Brigham and Women's Hospital
Founding Member, Mass General Brigham

Headache

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CONTINUING MEDICAL EDUCATION
DEPARTMENT OF MEDICINE

HARVARD MEDICAL SCHOOL
TEACHING HOSPITAL

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Disclosure:
Percept (consultant)
Teva (research support)

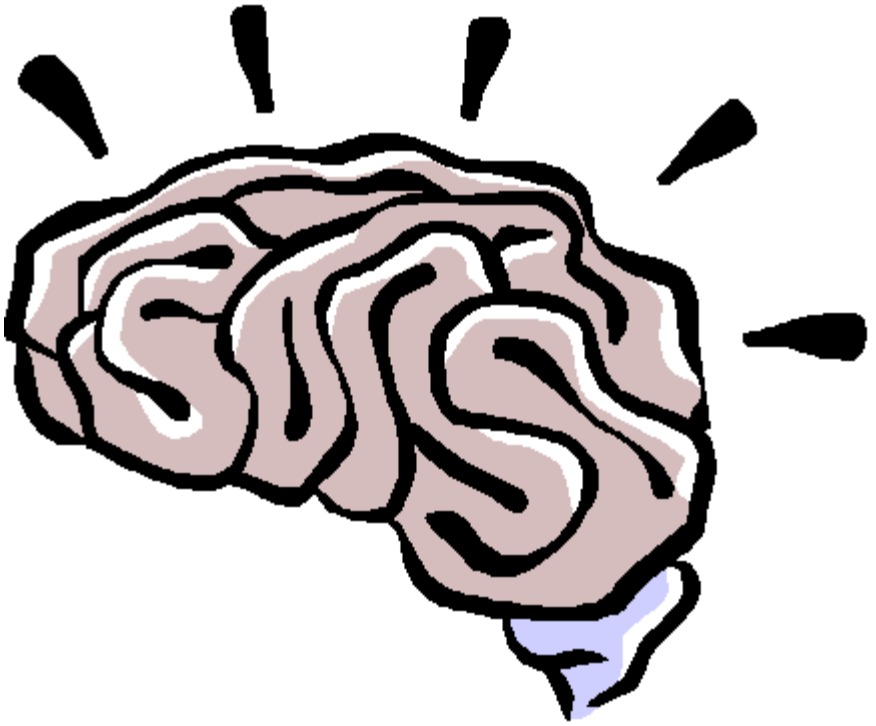
Goals

- Understanding of diagnosis of common types of headaches
- “red flag” recognition
- Work-up
- Treatment, medication and integrative therapies
- Preparedness for board questions

MOC reflective notes

- Separate primary from secondary headaches
- Be familiar with FDA approve and evidenced treatments
- Engage patients in decision-making

According to article in The Telegraph , average attention of humans has fallen to 8 seconds, less than a goldfish



What is a headache?

- **Full Definition of HEADACHE**
- ***1*:** pain in the head
- ***2*:** a vexatious or baffling situation or problem <*meetings had become a giant headache — Franklin Foer*>

Primary vs. Secondary

- Idiopathic
- Non-structural
- Rule-out diagnosis

- “secondary” to underlying disease
- Tumor
- Aneurysms
- Infection
- inflammatory

Office evaluation of headache—the essentials

- How long
- Where on head
- Quality of pain
- Positional
- Nausea, vomiting
- Photophobia/phonophobia
- Dizziness, vertigo
- Focal neurologic symptoms, especially visual
- Duration
- Degree of disability
- Family history

Red Flags

“first or worst”

