INTERNATIONAL JOURNAL OF PHARMACEUTICAL SCIENCES
[ISSN: 0975-4725; CODEN(USA): IJPS00]
Journal Homepage: https://www.ijpsjournal.com

OPEN ACCESS

Review Article

Novel Pharamacology Approaches of Migraine Therapy

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ARTICLE INFO

Published: 06 Feb. 2025
Keywords:
Migraine, Pharmacological approaches, Novel therapeutics, Neurological disorders, Headache management, Neuromodulation, CGRP inhibitors, Triptan, Ergotamines, Personalized medicine.
DOI:
10.5281/zenodo.14824925

ABSTRACT

Millions of people worldwide suffer from migraines, a crippling neurological condition. Traditional treatments often provide inadequate relief, underscoring the need for innovative pharmacological approaches. Novel drugs and targets in migraine treatment are highlighted in this review.Although the need for new therapeutic approaches to treat migraine and other primary headaches is well acknowledged,underlying mechanism & the molecular targets that should be tackled Although new medications are still unknown, there have been notable advancements in the previous ten years in the treatment of migraines, including the discovery of substances that exactly stop migraine attacks targeting .Because current acute and preventive therapies are either ineffective [or] poorly tolerated, the management of migraine patients is frequently inadequate. The only options for treating acute migraine attacks have been analgesics, analgesic combinations with caffeine, ergotamines, and triptans. non-invasive & invasive neruomodulation approaches also show promise as both acute & preventive therapies ,although further studies are needed to define appropriate candidates for these therapies & optium protocols for their use.

INTRODUCTION

Migraine is a familial disorder characterized by recurrent attacks of headache widely variable in intensity frequency & duration .Attacks are commonly unilateral & are usually associated with anorexia ,nausea& vomiting.[1]Migraine therapy refers to various treatments techniques used to manage & reduce migraine 16% of primary headaches Migraine afflicts 10-20% of the general population[2] In India 15-20% of people suffer from migraine [3]transmission are effective and better tolerated , but they are expensive and may not influence brain dysfunctions upstream in the pathophysiological of migraine.[4] Migraine is the second leading cause of disability throughout worldwide [5],yet many patients are unable to tolerate benefit from or afford pharamacological treatment options & non-pharamacological migraine therapies. [6] According through early stage acute migraine therapy gained stream. In

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Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

1990s after the introduction of triptans 5-HT 1B /1D receptor agonists namely triptans are considered as the standard of care for migraine[7] acute treatment Tirptans have limations in some patients such as incomplete pain relief ,headache recurrence & caridovascular contraindications[8] medication –overuse headache. Affects approximately 1 in 7 worldwide[15% of the global popoulation][9] in general population it also affects more than 60 million people according through the worldwide. these are also called as clinical features of migraine therapy these are occured one side headche at a time which is extremely painful & manytimes associated with 15% .these are chronic neurological condition often accompanied by sensitivity to light ,sound[10].new migraine therapies are the innovative therapies offering improved efficacy and tolerability .calcitonin gene –related peptide [CGRP] targeters 1. Erenumab [Aimovig]: Monoclonal antibody blocking CGRP receptors.[11] Ubrogepant [Ubrelvy] : Oral CGRP receptor antagonist. GABA Modulators :[12] 1. Tonabersat [Civitas] : GABA receptor modulator 2. Pregabalin [Lyrica]: GABA- enhancing compound [13] 3. Neurostimulation : Transcranical magnetic stimulation [TMS]:[14] Non –invasive brain stimulation , Transcrancial direct current stimulation [TDCS] : Non – invasive brain stimulation[15] .4. gene therapy :CGRP gene silencing : targeting migraine –related genes these innovative therapies offer new hope for more effective and targeted migraine management . that the genesis of pain occurs by activation of the trigeminovascular system (TGVS). The trigeminal nerve, the trigeminal nucleus caudalis (TNC), and the cranial vasculature[16] make up this system. As a main control centre that regulates cerebral blood flow, TGVS is thought to be a crucial pathway for the transmission of pain. Vasoactive substances such substance P, neurokinin A, and calcitonin gene-related peptide (CGRP) are released when trigeminal sensory nerve terminals are activated, which causes vasodilation and dural plasma.[17]

Fig-1 Introduction to migraine

Migraine Characteristics Include:

Usually one side of the pain creates a throbbing or pulsting sensation[18] .pain that interferes with everyday activities [19],moderate to severe.Feeling queasy or throwing up[20].sensitivity to sound & light.[21]Attacks can linger anyways from four to seventy-two hours.[22]for 20 to 60 mintues .there may be visual disturbances or aura[such as wavy lines ,dots ,flashing lights and lights ,and blind patches][23] or problems in taste ,smell,or touch .prior to the headache starting: physical activity ,such as jogging or climbing stairs ,exacerbates headaches.[24]

Non –Pharmacological:

strategies we may apply for ourselves and therapies administered by qualified professionals are examplesofnon-pharmacologicalsolutions.[25] maker ecommendations; a few resource sareal so providedon the this handout's back . These tactics can be beneficial for both controlling and preventing assaults persistent migraines.[26]

Life Changes:

- **Maintain a Regular Sleep Schedule:** Sleeping 7-8 hours per night lowers the incidence of migraines.
- **Hydration:** Migraines brought on by dehydration can be avoided by consuming 8–10 glasses of water daily.
- **Exercise:** Frequent exercise (30 minutes, three to four times a week) lessens the frequency and intensity of migraines.
- **Dietary Adjustments:** Steer clear of trigger foods and think about eating a lowhistamine diet
- **Stress Management:** Deep breathing, yoga, meditation, and other relaxation methods help people feel less stressed.
- **Keep Your Weight in Check:** Being overweight raises your risk of migraines.
- **Limit Screen Time:** Steer clear of extended screen time, particularly right before bed.
- **Nutritional Aspects:**Eat foods high in magnesium, such as nuts and dark leafy greens, to lessen the frequency of migraines.
- **Omega-3 Fatty Acids:** To reduce inflammation, eat foods high in omega-3 fatty acids, such as flaxseeds and fatty fish.
- **Steer clear of food additives:** Limit items that include tyramine, aspartame, and MSG.
- **Interventions in behaviour** :Headache diary:monitor causes and patterns

 Relaxation methods : use relaxation methods on a regular basis.

These are based upon using congnitive – behavioral therapy [CBT] to treat migraines .[27]

Fig-2 life changes of migraine

Alternative Therapies:

 Herbal Treatments :

- Feverfew: Lowers the frequency and intensity of migraines
- Butterbur: Extract from Petasites hybridus lowers the incidence of migraines According to Maghbooli et al. (2014), ginger relieves migraine discomfort.
- Coenzyme Q10: Lowers the frequency of migraines Mind-Body Treatments :
- Acupuncture: Lowers the frequency and intensity of migraines

- ❖ Mindfulness Meditation: Reduces the Signs of Migraines
- ❖ Yoga: Enhances life quality and lessens the incidence of migraines
- ❖ Cognitive-Behavioral Therapy (CBT): Reduces migraine frequency and improves coping mechanisms

Physical Treatments :

- ❖ Chiropractic care: reduces the symptoms of migraines
- ❖ Massage Therapy: Lessens the frequency and severity of migraines Physical Activity:
- ❖ Frequent exercise lessens the frequency and intensity of migraines.
- ❖ Supplements for Nutrition :
- ❖ Magnesium: Lowers the frequency and intensity of migraines
- ❖ Riboflavin (B2): Reduces the incidence of migraines
- ❖ Herb3:Omega-3 Fatty Acids: Reduce migraine symptoms due to their anti- inflammatory properties .

Additional Alternative Medicines:

- ❖ Aromatherapy: Essential oils, such as peppermint and lavender, can ease migraine symptoms.
- ❖ Biofeedback:Aids in controlling the symptoms of migraines [28]

Fig-3 Alternative Therapies Of Migraine

Complications Of Migraine:

A severe migraine lasting more than 72 hours is known as status migrainenosus, and it can cause dehydration and other major health problems.Migrainous Infarction: An uncommon consequence in which a migraine triggers a stroke, causing irreversible brain damage.Seizures: Some people, particularly those with a history of epilepsy, may experience seizures as a result of migraines.

Additionally frequent are psychiatric complications:

sadness: Because migraines cause persistent pain and impairment, they can exacerbate mood swings, anxiety, and sadness.

worry: Stress and worry might result from the dread of having another migraine attack.[29]

FIG-4 Complications of migraine

Other Complications Might Occur:

Chronic Migraine: 15 or more headache days per month is a sign of chronic migraine, which is brought on by frequent headaches.

Overuse of Medication Headache: Rebound headaches might result from using too many painkillers.making the migraine worse.

