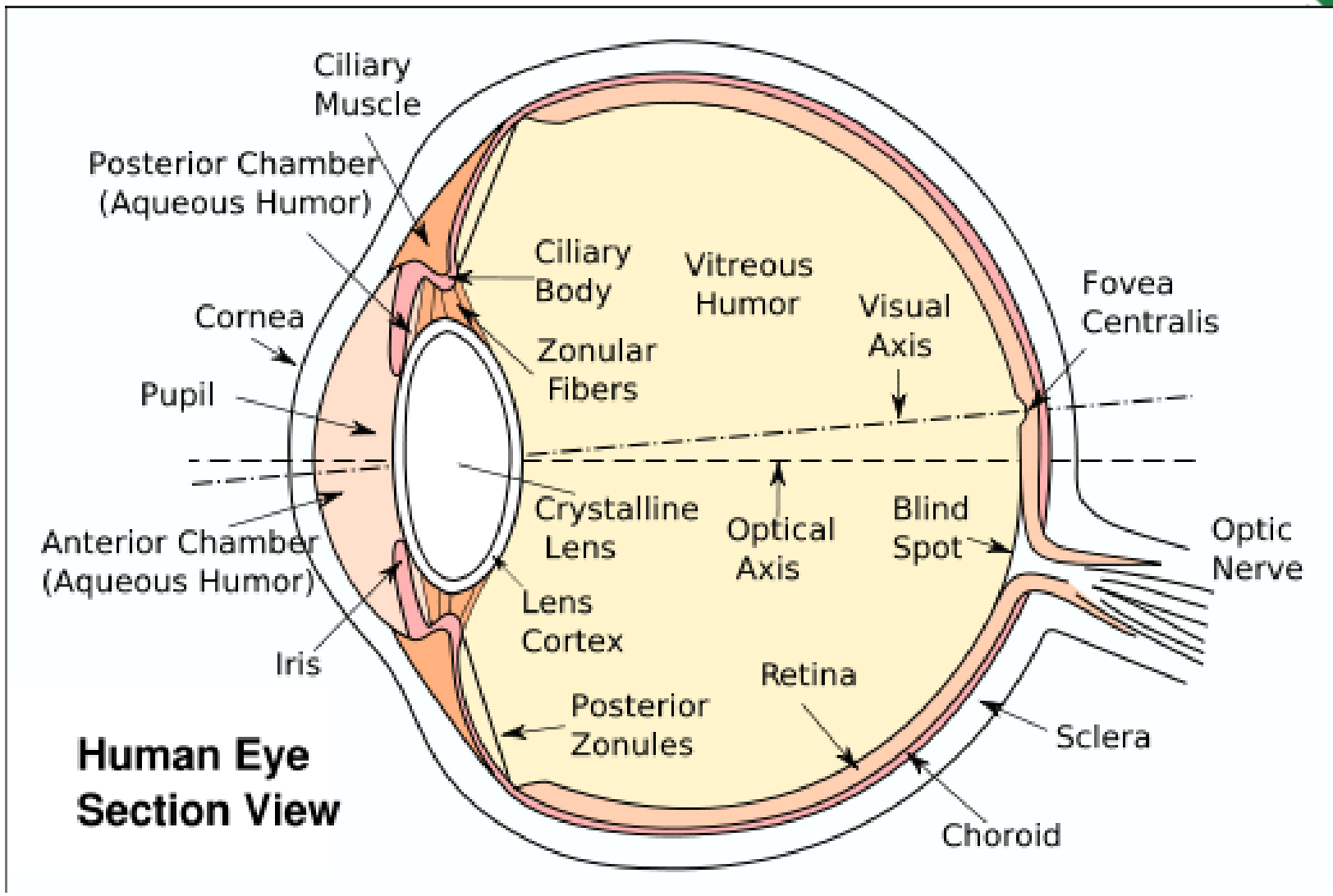
- Direct ophthalmoscopy, visual field testing, visual acuity testing
- Differential: autoimmune, infection, multiple sclerosis
- MRI; referral to ophthalmology
- Visual recovery usually begins within a few weeks
- Most achieve 20/40 vision or better at one year
- Thirty percent develop multiple sclerosis (MS) within five years, lifetime incidence in MS is 50%
- When caused by MS prognosis is less favorable

