

# Headache

→ International headache Society divides headache into Primary & Secondary headache disorder.

Classified into 4 subtypes.

→ Definition:

Headache is pain anywhere in the region of the head (& neck) because it can be a symptom of number of different condition of head & neck.

→ Pain is caused by disturbance of pain sensitive structure (not in the brain but around the brain like Cranium, muscle, nerve & veins, subcutaneous tissue, eye, ear sinuses, & mucosa membrane).

## IHS classification (International Headache society)

### ① Primary headache disorder.

#### a) migraine

(Aula - A sensation perceived by a pt. that precedes a condition affecting brain)

- 1) migraine without aura
- 2) migraine with aura
- 3) childhood periodic syndromes. (Predisposed for migraine)
- 4) Retinal migraine. (Brief attacks of blindness (&) visual problems. like flashing lights in one eye)
- 5) Complications of migraine. (depression, asthma, heart disease)
- 6) Probable migraine. (true migraine headache)

#### b) Tension-type Headache (TTH)

- 1) Infrequent TTH. (at least 10 episodes occurring < 1 day per month on average < 12 days . 1 year).

2) Frequent TTH (at least 10 episodes occurring  $\geq$  day < 15 days/month).

3) Chronic TTH ( $\geq$  15 days/month on Avg  $\geq$  3 months).

4) Probable TTH.

c) cluster headache & other Trigeminal autonomic cephalgia.

→ Pain in head caused by dilation at cerebral arteries)

1) cluster.

2) Palloxymsal hemicrania.

3) miscellaneous headache not structural tensions.

Hypothalamic dysfunction

Parasympathic activity associated with

Trigeminal Pain.

③ Secondary Headache disorde:

1) ~~Headache~~ Headache attributed to head trauma.

2) ~~Headache~~ Headache attributed to cranial, cervical, (&) vascular disorde.

3) ~~Headache~~ Headache associated  $\bar{c}$  substance on their withdrawal.

4) ~~Headache~~ Headache associated to infection

5) Headache associated to a psychiatric disorde.

Etiology:

1) Cough.

2) Exercise.

3) alcohol.

4) changes in sleep (&) lack of sleep.

5) stress.

6) certain foods such as processed meats that contain nitrates.

7) Ear infection

8) meningitis.

9) stroke.

migraines are characterized by recurrent, pulsating pain on one (&) both sides of the head & are usually accompanied by one (&) more symptoms.



# Pathophysiology of Headaches:

1) Dysfunction of  $Ca^{+2}$  channels (neuronal)



Serotonin + excitatory neurotransmitter in brain stem.



Vasodilation of Intracranial Extracerebral blood vessels



Activation of Trigeminal vascular system.



Release of vasoactive neuropeptides (eg + substance P)



Inhibition of distal blood vessels.



Vasodilation & distal Plasma-Extravasation.



Neurogenic inflammation.



Trigeminovascular fibres.



Trigeminal nucleus caudalis.



Higher cortical pain centres.



Headache.

Brainstem activation



2)

Traction (& irritation) of the meninges & blood vessels



Dilation of these Extracranial blood vessels.