New and different

LOC

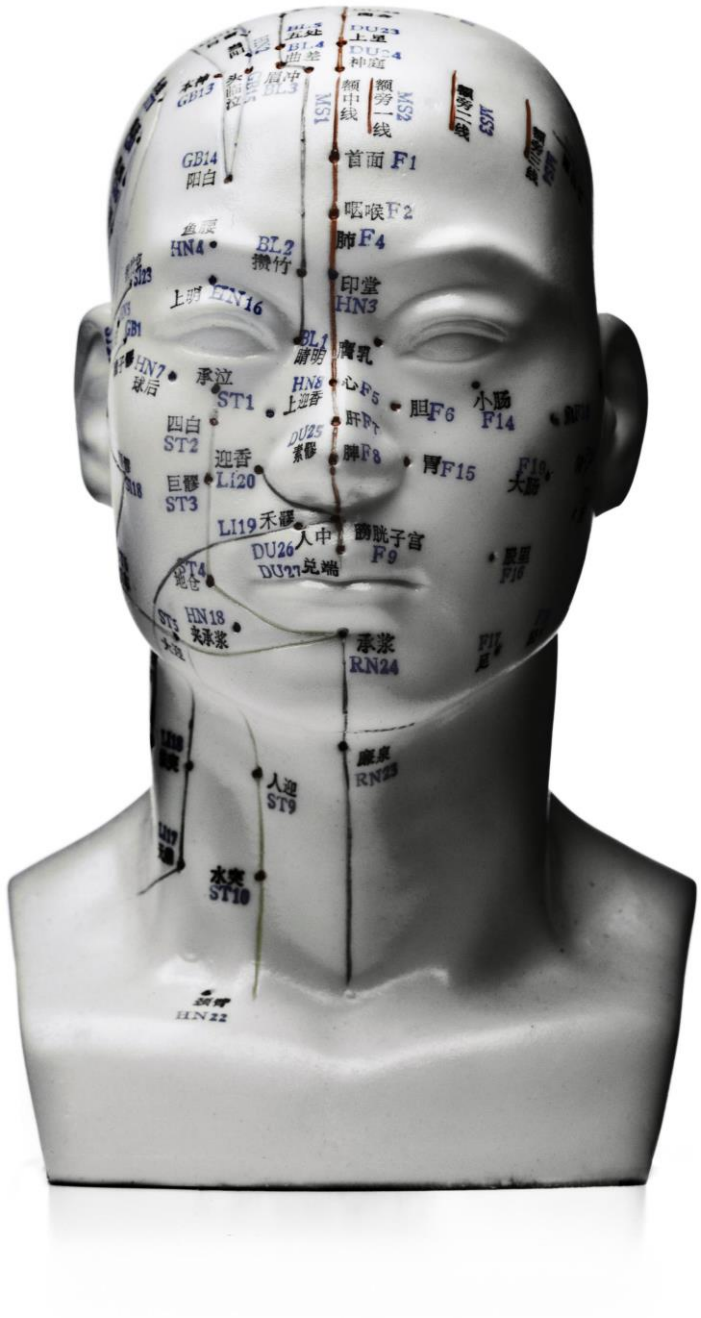
Focal signs

Increasingly worse ecology

International Headache Society Criteria

- Website at the end of talk
- Very specific descriptions
- Clearly defined criteria
- Useful to refer
- Lots of esoterica

Focus on Primary



Headache Locations—it's all about real estate

Forehead Pain

Pain in the forehead is often indicative of tension headaches. Stress and muscle tension are common causes.

Temple Pain

Pain in the temples is often associated with migraines or tension headaches. It may be throbbing or constant.

Pain Behind Eyes

Headaches behind the eyes can indicate cluster headaches or sinus issues, often felt as intense or sharp pain.

Back of Head Pain

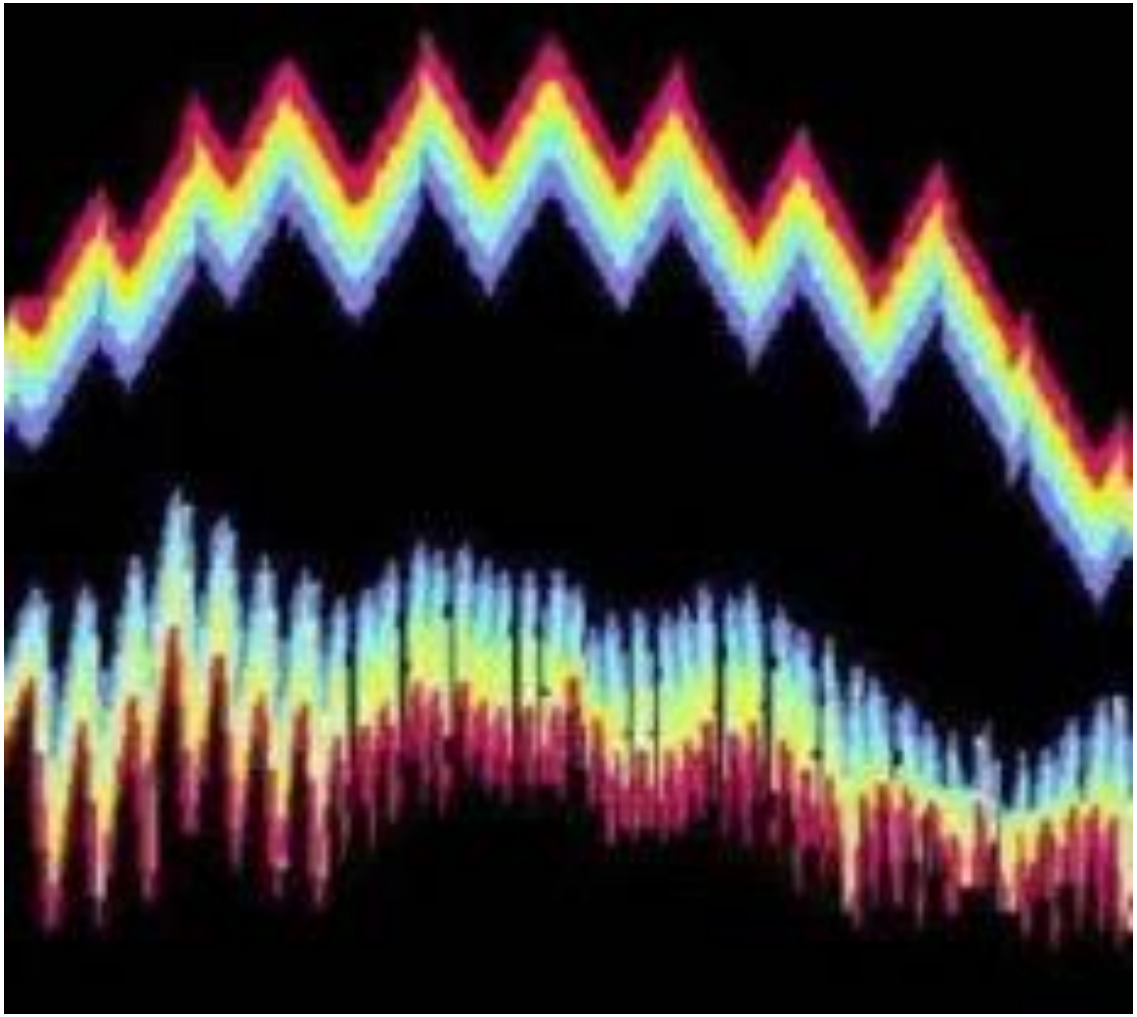
Pain at the back of the head can be a sign of tension headaches or occipital neuralgia, often related to neck tension.