Optic Neuritis: Treatment

- Treatment with intravenous methylprednisolone
  - All children, all adults with severe vision loss, and all adults with >2 white matter lesions on MRI
  - More rapid recovery of vision, delayed onset of MS
  - Does not impact long-term visual function
  - Oral prednisone is not recommended
- Treatment with immunomodulatory therapy for those at high risk of MS also delays onset of MS

Acute Glaucoma – Background

- Peripheral vision lost
- Tunnel vision results
- Angle closure (acute)
- Risk factors
  - Age >50 years
  - African American
  - Myopia
  - Family history



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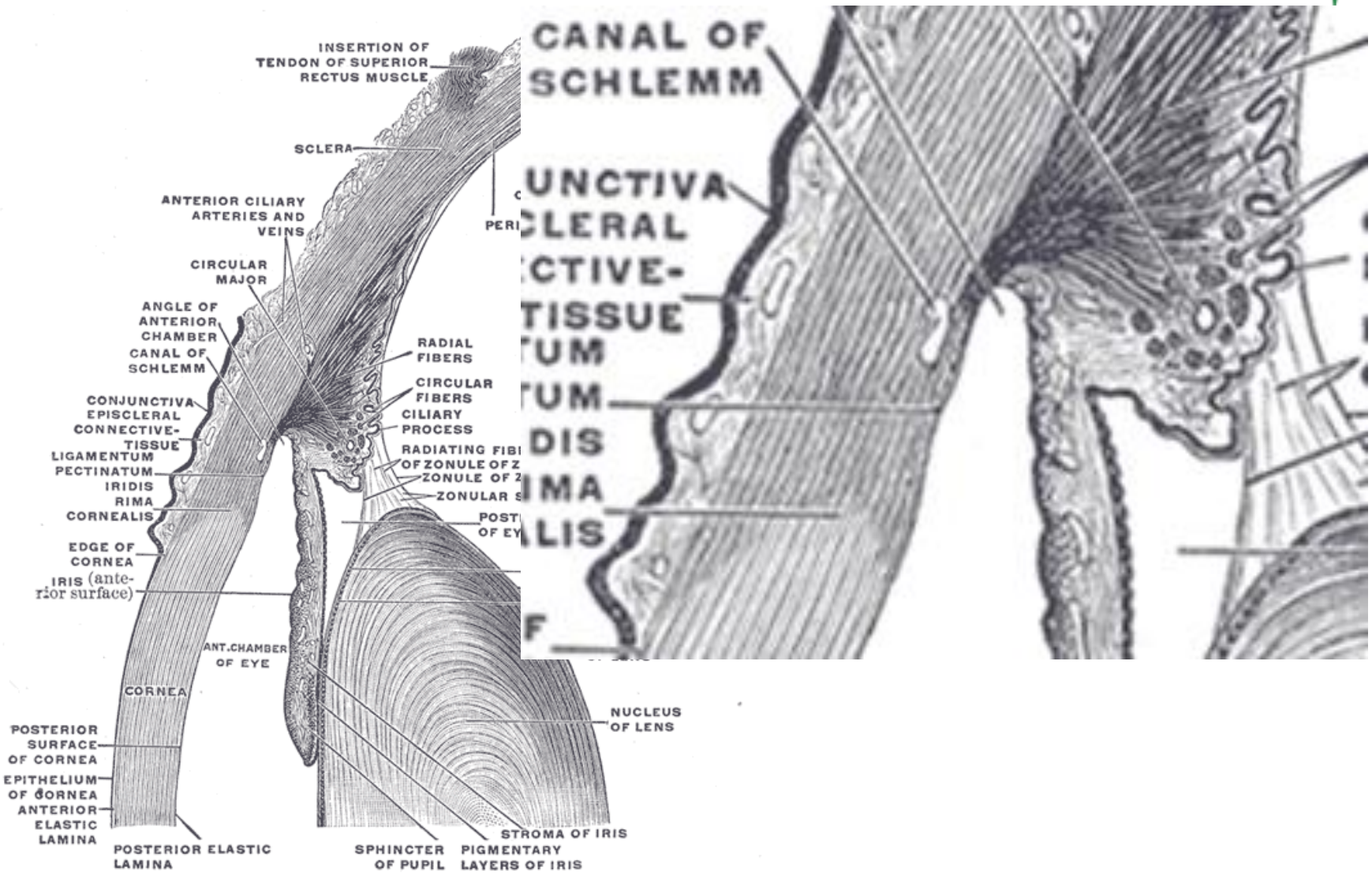