If you encounter any of these issues, it is imperative that you get medical help. Migraines may be managed and these problems avoided with the right diagnosis and treatment.[30]

 Epidemiology Of Migraine :

The 1990s:

Prevalence worldwide: 12.7% in 1990 2. Prevalence in the US: 10.2% (1994) 3. Prevalence in Europe: 13.4% (1995) The 2000s:

Prevalence worldwide: 14.1% (2003) 2. Prevalence in the US: 11.7% (2005) 3. Prevalence in Europe: 14.9% (2004) The 2010s:

Prevalence worldwide: 15.3% (2013) 2. Prevalence in the US: 12.2% (2012) 3. Prevalence in Europe: 15.7% (2011) The 2020s:

Prevalence worldwide: 16.2% (2020) 2. Prevalence in the US: 12.9% (2020) 3. Prevalence in Europe: 16.5% in 2020 Patterns:

1. Growing prevalence worldwide: 1990–2019 2. Consistent prevalence in the US: 2005–2019 3. Europe's declining prevalence, 2004–2019[31]

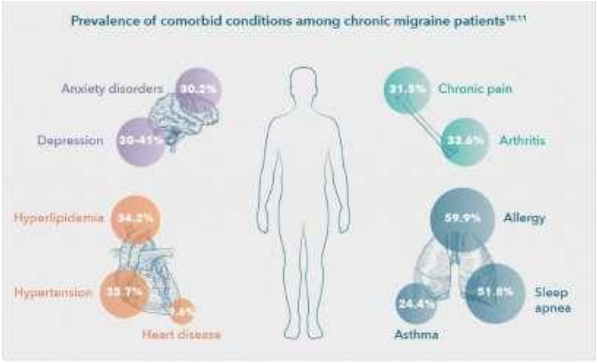

Fig-5 Epidemiology of migraine

Migraine Tiggers:

The purpose of this study was to compare a new method of trigger management called "Learning to Cope with Triggers," which offers progressive exposure to certain triggers to encourage desensitisation, with the conventional advise for headache patients to avoid all triggers. Four groups were randomly allocated to people with migraine and/or tension-type headaches: waiting-list avoidance, avoidance plus cognitive behaviour

treatment, and LCT. Pre- and post-treatment variations in headaches and medication.Probably the most often consumed pharmacologically active drug in the world is caffeine.Common drinks (coffee, tea, soft drinks), goods that contain chocolate or cocoa, and pharmaceuticals all contain it. Both the general public and the scientific community are interested in the possibility that caffeine might have negative health consequences because it is widely used at varying quantities by the majority of the population.

Common Migraine Triggers:

1. **Dietary Triggers:**

Certain foods and drinks can be a significant cause of migraines. These include:

- **Caffeine** While small amounts may help relieve migraine pain, excessive caffeine intake or withdrawal can trigger an attack.
- **Alcohol**: Particularly red wine, beer, and champagne are common triggers.
- **Aged cheeses**: Contain tyramine, a substance known to provoke migraines.
- **Processed meats**: These contain nitrates or nitrites, which can trigger migraines in some individuals.
- **Chocolate**: Contains compounds like caffeine and phenylethylamine, both of which may contribute to migraine onset.
- **Monosodium glutamate (MSG)**: A flavor enhancer commonly used in processed foods.
- **Artificial sweeteners**: Aspartame and other sugar substitutes can also be triggers for some people.
- **Salty or highly preserved foods**: Can contribute to dehydration, which is another migraine trigger

2. **Environmental Triggers:**

- **Bright lights or glare**: Sunlight or flickering lights (e.g., fluorescent lighting) can be a major environmental trigger.
- **Strong smells**: Perfumes, chemicals, cigarette smoke, and strong cooking odors can provoke migraines.
- **Weather changes**: Sudden shifts in barometric pressure, humidity, or temperature can trigger migraines.
- **Loud noises**: Exposure to loud sounds or noise pollution, like from traffic or machinery, can also be a trigger.
- **Air pollution**: Smog or high pollen counts can exacerbate migraine symptoms.

3. **Hormonal Triggers:**

- **Menstruation**: Hormonal fluctuations related to the menstrual cycle are one of the most common triggers for women. Migraines often occur around the time of ovulation or menstruation.
- **Pregnancy and menopause**: Hormonal changes during pregnancy or menopause can affect the frequency of migraines.
- **Birth control pills**: The hormones in oral contraceptives can trigger migraines in some individuals.