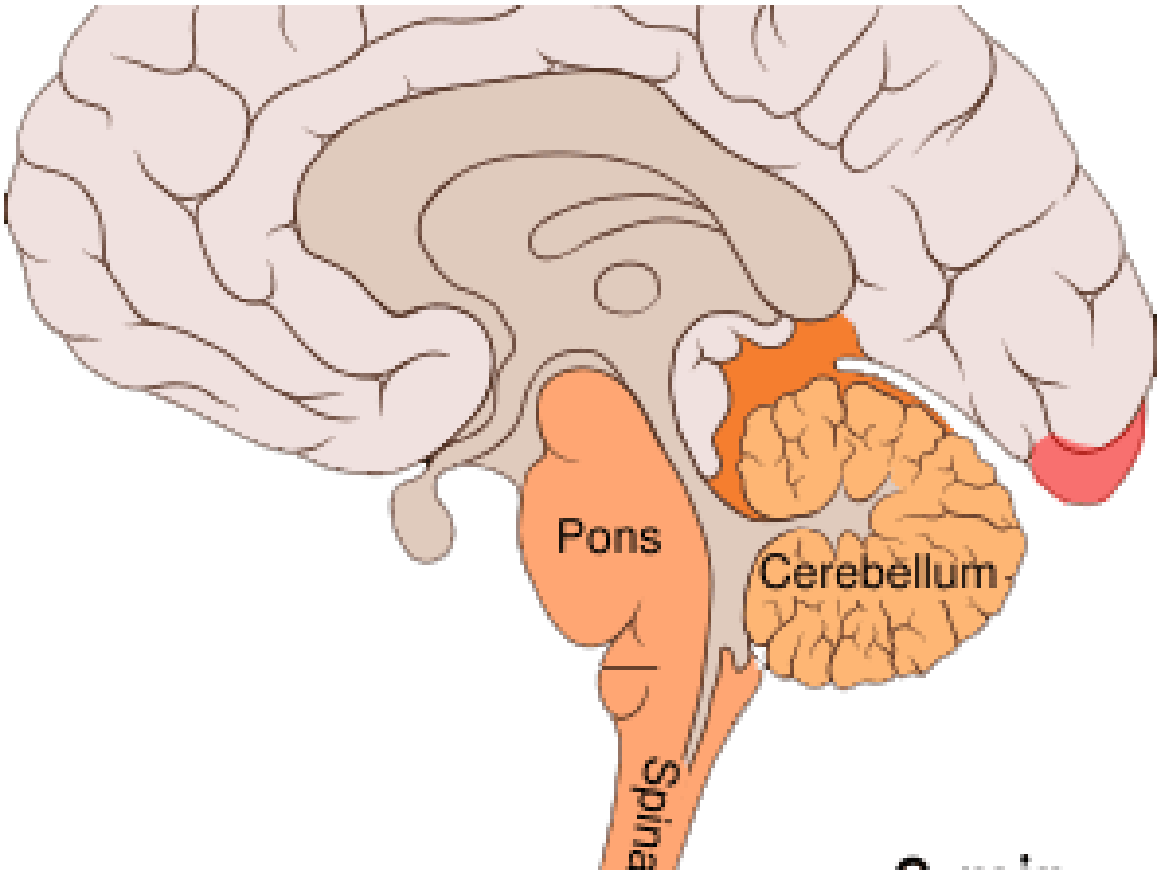
Migraine

- Unilateral
- Minimum four hours
- Throbbing pain
- Moderate to severe intensity
- Photo/phono
- Nausea or vomiting
- At least five events

Migraine with aura

- At least two attacks
- Fully reversible symptoms
- More than 5 and less than 60 minutes
- Speech, sensory or visual





Cortical spreading depression—wave of depolarization

Other migraine variants

- Menstrual
- “complicated”
- Hemiplegic
- Chronic

Tension Type Headache "hatband headache"

- Ten episodes
- Bilateral
- Pressing/tightening
- Mild to moderate
- 30 min to 7 days
- Variants—infrequent/frequent/chronic
- No nausea or vomiting
- Sound or light sensitivity

Chronic daily headache—what is it?

TACs

- SUNCT
- SUNA
- Cluster
- Hemicrania

SUNCT

This syndrome is characterized by short-lasting attacks of unilateral pain that are much briefer than those seen in any other TAC and very often accompanied by prominent lacrimation and redness of the ipsilateral eye.

5 to 240 seconds, occurring multiple times/day

SUNA

- Attacks of unilateral orbital, supraorbital or temporal stabbing or pulsating pain lasting from 2 seconds to 10 minutes

Cluster
Clint Eastwood Headache?

15-180 minutes

Unilateral pain, very severe, same distribution

Tearing/rhinorrhea/injection/ipsi hydrosis

Meiosis/ptosis

Cluster sufferers pace, migraine patients lie in the dark with ice

hemicrania

2 TO 30 MINUTES

INDOMETHACIN RESPONSIVE

SIDE-LOCKED

When to image and what to order

- RED FLAGS
- FOCAL SYMPTOMS
- AGE
- POSITIONAL
- CHOOSING WISELY ARTICLE FOR PATIENTS

CT vs. MRI

CT Scan—blood, bone

- Trauma
- ? SAH
- Acute neurologic changes

MRI

- Acute neurologic changes
- ? Stroke
- Hydrocephalus, IIH
- ? Tumor
- ? Infection
- Imaging of posterior fossa