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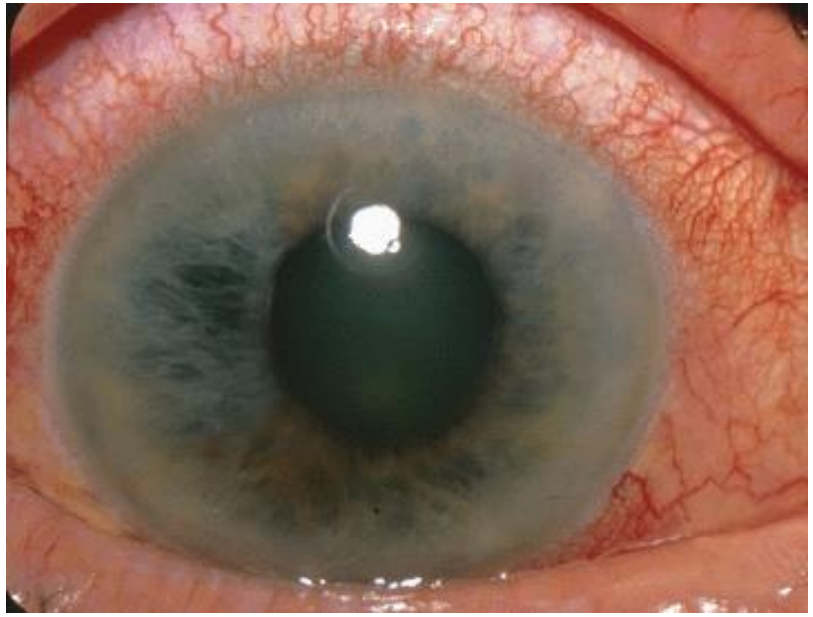
Acute Glaucoma Diagnosis

- Definition
  - Acute rise in the intraocular pressure
  - Closure of the anterior chamber drainage angle
  - Dilation of the iris with medications may cause this
- Diagnosis
  - Reduced visual acuity, one eye
  - Nausea, vomiting
  - Painful red eye with un-reactive pupil
  - Corneal clouding



Acute Glaucoma Treatment

- Treatment
  - True emergency
  - Immediate ophthalmology referral
  - Iridotomy

Temporal (Giant Cell) Arteritis

- Blurry vision, double vision, blindness
- Scalp pain; boring type painful headache
- Vague migrating joint pains, many other symptoms
- High dose corticosteroids; biopsy to diagnose
- Recovery over 1-2 years

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Acute Loss of Vision Painless Causes

Slides (18-25)

Question: A 75 y.o. M presents to your office a sudden onset of flashes of light and decreased vision in his right eye. He is in no pain and you find decreased visual acuity in the right eye. Appropriate management consists of:

A. Patching the affected eye
B. A course of oral steroids
C. Initiation of aspirin therapy
D. Prompt ophthalmology referral
E. Watchful waiting