4. **Physical and Lifestyle Triggers:**

- **Stress**: Emotional stress is one of the most common triggers for many people. Tension, anxiety, and stress can increase the likelihood of a migraine attack.
- **Lack of sleep or poor sleep**: Irregular sleep patterns, oversleeping, or insufficient sleep are frequent migraine triggers.
- **Skipping meals or dehydration**: Missing meals, especially breakfast, or not drinking enough water can lead to a migraine.
- **Overexertion or intense exercise**: Physical exertion or strenuous exercise, particularly in hot or humid environments, can bring on a migraine.
- **Jet lag**: Changes in time zone or disrupted circadian rhythm may increase migraine risk.

5. Medications:

- **Medications overuse**: Also called "rebound headaches," frequent use of pain medications (e.g., overuse of acetaminophen, ibuprofen, or triptans) can lead to more frequent and severe migraines.
- **Certain prescription medications**: Some medications, such as vasodilators, hormone replacement therapies, and certain antidepressants, can trigger migraines.

6. Other Triggers:

- **Dehydration**: Lack of sufficient fluid intake can trigger a migraine, especially in hot weather.
- **Allergies**: Pollen, dust, mold, and animal dander can contribute to migraine attacks, especially in individuals who are allergic.
- **Change in routine**: Major changes to daily habits or routine (such as starting a new job or moving) can sometimes precipitate a migraine.
- **Visual triggers**: Flickering lights, computer screens, or reading for extended periods can also provoke migraines in sensitive individuals.
- Specific pictures, patterns, or visual cues that evoke intense emotional responses or memories are referred to as visual triggers in psychology. For instance:

PTSD triggers: Certain images, such as images of combat, might cause flashbacks or emotional anguish in a person suffering from PTSD.

Anxiety triggers: Certain people may experience anxiety or terror in response to visual stimuli such as crowded areas, dim alleys, or particular items.

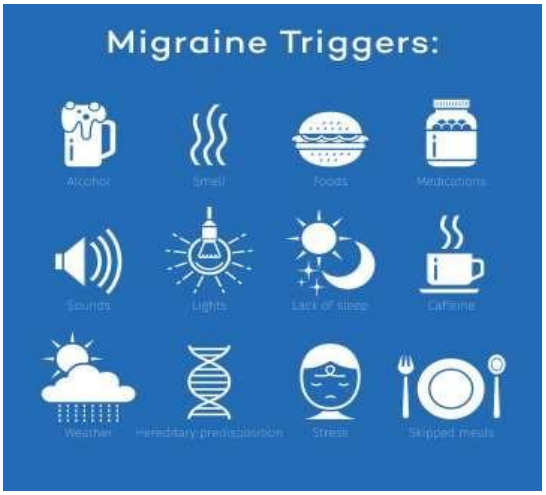

Fig-6 Migraine Tiggers

Managing Migraine Triggers:

Identifying and managing migraine triggers is crucial for reducing the frequency and severity of migraines. Some strategies include:

- **Keeping a headache diary**: Tracking food intake, activities, sleep, and other environmental factors can help identify specific triggers.
- **Lifestyle changes**: Reducing stress, maintaining a regular sleep schedule, staying hydrated, and exercising regularly can help mitigate triggers.
- **Dietary adjustments**: Avoiding known food triggers and eating smaller, more frequent meals may help prevent migraines.
- **Environmental modifications**: Minimizing exposure to bright lights, strong smells, or loud noises can help prevent an attack.[33]

Pathogensis: The pathophysiology of migraine was mostly predicated on neurological or vascular

processes Premonitory, aura, headache, and postdromal are the four stages of migraine These stages may appear one after the other or exhibit notable overlap.

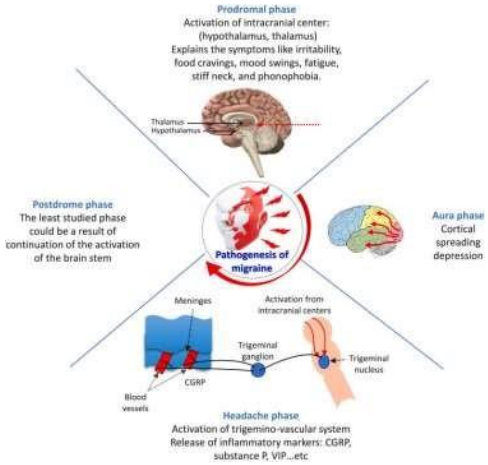

FIG-6 Pathogensis of migraine

Prodromal Phase :

This stage begins prior to the normal migraine attack. The symptoms appear roughly 72 hours before the headache phase. It is long time duration Symptoms: Irritability, food cravings, mood fluctuations, exhaustion, stiff neck, and phonophobia . These symptoms, which show a connection between the premonitory phase and the hypothalamic origin, continue throughout the aura and even throughout the headache phase. The hypothalamus plays a part in the early phases of a migraine attack, as evidenced by imaging studies that show increased blood flow in the area of the brain .For migraineurs, hunger, strong light, or lack of sleep can either cause a migraine or be a sign of premonitory symptoms.