CALL THE RADIOLOGIST

Ask the clinical question

CADASIL

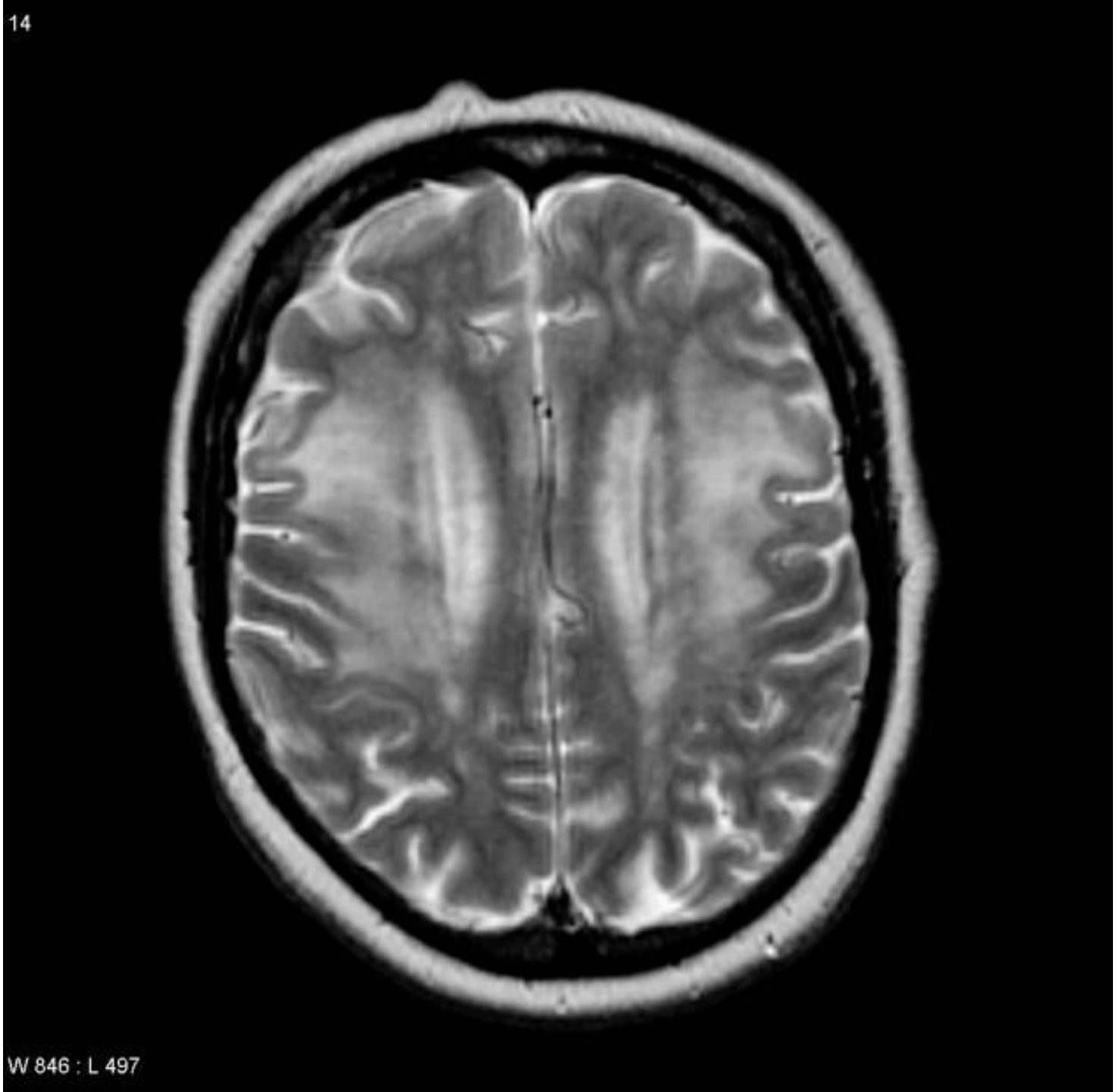
Cerebral autosomal dominant arteriopathy with sub-cortical infarcts

Inherited, notch 3 gene mutation

Migraines and multiple strokes progressing to dementia

Cognitive deterioration, seizures, psychiatric problems

Genetic testing is available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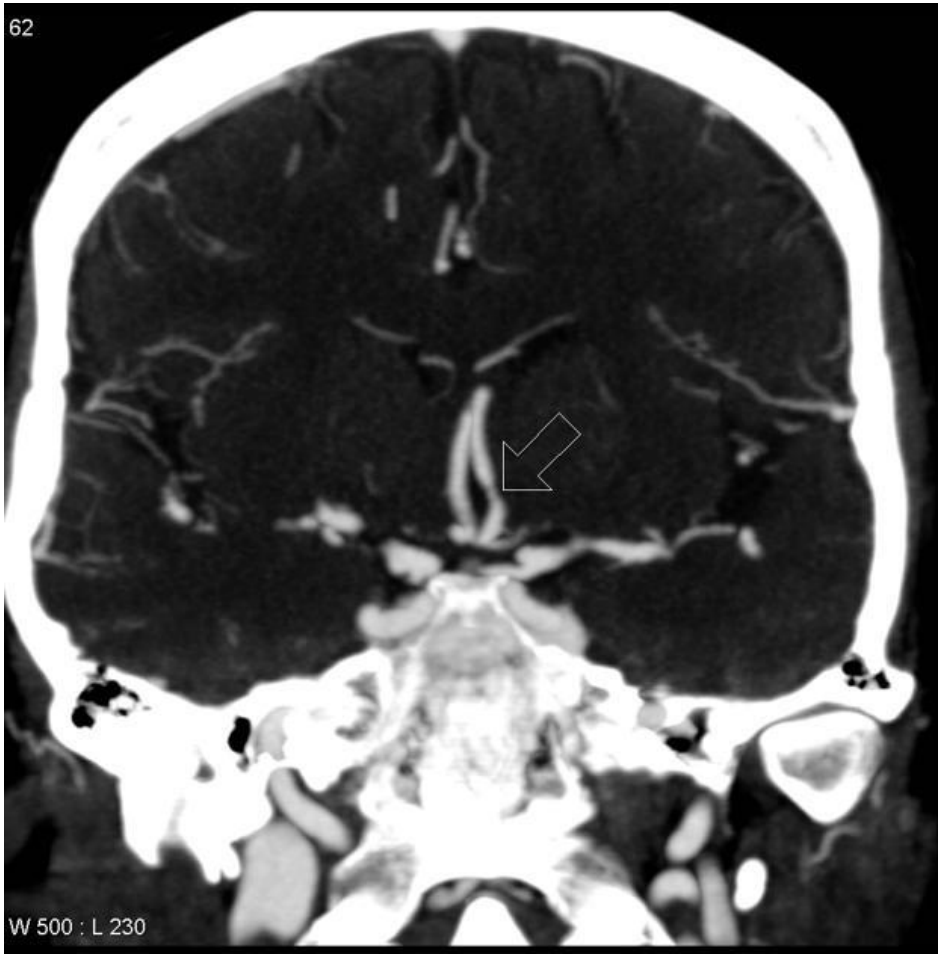
Reversible cerebral vasoconstriction Syndrome
Call-Fleming Syndrome