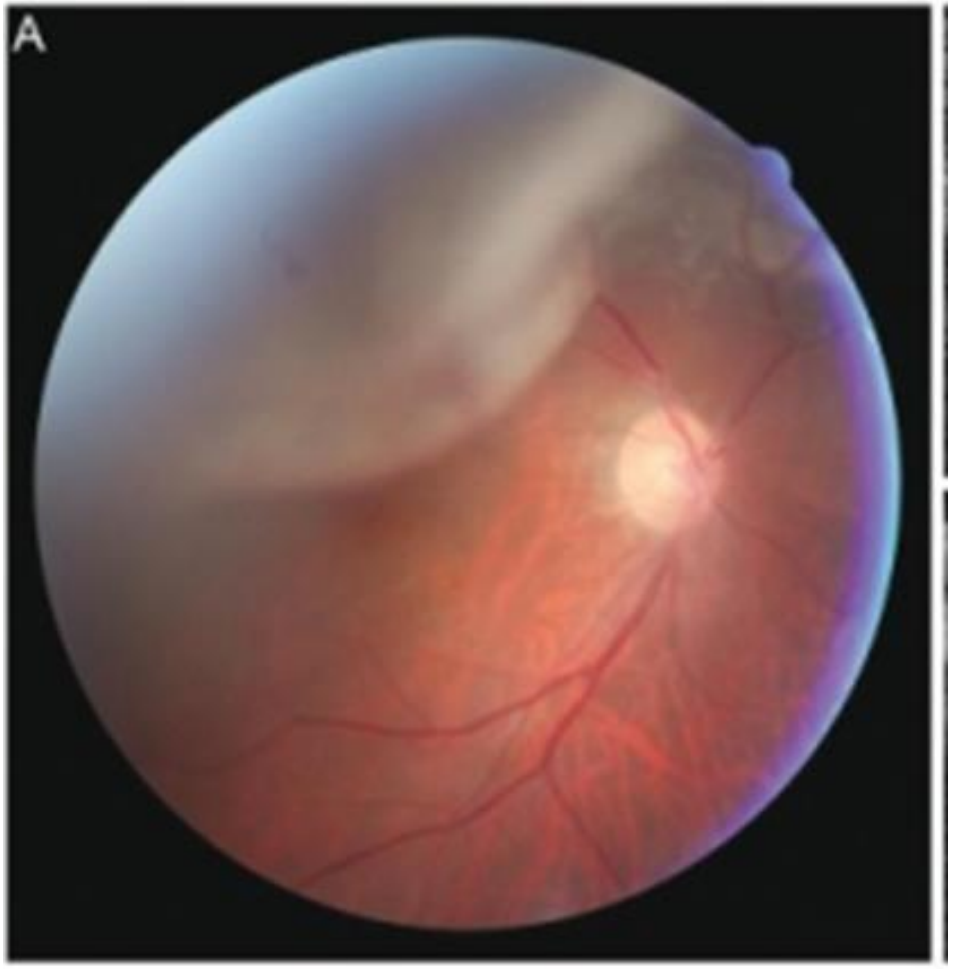
Correct answer is D

- Prompt ophthalmology referral
- Flashes of light, decreased acuity and lack of pain suggest retinal detachment, the separation of the neuro-sensory retina from the retinal epithelium.
- Causes include accumulation of fluid or traction from vitreous scarring in diabetic retinopathy, leading to ischemia, photoreceptor degeneration of the entire retina, and loss of vision.
- Rapid diagnosis and treatment minimizes loss of vision.

Retinal Detachment

- Usually acute loss of vision but may vary
- One eye affected
- Frequently preceded by flashing lights and floaters
- Often occurs after blunt trauma to the eye
- May or may not see retinal elevation on direct ophthalmoscopic exam
- Decreased visual acuity

