Headache Approach

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Introduction:

- Headache is the most common problem neurologists encounter in their practices.
- Lifetime prevalence of headache (all types) is **96%**
- Although most of these headaches are benign (>90%), a small percentage require urgent diagnostic studies and treatment

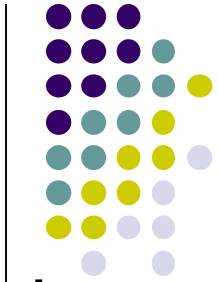
Pain-sensitive cranial structures

- **Intracranial**:
  - Blood **vessels**: arteries, veins, sinuses
  - **Meninges**: pia, arachnoid, dura
  - **Nerves**
- **Extracranial**:
  - Scalp: skin, subcutaneous tissue, **periosteum**
  - Joints: cervical, **TMJ**
  - Muscles: **paraspinal**, scalp
  - Teeth, eyes, ears

What to do first?

- Most important to find out if there is any ***red flag*** in this headache.
- Take a **good history**: onset, severity, any systemic features…
- Then, try to identify if you are dealing with **primary** or **secondary** headache.

Essential Questions



- Headache duration, location, quality, severity, exacerbating/relieving factors, associated symptoms, specific timing in the day…
- **Why** did the patient come to the ER?
- Was the **onset** sudden or gradual?
- Does the patient have any underlying medical conditions, e.g., are they **immunosuppressed**?
- Any recent head trauma?
- Any medications?

RED FLAGS: Secondary headache « SSNOOP4 »

- **S** systemic symptoms (fever, weight loss, rash)
- **S** secondary risk factors (HIV, cancer)
- **N** neurological symptoms or signs (confusion, impaired alertness, seizure)
- **O** onset: sudden, abrupt
- **O** older – new onset or progressive pain (>50 – GCA)
- **P** previous headache history: first time or change in the pattern
- **P** Papilledema
- **P** precipitated by valsalva
- **P** postural aggravation

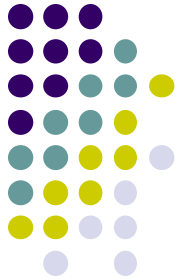
P = pregnancy

The Secondary Headaches

- **Secondary causes include:**
  - **Vascular** (SAH, intracerebral hemorrhage, stroke)
  - **Infectious** (meningitis, sinusitis, post-herpetic neuralgia)
  - **Post-traumatic**
  - Elevated **ICP** (mass, HTN, pseudotumor)
  - Decreased **ICP** (post-LP, SIH)
  - **Inflammatory** (temporal arteritis)
  - **Drug-related** (nitrates, caffeine withdrawal, sympathomimetics)
  - Systemic/metabolic disorders (hypercalcemia, anemia, renal failure, hypoxia or hypercarbia)
  - **Opthalmologic** (glaucoma, ischemia)