- Can last for weeks
- Thunderclap headaches
- Focal neurologic signs
- Seizures
- Many potential triggers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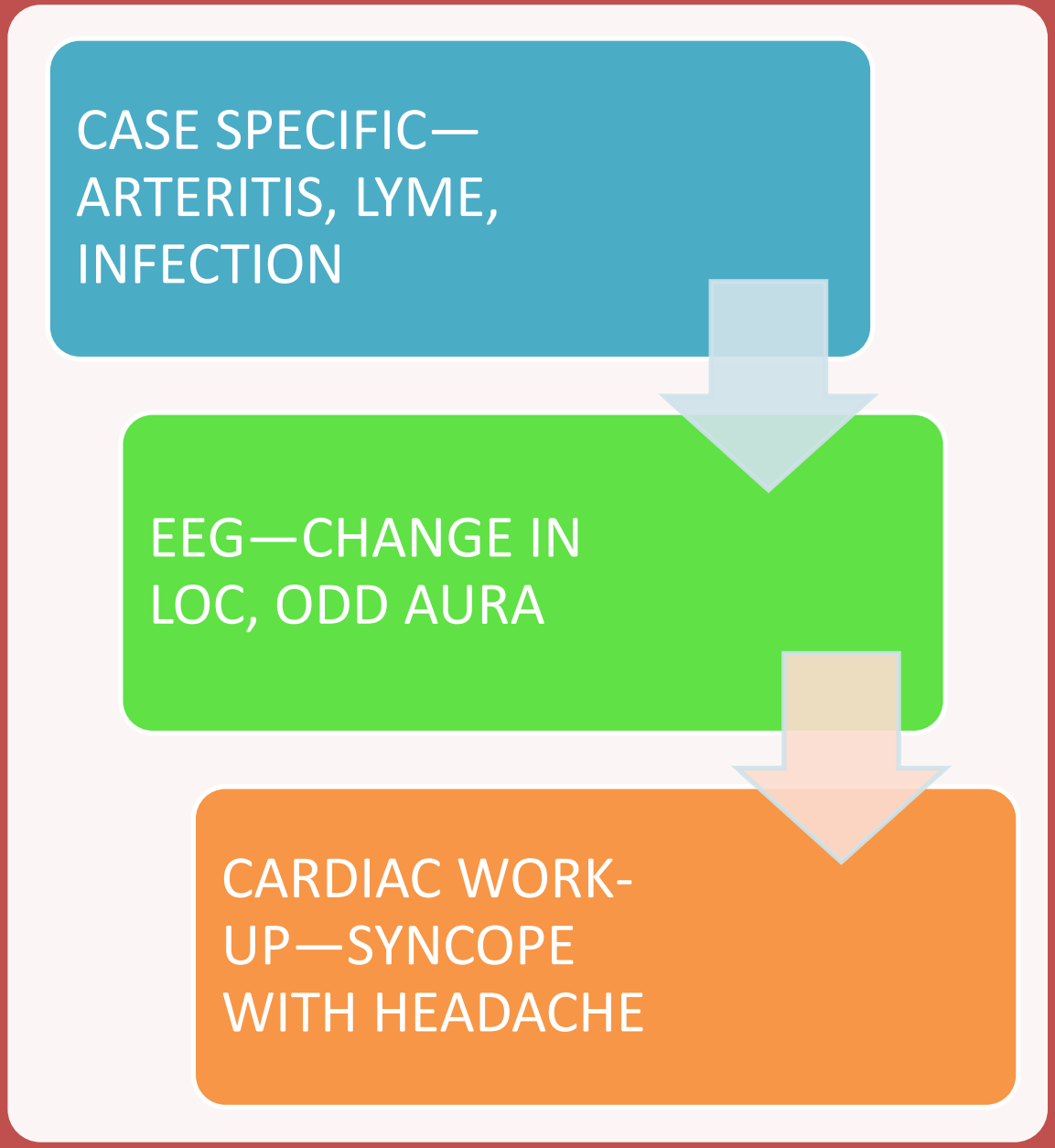
Labs, other tests