Retinal detachment



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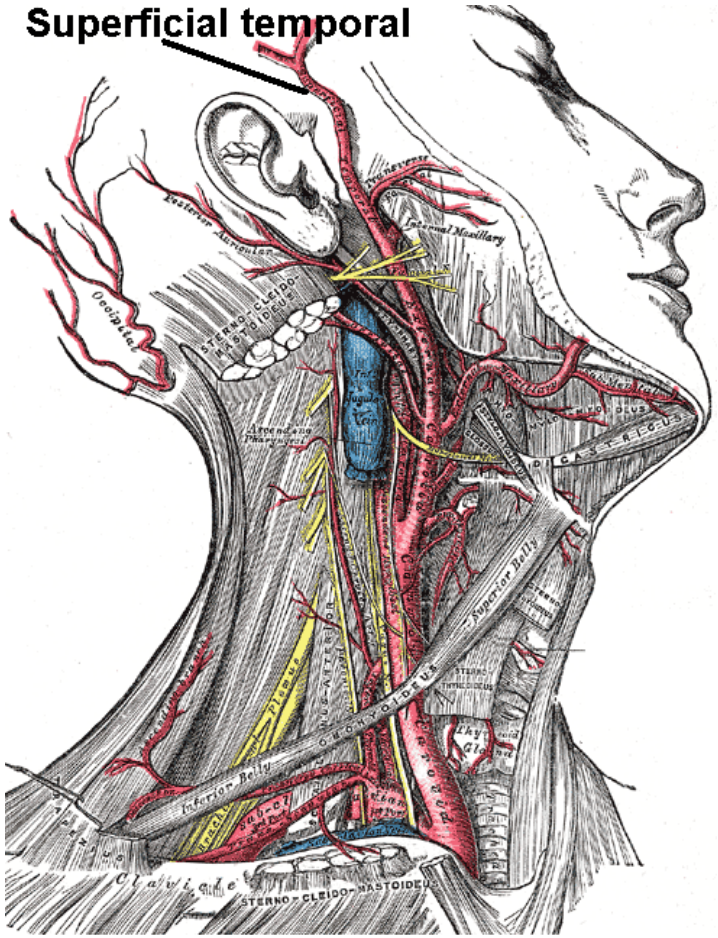
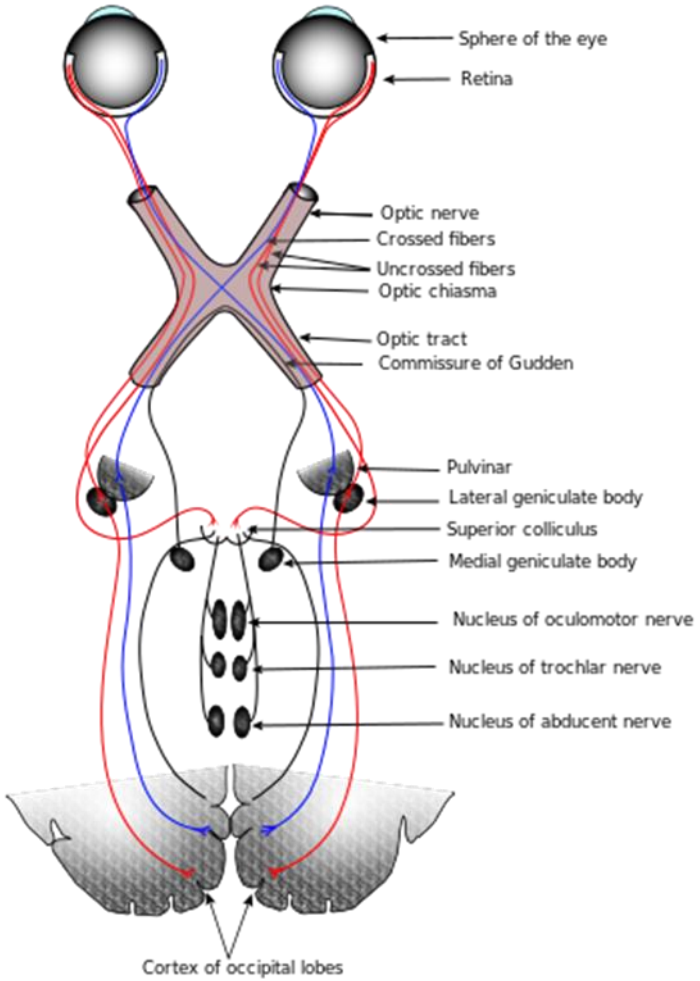
Transient Monocular Blindness

- Transient monocular blindness
  - Amaurosis fugax, transient ischemic attack - TIA
  - Symptom of carotid artery disease
  - Sudden painless loss of vision in one eye
  - Resolves spontaneously