Tests for secondary causes

think before you request…

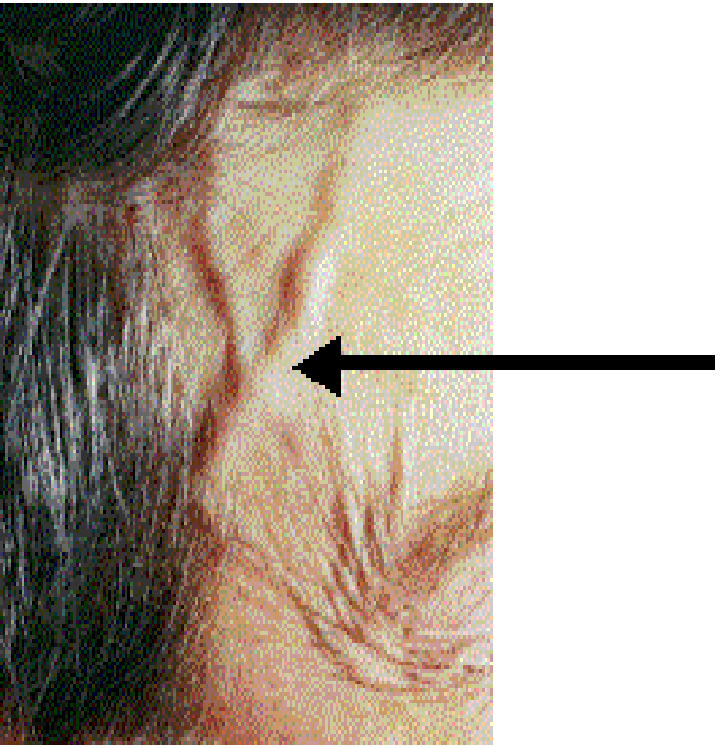


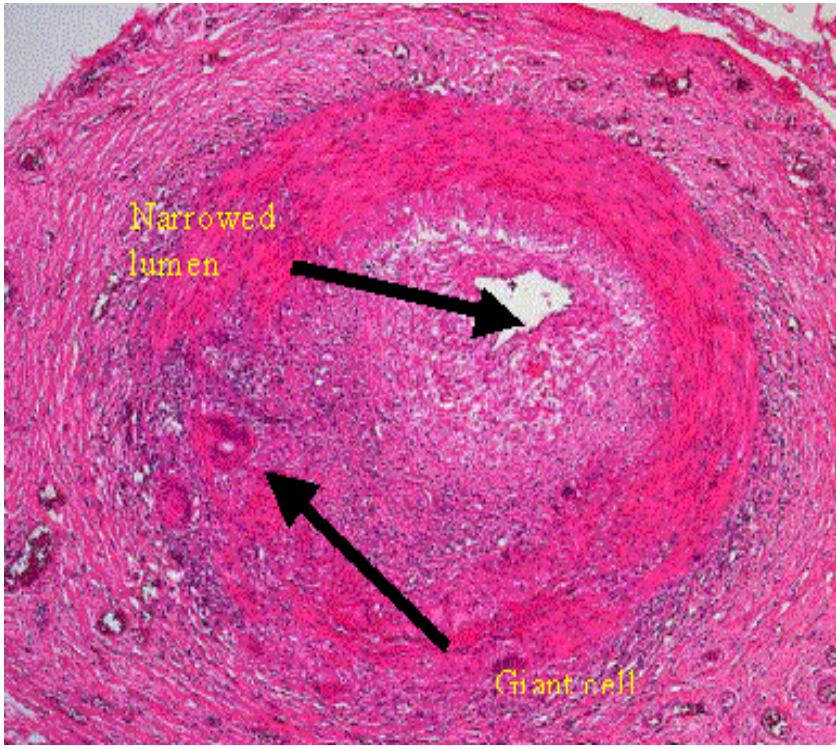
- **CT scan** (mass lesion, SAH)
- **MRI/MRA/MRV** (mass lesion, dissection, AVM, aneurysm, AVM, venous thrombosis)
- **Lumbar puncture** (meningitis, SAH, IIH)
- **Angiography** (aneurysm, AVM, vasculitis, venous thrombosis, dissection)
- **Labs**: ESR, CRP, CBC, **TSH**, drug screens, electrolytes

Meningococcal rash

Battle’s sign

Temporal arteritis





Primary headache disorders

- Migraine
- Tension
- TAC (trigeminal autonomic cephalgia).

1. Cluster
2. Paroxysmal Hemicrania
3. SUNCT
4. Hemicrania continua

- Other primary headache disorders
  (cough, exercise, sexual, stabbing, hypnic, NDPH…)

Migraine

- Either with aura or without (more common)
- The aura: visual (commonest), sensory or speech
- Features: photophobia, phonophobia and osmophobia.
- Moderate to sever in intensity
- **Nausea** and vomiting (motion sickness)
- Migraine has also its complications.

Childhood migraine

- **Migraine variants in children can include:**
- Benign paroxysmal vertigo
- Cyclic vomiting
- Abdominal migraine.
- Later in their age will behave like adult migraine.