Interestingly, explanations of triggering .Duration : 15 to 20 mints .[34]

Aura Phase:

Headache appears, aura serves as a warning or indicator. One-third of migraineurs experience this stage. The aura phase, often referred to as cortical spreading depression (CSD), is characterised by the primary pathogenic processes of cortical depolarisation and the formation of a transitory wave . It has been demonstrated by researchers that this process is the primary cause of the aura phase. The visual cortex's retinotopic propagation. symptoms : flashing of lights ,zig-zag lines ,difficulty in focusing .Duration:15-30mints. [35]

 Headache Phase:

Unilateral throbbing pain of moderate to severe intensity is a hallmark of the headache phase .According to the neurovascular hypothesis, this pain can be explained by the earlier activity of higher cerebral centres such the thalamus and hypothalamus, which triggers the activation of the trigemino-vascular system. As a result, nociceptive fibres that originate from the trigeminal ganglion and innervate the dura matter's vascular supply become sensitised and produce inflammatory mediators such substance P, vaso-inhibitory peptide (VIP), and calcitonin gene-related peptide (CGRP). The trigemino-vascular pathway is signalled by these mediators. Upper neck discomfort is explained by the synapse of afferent nerve fibres from the trigeminal ganglion and the afferent from the skin and muscles of the neck on second-order neurones in the trigeminal cervical complex (TCC). After travelling via the brainstem, thalamic, hypothalamus, and basal ganglia nuclei, ascending fibres from the TCC send signals to many cortical regions, resulting in the manifestation of pain.

Symptoms:Anorexia,vomiting,phonophobia,tinnitus.Duration:4-72 hours .[36]

 Postdrome phase:

Following headche ,patient complians of postdrome phase Symptoms : fatigue, weakness muscles, mood swings, difficulties focussing,depression and severe exhaustion . Persistent brainstem activity and diencephaly during and after processing the pain inputs might be postdromal phase .Duration:Few hours [or] upto 2days.[37]

Sign & Symptoms Migraine Therapy:

- Fever
- Sleepiness
- Headche
- Light sensitivity
- Seizures
- Rash
- Joints pain
- vomiting

Prodrome:

Light, sound & scent sensitivity account for 60% of the symptoms constipation, A shift in mood, Lack of appetite, Feeling queasy.

Aura: The blind region before the eyes .One half of the body is tingly and numb .In-ear ringing ,dizziness, lightheadedness, temporary blindliness

Attack : The duration of a migraine varies from a few hours to three days if treatment is not received .through frequently on both sides ,the discomfort is typically on one side of the head vomiting and nausea .sensitivity to touch ,smell,soundand light

Postdrome Effects Following An Attack: Feeling exhausted and depleted. Moving your headache might cause discomfort to return.lack of appetite.In the darkroom,lying down.[38]

Fig-7 Migraine symptoms

Prevention:

Eat regular drinklots of fluid,yoga,medication ,relaxationtechniques,avoid triggersand keep track of symptom patterns,take proper rest,regular moderate exercise avoid over meditation,manage stress,in winters wear appropriate clothes ,avoid bright lights uv rays ,avoid fatty food ,smoking ,alcohol etc .

Causes:

Environmental Factors: The environmental is very important .Even the smallest odour can cause a migraine ,as can loud nosises from cars ,pollution and other sources .Gentics there is a higher genetic correlation between migraines with and without aura .

Variations in the weather :

Barometric Pressure: In vulnerable people, a decrease in barometric pressure, which is frequently linked to storms, can cause migraines.

Temperature Fluctuations: Abrupt temperature fluctuations or extremes of heat or cold may act as triggers.

Humidity**:** Excessive humidity can also trigger the start of migraines, particularly when combined with heat.

Vibrant or Changing Lights:

Sunlight: Migraines can be brought on by intense sunlight or glare, particularly when there is bright, direct exposure.

Artificial Lighting: For certain people, fluorescent or flickering lighting can be a major trigger.