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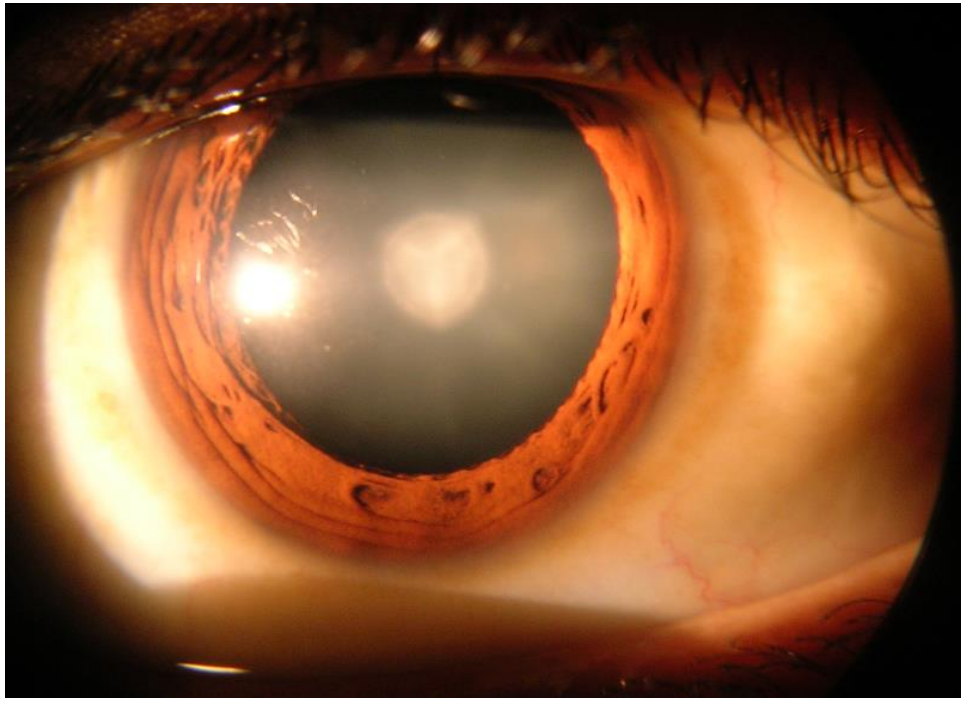
Gradual Loss of Vision

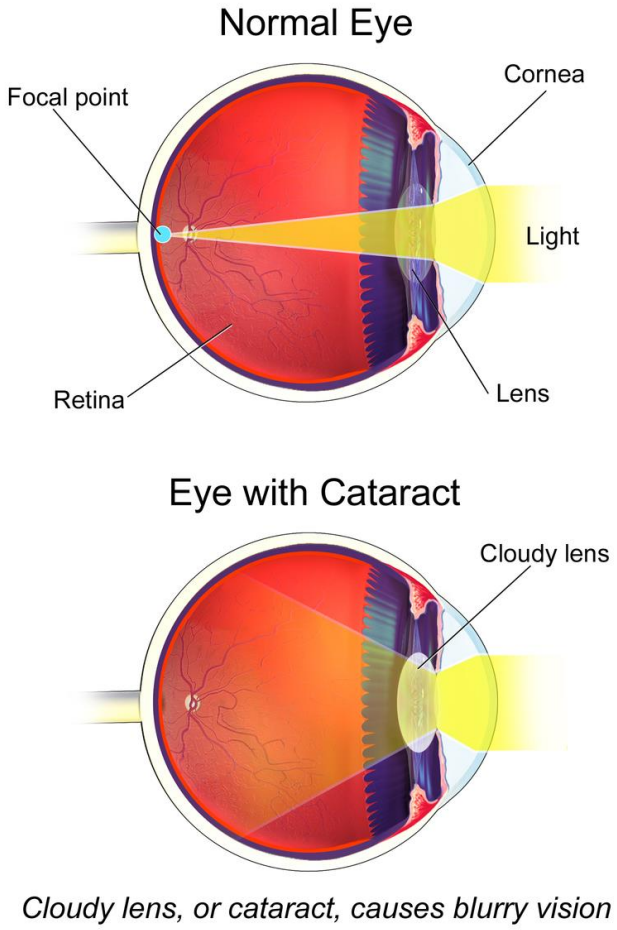
Causes of Gradual Loss of Vision

- Aging
- Cataracts
- Chronic (open angle) glaucoma

Cataracts

- Any opacity of the lens





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Cataracts

- Slowly progressive, painless decrease in vision
- Common causes
  - Age (senile) – accounts for 90% of cases
  - Congenital – genetic, infectious, toxic
  - Trauma – ionizing radiation or penetration
- Treatment
  - Phacoemulsification and intraocular lens impacts
  - 95% effective

Chronic (Open Angle) Glaucoma

- Optic neuropathy
  - Decreased outflow of aqueous fluid?
  - Asymptomatic until advanced visual field loss
  - Primary open angle glaucoma – 25%-50% have normal pressure
- Treatment
  - Topical medications lower intraocular pressure
  - First line: increase aqueous outflow (prostaglandins analogues: xalatan, lumigan, travatan)
  - Second line: decrease aqueous production (alpha and beta blockers: iopidine, betoptic, betagen, timoptic)


Thank you for your attention
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