Migraine treatment

- **Acute**: analgesia and Triptans
- **Preventive** treatment
- **Education**: triggers (cheese, chocolates, red meat, Chinese food, nuts, cola…). They need also **diary** for their headache. Also they shouldn't abuse analgesic treatment.

Nonpharmacologic Strategies

- Lifestyle modification / minimize triggers
  - Sleep
  - Exercise
  - Diet
  - Stop smoking
- Consider behavioral and physical treatments

Recommended substances (drugs of first choice) for the prophylaxis: ***established*** effective:

Substances	Daily dose	Level
Betablockers		
Metoprolol	50–200 mg	A
Propranolol	40–240 mg	A
Timolol		
Antiepileptic drugs		
Valproic acid	500–1800 mg	A
Topiramate	25–100 mg	A

Drugs of second choice for migraine prophylaxis: ***probably*** effective

Substances	Daily dose (mg)	Level
Amitriptyline	50–150	B
Effexor		B
Atenolol		

Drugs of third choice for migraine prophylaxis ***possible*** efficacy

Substances	Daily dose	Level
Clonidine		C
Candesartan	16 mg	C
Lisinopril	20 mg	C
Carbamazepine		C

Level U: results are conflicting:

-Gabapentin
-SSRI
-Calcium channel blockers
-Acetazolamide

Ineffective drugs: Lamotrigine, clomipramine, clonazepam.

Other options

Monoclonal

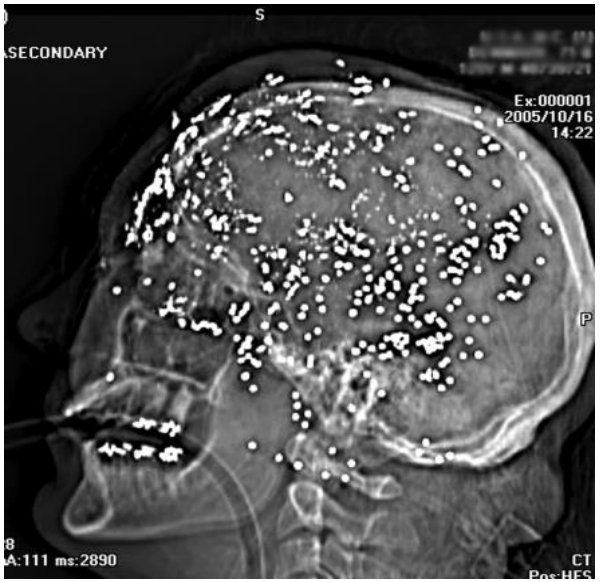
Tension

- Commonest primary headache.
- Likely under reported.
- Described like tight **band** on the head
- Associated with **stress** and **depression**
- Could be chronic and many times associated with MOH.

TAC

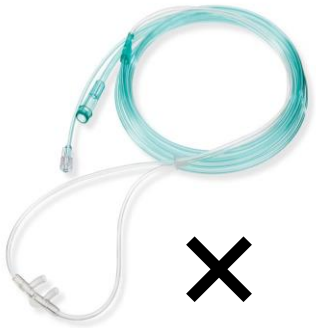
- All have **autonomic** features. (ptosis, miosis, facial swelling, tearing and nasal congestion).
- All need **MRI**.
- Cluster: severe to very severe, mainly in male (smoker), they get restless.
- Paroxysmal hemicranias: either episodic or chronic
- SUNCT: rare and difficult to treat.
- Hemicrania continua *(new classification)*.