activates the pain receptors in the surrounding nerves

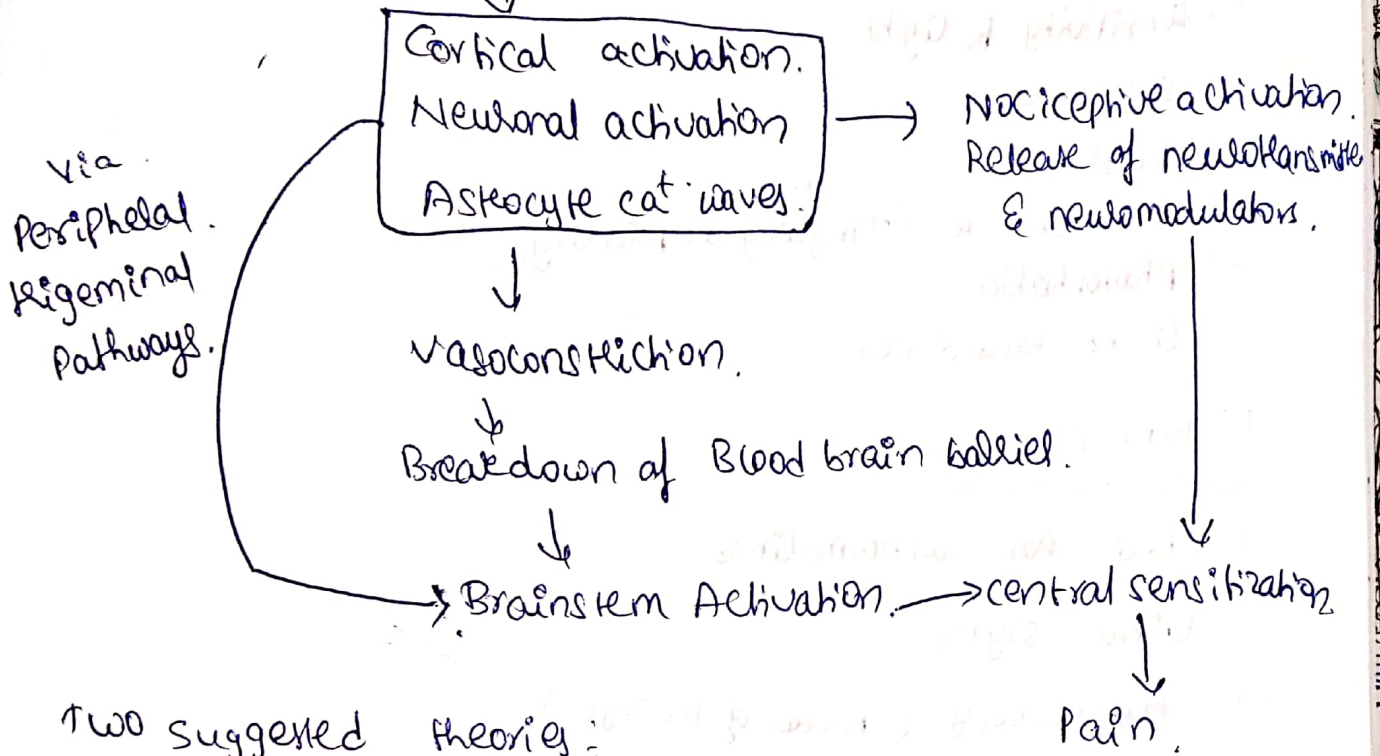


Headaches.

(ii)

# Primary neuronal dysfunction.

Dysregulation of cortical & brainstem excitability



## Two suggested theories:

- 1) Intracranial vasoconstriction is responsible for the aura of the migraine.
- 2) Headaches is results from the subsequent rebound dilation which leads to activation of the perivascular nociceptive nerves.

## Migraine Pathway:

migraine originates deep within in the brain

Electrical impulses spread to other regions of the brain.

The inflammation spreads across nerves supplied by the trigeminal nerve causing pain.

chemicals in the brain cause blood vessel dilation & inflammation of surrounding tissue

Changes in nerve cell activity & blood flow & may result in symptoms such as visual disturbances, numbness & dizziness.



## Clinical presentation:

- Nausea
- Vomiting
- sensitivity to light
- Stiff neck
- Rash
- Paresthesia (Tingling & Prickling)
- Photophobia
- Light headedness

## Diagnostic tests:

- Check for abnormalities.
- Vital signs.
- Fundoscopy. (Fundus of the eye.)
- Neurologic Examination. (Ruling out diseases of the brain & nerves)
- Headache history.
- CT scan.
- MRI of brain.
- EEG.
- Eye Examination. (To rule out glaucoma) Perikone optic nerve
- Spinal tap.

## Management:

### Non pharmacological:

- application of ice to head.
- Proper sleep usually.
- Calm environment.
- Exercise.
- Good & Eating habit.
- Smoking cessation.
- limited caffeine intake.
- Reduce & avoid stress.

# Pharmacological Treatment:

<u>Drug</u>	<u>Dose</u>	<u>MOA</u>	<u>Adverse effects</u>
1) Acetaminofen.	100mg 4-6 hrs.	Block the COX Enzymes & reduce the Pg's throughout the body.	Bleeding ulcer. Stomach upset. B.P. Fluid retention Swelling. (legs, feet, ankle & hands)
2) Aspirin.	500-1000mg 4-6 hrs.		
3) Ibuprofen.	200-800mg every 6hrs.		
4) Naproxen	550-825mg at onset		
Diclofenac.	220mg in 3-4 hrs. 50-100mg at onset 50mg in 8 hrs.	Pain reduced.	
Ergotamine tartrate & 1 tab 7 Caffein.	2mg at onset then 1-2mg every 60min.	Binds to 5HT <sub>1B/D</sub> receptors. ↓ Reduces throbbing effects. → helps narrow widened blood vessels in the head.	Spinning sensation nausea vomiting Dizziness.
Dihydroergotamine.	0.25-1mg at onset.	agonist to the 5HT-1B, -1D & -1F receptors. ↓ vasoconstriction of intracranial blood vessels.	weakness. itching.

## Serotonin agonist.

Sumatriptan.	6mg at onset & Repeat after 1 hour (80s)	5HT <sub>1</sub> agonist ↓ Cranial vasoconstriction.	Vomiting Drooling. Burning. mild tingling of skin. Numbness.
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## Prophylactic therapies:

### Antidepressants:

Amitriptyline	25-150mg Bedtime	Balancing chemicals (ie neurotransmitters)	wt gain. Loss of sexual desire Fatigue Drowsiness Insomnia Blurred vision.
Imipramine	10-200mg.		
Doxepin	10-200mg.		
Gabapentin	10-150mg.		



## β-adrenergic antagonists:

Propranolol. <sup>80-240</sup>  
~~20-40~~ mg/day.

Atenolol 25-100 mg/day.

Timolol 20-60 mg/day.

Blocks the receptor sites for the endogenous catecholamines on β-receptors of the sympathetic nervous system.

Dizziness  
Weakness  
Cold hands & feet  
Dry mouth  
Diarrhea  
Fatigue.

## NSAIDs:

Aspirin - 300 mg/day.

Ibuprofen - 1500 mg/day.