Treatment

Medication vs integrative

- Evidence-based
- How to monitor
- Ecology
- Patient preference

- Evidence-based
- Safety
- Cost
- Patient preference

Guidelines--

- AHS 2021 Migraine is excellent
- Start low and titrate up for preventives
- “minimal effective dose”
- Review contraception if indicated
- Acute--stratify

2024 New AHS statement

New CGRP targeting medications as first line therapies

Big step forward

Migraine

Antihypertensives

Anticonvulsants

Antidepressants

antispasmodics

Onabotulinum toxin

CGRP monoclonal antibodies!!! target molecule or receptor

Gepants—CGRP antagonists

Acute mediations

Triptans--formulations

Ergots—potential for side effects

Anti-inflammatories

Anti-nausea

Gepants!--dissove, pills, nasal spray

Little or no role for narcotics/barbiturates

hormonal

- Estrogen/progesterone formulations
- Role of HRT

TTH

- All off-label
- Antidepressants
- Anticonvulsants
- Antispasmodics
- Anti-inflammatories

TACS

- Indomethacin—for hemicrania
- Triptans
- Calcium-channel blockers
- Steroids
- lithium

procedures

- Nerve blocks
- Trigger point injections
- Onabotulinum toxin
- Transcranial magnetic stimulation
- Migraine surgery????

Migraine headband—FDA approved
Arm band
Other neuromodulators

Integrative therapies

YOGA

MINDFULNESS

TAI CHI

HERBS

VITAMINS/SUPPLEMENTS

NUTRITION

ACUPUNCTURE

MASSAGE

Apps for tracking

Iheadache

My migraine

migrainebuddy

Case One

- Jane, age 24, grad student
- No medical problems besides headache
- Occurs several times/month
- Throbbing pain, usually behind her right eye
- Preceded by floating wedge shape that glows and crosses from one side to the other
- Needs dark and quiet room when it happens
- Usually occurs one day before period and mid-cycle

Diagnosis?

- Migraine with aura
- Menstrual migraine
- TIA
- Tension-type headache

How would you treat?

- Continuous combined oral contraceptive
- Trial of topiramate
- Abortive plan: triptan plus NSAID
- OTC

Case Two

- Ashley, age 19, college student
- Throbbing pain over forehead and under eyes
- Worse with movement
- Light bothers her
- Slight nausea
- Runny nose, some tearing
- Very anxious about school, headaches, life

Diagnosis?

Sinus headache

Migraine without aura

Tension-type headache

Headache attributed to Rhinosinusitis

Diagnostic criteria: Frontal headache accompanied by pain in one or more regions of the face, ears or teeth and fulfilling criteria C and D. Clinical, nasal endoscopic, CT and/or MRI imaging and/or laboratory evidence of acute or acute-on-chronic rhinosinusitis[1;2]Headache and facial pain develop simultaneously with onset or acute exacerbation of rhinosinusitis. Headache and/or facial pain resolve within 7 days after remission or successful treatment of acute or acute-on-chronic rhinosinusitis.

Notes: Clinical evidence may include purulence in the nasal cavity, nasal obstruction, hyposmia/anosmia and/or fever. Chronic sinusitis is not validated as a cause of headache or facial pain unless relapsing into an acute stage.

How would you treat?

- Preventive med
- Antibiotics
- Nasal spray
- Biobehavioral therapies

Case Three

- Tom, age 53, no headache history
- Wakes up at 4 a.m. at least half the month with dull headache
- Pain lasts at least 15 minutes, some occasional nausea associated
- NSAIDS are not helpful
- No autonomic symptoms

Diagnosis

Cluster

Migraine

Tumor

Aneurysm

Other

Treatment?

- Verapamil
- Lithium
- Amitriptyline
- coffee

Case Four

- Christine, age 42
- Works in an office
- Frequent headache of minor to moderate severity but annoying
- Band around her head, neck pain
- Mild phonophobia, no other symptoms
- Has been present for years
- Exam is normal other than paracervical trigger points