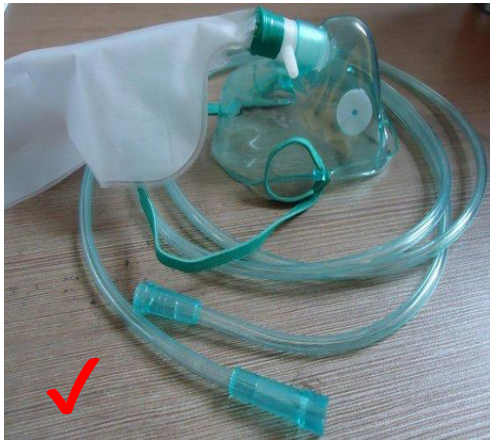
Cluster



- Severe to very sever
- Suicidal
- Cant sleep
- Last from **15-180 min**
- Need abortive and prophylactic treatment.

Oxygen something can be offered in the poly clinic…
high flow + Non breathing mask





Paroxysmal hemicrnia

- Either episodic or chronic
- Last from **2-30 min** ***(before it was 5-30)***
- Moderate in its severity
- Treatment: **indomethacin**

SUNCT

- Very rare
- Short lasting unilateral Neuralgiform headache with Conjunctival injection and tearing.
- Last from 1-600 sec ***(before 5-240)***
- Very difficult to treat. Lamotrigine can be helpful

Hemicrania continua

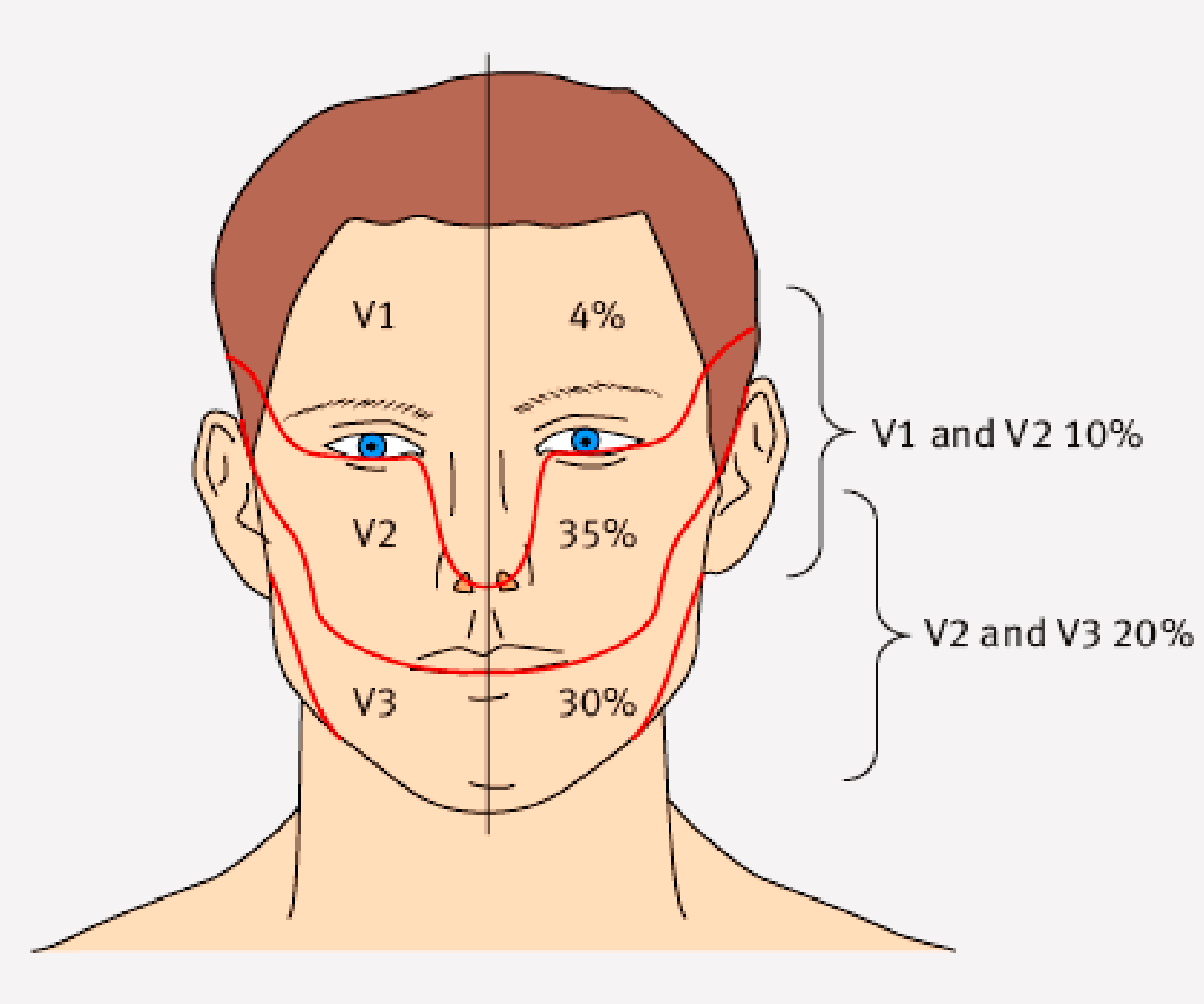
- Continuous headache (all the time, with some exacerbations) for more than **3 months.**
- **Mild to moderate**
- Associated with autonomic futures
- Treatment options:

1. **Occipital nerve block**
2. **Indomethacin**

Other neuralgia

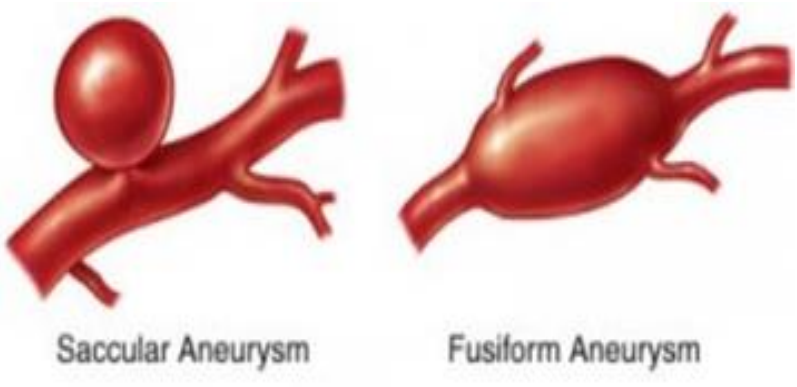
- Trigeminal neuralgia: mainly in V2 and V3. good response to *Carbamazepine*
- ***"Bilateral trigeminal neuralgia is a case of MS till proven otherwise"***
- Occipital neuralgia: in the occipital region of the head (C2).
- Neuralgia means very sharp pain in seconds (like a spark). It can happen many times during the day.

Trigeminal Neuralgia



SAH (non-traumatic) causes

- Intracranial aneurysm 85%
- Non-aneurysmal perimesencephalic hemorrhage 10%
- Cerebral arteriovenous malformation
- Dural arteriovenous fistula
- Mycotic aneurysm
- Cocaine abuse



CT Recognize Bleed

Time post event	Probability
Day 0	95%
Day 3	74%
One week	50%
Two weeks	30
Three weeks	Almost 0

Adams et al. Neurology 1983;33:981-8

Xanthochromia

- Blood in SA space hemolysis within 2-4 hours producing oxyhemoglobin
- Oxyhemoglobin is then converted to **Bilirubin** over a period of **12 hours**
- The presence of bilirubin cannot be caused by a traumatic tap

Xanthochromia in CSF

Time Post Bleed	Probability (%)
12 hours	100
One week	100
Two weeks	100
Three weeks	>70
Four weeks	>40

100 %

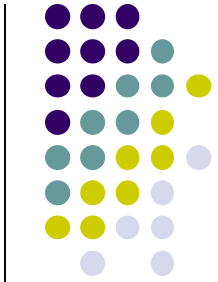
Vermuelen M et al. JNNP 1989;52:826-8

Dissection

- Thunder Clap Headache: 20%
- Head pain:
  - CAD: ipsilateral, frontotemporal
  - VAD: commonly occipital-nuchal region; may be diffuse and bilateral
- Neck pain:
  - VAD: 50%
  - CAD: 25%

Treatment Dissection –

Thrombolysis? Anticoagulation? Antiplatelet?