Screen Time: Extended use of digital screens, such as those found in computers and smartphones, can cause eye strain and migraines.

Sound:

Loud Noises: Environments with continuous noise, like construction sites, or abrupt loud sounds, like music or alarms, can cause migraines.

Pollution and Air Quality:

Strong Odours: Perfumes, smoking, cleaning supplies, and chemical fumes are examples of strong scents that frequently cause headaches.

Air Pollution: Exposure to allergens such as pollen or poor air quality, such as pollution, might make migraines more likely.

Ozone Levels: Higher migraine incidence is associated with higher atmospheric ozone levels, which are frequently caused by smoking.

Chemicals or Toxins:

Cigarette Smoke: Many migraineurs are reported to be triggered by secondhand smoke. Cleaning supplies and solvents: Some chemicals used in domestic cleaning can cause migraines.

Elevation:

High elevations: Migraines may be more likely to occur in high elevations (such as mountainous areas) where oxygen levels are lower.

Migraine Risk Factors:

Migraines are three times as common in women than in males hormone alterations ,stress in the home or at work ,beverages and food ,missing meals ,coffee, bright brightness ,loud noise and overpowering odour exercise ,smoking and tobacco ,not enough sleep ,agitation.

- vomiting,
- Headache
- Neck stiffness
- Alcohol
- Sound
- Weather
- Blurred vision
- Stress
- Nausea
- Lack of sleep
- Smell,Light[39]

Fig-8 Risk factors of migraine

Mechanism Of Action Of Migraine Therapy :

This mechansim is about the trigeminal. The causes of aura symptoms are CSD [cortical spreading depression] Significant elevations in excitatory glutamate and extracellular potassium ion concentration are crucial for the onset and

spread of CSD[cortical spreading depression]. Meningeal trigeminal terminals and the trigemino-vascular system may get activated due to biochemical alterations in CSD [cortical spreading depression], which would cause the headache phase. This latter can happen through the production of nociceptive chemicals from mast cells, such as proinflammatory cytokines, and the activation of matrix metalloproteases, which increases vascular permeability. The production of CGRP,[calcitonin gene related peptide] both centrally and peripherally, and peripheral and central sensitisation of the trigeminal system are the causes of the pain phase. Both CGRP[calcitonin gene related peptide] and NO[nitric oxide] are the primary molecules that cause vasodilation, which leads to neurogenic inflammation, and are thought to be important mediators in migraine.The calcium-dependent release of CGRP[calcitonin gene related peptide] from cortical slices during CSD[cortical spreading depression] may also be a mediating factor in the dilatation of cortical arterioles. Brainstem regions involved in processing trigeminal pain include the nucleus of raphe magnum (NRM)[no regular medication] periacqueduttal grey matter (PAG), and locus coeruleus (LC). The hyper-excitability of trigeminal nociceptive pathways is a result of defects in the structure and function of PAG that occur in migraineurs. The LC's noradrenergic nuclei are thought to be functionally altered in cortical vasomotor instability. This suggests that many aspects of the headache phases, even in MwA[migraine with arua], may be explained by malfunction in the brainstem pain-inhibiting circuitry. The suppression of trigeminal neurone responses by NRM[no regular medication] is counteracted by CSD[cortical spreading may affect CSD[cortical spreading deprssion] by maintaining 5-HT and maybe NA[noradrenalin] [40]