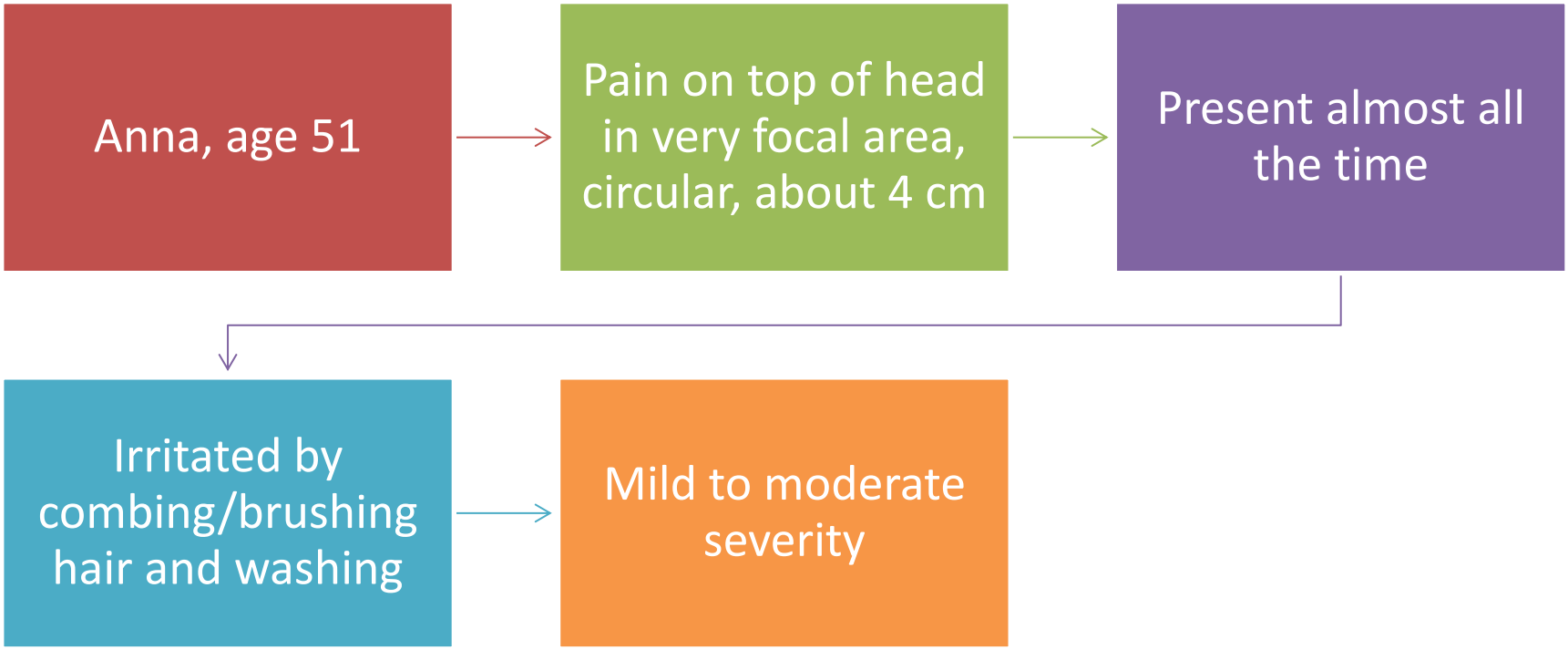
Diagnosis?

- Migraine without aura
- Chronic Daily headache
- Episodic Tension-type headache
- Chronic Tension-type headache

How to treat Christine

- Physical therapy
- Amitriptyline
- Muscle relaxants
- Exercise/yoga therapies
- psychotherapy

Case Five


Anna, age 51
Pain on top of head in very focal area, circular, about 4 cm
Present almost all the time
Irritated by combing/brushing hair and washing
Mild to moderate severity