- RCTs lacking. One trial published (JAMA Neurol. 2019 Jun 1;76(6):657-664): **No difference**

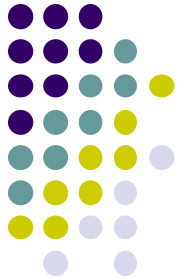
- CAD was **not** a contraindication in NINDS

- Be careful with vertebral artery dissection
  (risky anticoagulation with intracranial extension).

CEREBRAL VENOUS THROMBOSIS

- Most common in 3rd decade of life
- 75% are **female**
- Headache in 90% of cases
- 15–30% present with isolated headache without papilledema or neurological deficit.
  (HEADACHE SUGGESTIVE OF INCREASED ICP)
- 2–10% present with TCH
- Seizure + Headache *"high suspicion"*
- Approximately 0.5-1% of all strokes
- Accounts for 50% of strokes during pregnancy and peripartum period

CEREBRAL VENOUS THROMBOSIS



Risk factors:

- **Acquired**:

surgery, trauma, pregnancy, puerperium, antiphospholipid syndrome, cancer, exogenous hormones, sepsis, dehydration, infection, Behcet's, SLE.

- **Genetic** (inherited thrombophilia):

Factor V Leiden, Protein C & S, ATIII deficiency, prothrombin gene mutation, etc

CVT Treatment:

- Stabilize the patient
- Watch for signs of increase **ICP**
- They need anticoagulation with heparin or LMWH initially and oral anticoagulation after. Treatment at least for three months then repeat imaging.
- The role of **NOAC**…

JAMA Neurology | Original Investigation

Safety and Efficacy of Dabigatran Etexilate vs Dose-Adjusted Warfarin in Patients With Cerebral Venous Thrombosis

A Randomized Clinical Trial

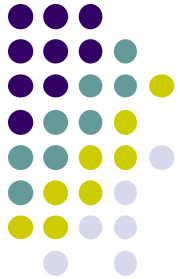
JAMA Neurol. 2019;76(12):1457-1465

INTERVENTIONS Dabigatran, 150 mg twice daily, or dose-adjusted warfarin for a treatment period of 24 weeks.

MAIN OUTCOMES AND MEASURES Primary outcome was a composite of patients with a new VTE (recurrent CVT, deep vein thrombosis of any limb, pulmonary embolism, and splanchnic vein thrombosis) or major bleeding during the study period. Secondary outcomes were cerebral venous recanalization and clinically relevant non–major bleeding events.

CONCLUSIONS AND RELEVANCE This trial found that patients who had CVT anticoagulated with either dabigatran or warfarin had low risk of recurrent VTEs, and the risk of bleeding was similar with both medications, suggesting that both dabigatran and warfarin may be safe and effective for preventing recurrent VTEs in patients with CVT.

New Guidelines on Headache Imaging: Key Points



- For **Thunderclap headache**: CT head without contrast remains the most appropriate. CTA may be appropriate in certain circumstances.
- For new **headache with optic disc edema**: MRI brain with or without contrast or CTH without contrast are usually appropriate, while CTH with contrast and CT or MR venography may be appropriate.
- New or progressive **headache with "red flags"** (e.g., head trauma, exertional headache, neurologic deficit, cancer, immunocompromise, pregnancy, age ≥50) warrants plain **CTH or MRI with or without contrast.**
- **TACs** should be investigated with MRI, **contrast recommended**.
- **Chronic headache but new features or progression**: MRI with or without contrast is appropriate (CTH with or without contrast may be appropriate).
- Imaging is **not appropriate** for newly diagnosed migraine or tension-type headache with a normal neurologic exam or for chronic stable headache with no neurologic deficit.

J Am Coll Radiol. 2019 Nov;16(11S):S364-S377

Thank you