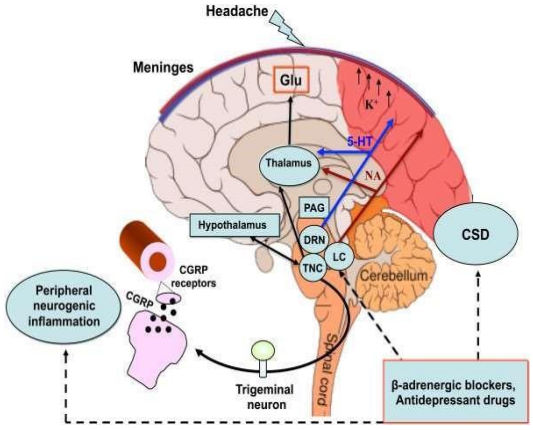

Fig-9 mechanism of action of migraine therapy

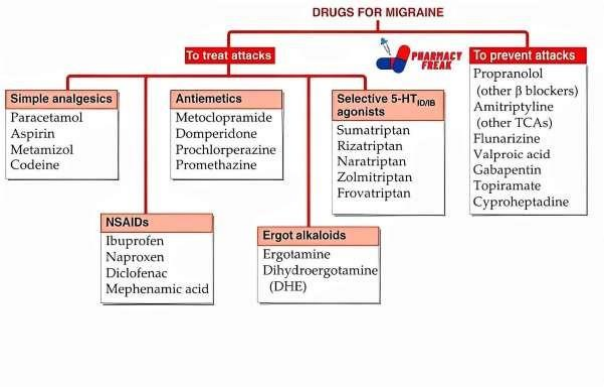

Fig-10 Classification of migraine

Anti-inflammatories (NSAIDs and Acetaminophen):

Mainstay options with the strongest evidence are non-steroidal anti-inflammatory medications (NSAIDs). Double-blind randomised controlled trials have demonstrated the effectiveness of ibuprofen, naproxen sodium, acetylsalicylic acid and diclofenac potassium. These trials have also been analysed in systematic reviews. NSAIDs include diclofenac, piroxicam, aspirin, naproxen, ibuprofen, tolfenamic acid, ketoprofen, and ketorolac. For acute migraines, acetaminophen and the acetaminophen/aspirin/caffeine combination have also shown reliable effectiveness.

Mechanism Of Action:

Prostaglandin synthesis is inhibited by NSAIDs. NSAIDs inhibit cyclooxygenase (COX) 1 and 2 in a reversible manner. Acute migraine episodes can be effectively treated with NSAIDs that block the formation of prostaglandin E2. Aspirin inhibits COX I and COX II irreversibly.

Administration:

Standard doses of aspirin are 325 mg, 500 mg, and 400 mg effervescent; therapeutic dosages can reach 1000 mg. Standard doses for naproxen are 220 mg, 275 mg, 500 mg, and 550 mg; therapeutic dosages range from 550 to 1100 mg daily in split dosages.

Ibuprofen: PO pill; 200–800 mg is the therapy dosage; usual dosages are 200–400 mg, 600– 800 mg, and 800 mg. 200 mg is the normal and therapy dose for tolfenamic acid PO tablets.

Standard doses for Diclofenac PO tablets are 50 mg; therapeutic dosages range from 50 to 100 mg. Piroxicam: PO capsules; 40 mg is the therapy dosage; usual dosages are 10 and 20 mg. Ketorolac: 30–60 mg is the usual dosage for parenteral administration; 30–60 mg is the therapeuticdose.

Adverse Effects: GI symptoms, such as diarrhoea, burning or pain in the abdomen, and dyspepsia, are the most frequent side effects of NSAIDs. Easy bruising, pruritus, rash, hypersensitivity reaction in asthmatics, gastritis, oesophagitis, gastrointestinal bleeding, renal failure, hepatic impairment, and cardiovascular events are some of the less prevalent symptoms. When used at the recommended amounts, paracetamol has not been shown to have any significant adverse effects aside from allergic responses. Higher dosages or longer paracetamol use can result in hepatotoxicity and, less frequently, nephrotoxicity

Contraindications:

Aside from NSAID hypersensitive response, patients undergoing coronary artery bypass graft surgery are another known absolute contraindication.Important cardiovascular illness, renal insufficiency, gastrointestinal erosive diseases, bleeding diathesis, and warfarin use are among the warning signs.Severe active liver disease and hypersensitivity responses are among the conditions.[41]

Migraine Diagnosis:

1. Frequent headaches (at least five bouts)
2. Length: 4–72 hours
3. Usually, unilateral pain
4. Quality that pulses
5. Mild to severe discomfort
6. Regular actions that aggravate
7. Feeling queasy or throwing up 8. Light, sound, or scent sensitivity

Tests For Diagnosis:

1. MRI and CT neuroimaging to rule out secondary causes
2. Electroencephalogram (EEG) to check for any seizures
3. Blood examinations for viral or inflammatory conditions Distinctive Diagnosis :
4. Headache of the tension kind
5. Headache clusters
6. Headache in the sinuses
7. Disorder of the temporomandibular

FIG-11 Migraine Diagnosis

Complete Blood Count [CBC]:_Haemoglobin levels, platelet counts, and red and white blood cell counts are all measured by the CBC test. It aids in the detection of infections, anaemia, and anomalies in the synthesis of blood cells. CBC offers useful information for identifying underlying migraine-related disorders.

Magnetic Resonance Imaging [MRI] Scan:

The CBC test measures red and white blood cell counts, platelet counts, and haemoglobin levels.