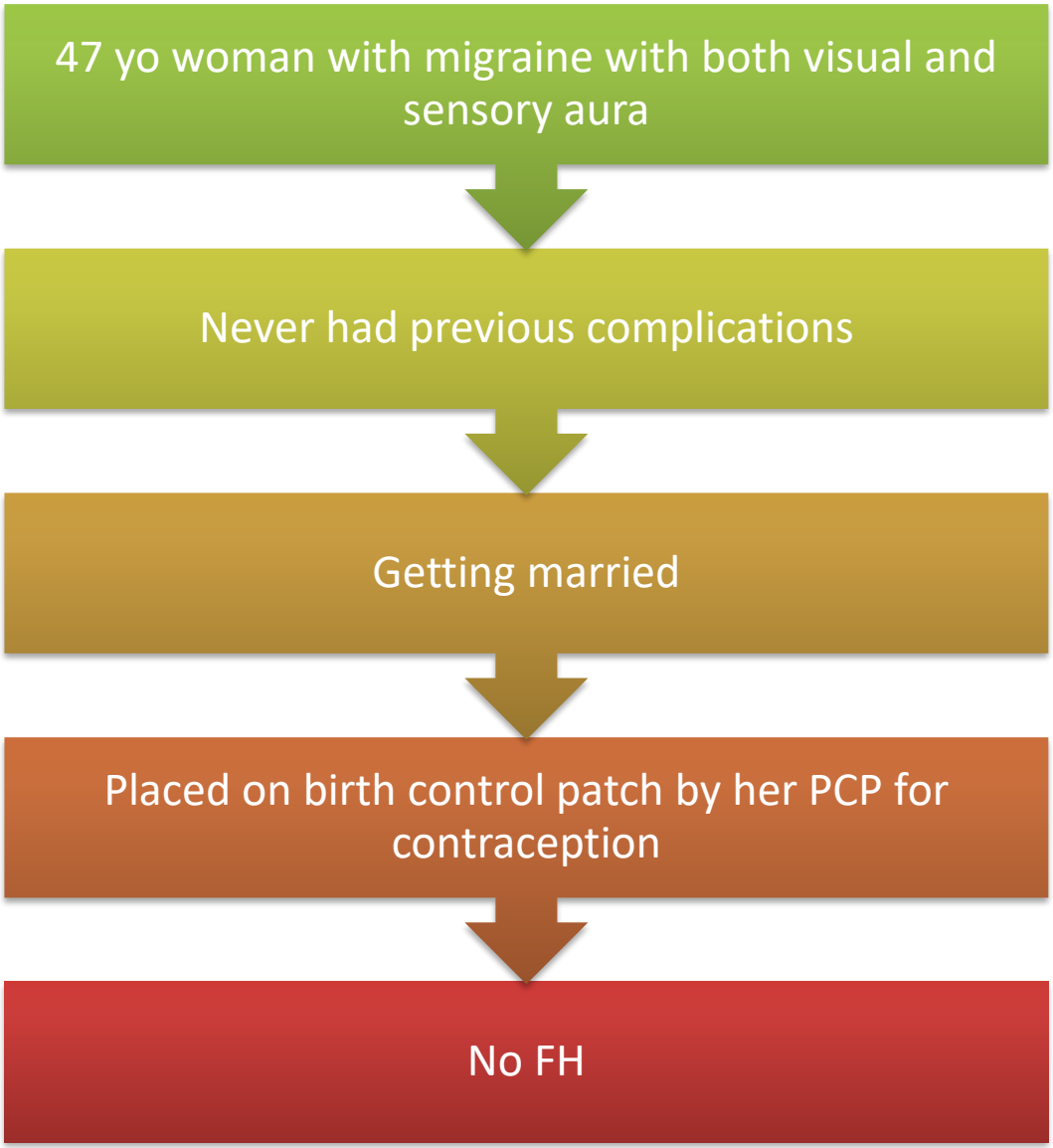
Diagnosis

- Vasculitis
- Migraine
- Tumor
- Skin lesion
- Nummular headache

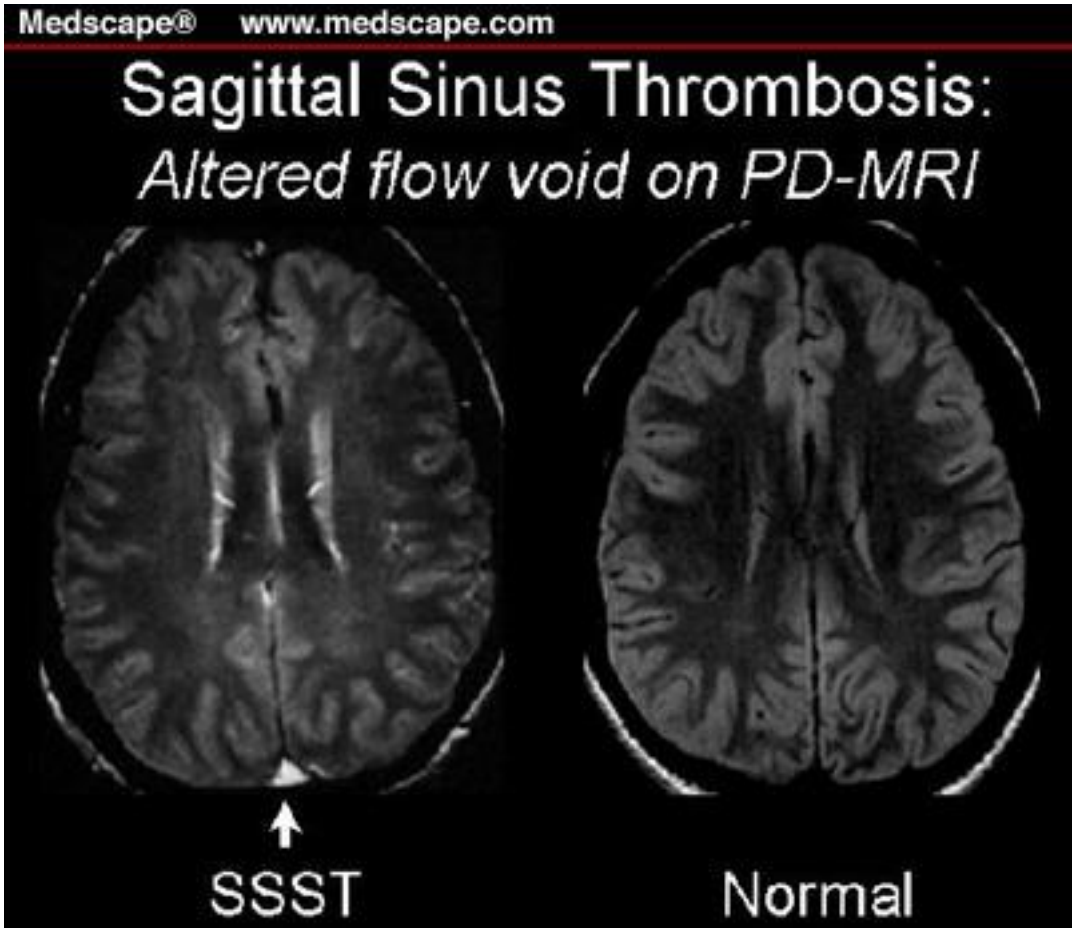
How to treat?

- Gabapentin
- Amitriptyline
- Topiramate
- clonazepam

Case 6


47 yo woman with migraine with both visual and sensory aura
Never had previous complications
Getting married
Placed on birth control patch by her PCP for contraception
No FH

- Leg cramps first—”muscle spasm”
- Shortness of breath
- Right body weakness


Medscape® www.medscape.com
Sagittal Sinus Thrombosis:
Altered flow void on PD-MRI
SSST
Normal

Poor outcome

Migraine with aura

Father had coagulopathy—Factor 5 Leiden thrombophilia—had a number of strokes and an MI before the age of 50

? Other types of birth control

Maintained on warfarin—had persistent increased intracranial pressure headache plus migraines

Case 7

Hannah, college student, age 19, LH

Occasional throbbing headache, has scintillations followed by pain

Studying animal science, goes to Zambia for a semester

Arrives on a hot day to rural village and goes running

CAN’T SEE TO THE LEFT

LEFT ARM AND FACE TINGLING

UNABLE TO TALK

THROBBING EXCRUCIATING HEADACHE 30 MINUTES LATER

Transferred to Lusaka

- Given some medication intravenously
- Process cleared
- Had a few headaches with scintillations after

- Came to see me about three months after arriving home

- Ecology—was on estrogen-containing birth control
- Really hot and had not been drinking much water…

What happened?

What would you recommend?

Websites

- http://www.headaches.org/pdf/MIDAS.pdf
- http://www.americanheadachesociety.org/
- http://www.headaches.org/
- http://www.achenet.org/
- http://itunes.apple.com/us/app/headache-diary-lite/id309227463?mt=8
- http://www.ncbi.nlm.nih.gov/pubmed/22671714