It helps identify anaemia, infections, and abnormalities in blood cell production.

CBC provides valuable insights into underlying illnesses connected to migraines. [42]

Treatment:

Acute Treatment:

 Triptans :

"Sumatriptan for acute migraine: A review of its efficacy and safety" sumatriptan (IMITREX).

- "**Rizatriptan for acute migraine**: A systematic review and meta-analysis" refers to Rizatriptan (MAXALT).
- "**Eletriptan for acute migraine**: A review of its pharmacology and clinical efficacy" refers to the medication Eletriptan (RELPAX).
- **Alkaloids of Ergot :**
- "Ergotamine tartrate and caffeine in the treatment of acute migraine" is the first one.
- "**Dihydroergotamine for acute migraine**: A review of its efficacy and safety" (D.H.E. 45).
- Antagonists of CGRP :
- "**Ubrogepant for acute migraine**: A randomised, double-blind, placebo-controlled trial" discusses Ubrogepant (UBRELVY).
- The study "Zavegepant for acute migraine: A randomised, double-blind, placebocontrolled trial" was conducted by Nurtec.
- The Ditans :
- **"Lasmiditan for acute migraine**: A randomised, double-blind, placebo-controlled trial"; Lasmiditan (REYVOW).

Additional Acute Interventions :

- **The use of ibuprofen:** "Ibuprofen for acute migraine: A systematic review and metaanalysis
- **The use of acetaminophen**: "Acetaminophen for acute migraine: A systematic review and meta-analysis. Although triptans are widely used in the acute management of migraine, there is uncertainty around the comparative efficacy of triptans among each other and vs non-triptan migraine treatments. We conducted systematic reviews and network meta-analyses to compare the relative efficacy of triptans (alone or in combination with other drugs) for acute treatment of migraines compared with other triptan agents, non-

steroidal anti-inflammatory drugs (NSAIDs), acetylsalicylic acid (ASA), acetaminophen, ergots, opioids, or anti-emetics.

2.Preventive Treatment: A thorough headache treatment strategy consists of long-term preventative therapy to lessen the frequency, intensity, and length of attacks as well as acute attack treatment to alleviate pain and disability. Preventive treatment may be necessary in the following situations: (i) a migraine that substantially disrupts the patient's daily routine even after receiving acute treatment; (ii) acute medication failure, contraindication, or problematic side effects; (iii) excessive use of acute medications; (iv) unique circumstances, such as hemiplegic migraine; (v) extremely frequent headaches (more than two per week); or (vi) patient preference. Start with a modest dosage of the medication. Give each therapy enough time to work. Steer clear of medicines that interfere, are overused, or are not recommended. Reassess the treatment. A woman who is capable of carrying children should be informed of any possible hazards. Engage patients in their treatment to increase adherence. Think about co-morbidity. The patient's preferences and headache profile, the drug's adverse effects, and the existence or lack of coexisting or co-morbid condition should all be taken into consideration when selecting a medication. B-blockers, amitriptyline, and divalproex are medications with mild to moderate adverse effects (AEs) with confirmed high effectiveness. Selective serotonin reuptake inhibitors (SSRIs), calcium channel antagonists, gabapentin, topiramate, riboflavin, and non-steroidal anti-inflammatory medications are among the medications with mild to moderate adverse events and lower reported effectiveness. [43]

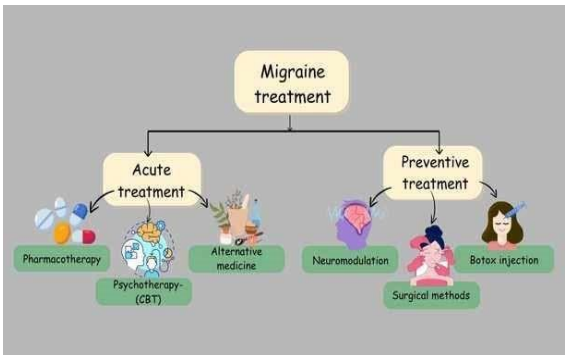

FIG-12 Migraine Treatment

CONCLUSION:

In summary, each person has different migraine triggers, which are quite personal. Stress, hormonal changes, specific foods, bright lights or loud noises in the environment, irregular sleep schedules, and weather variations are examples of common triggers. The secret to controlling migraines is to recognise and stay away from personal triggers. It can be useful to keep a migraine journal in order to identify trends and triggers. The frequency and intensity of migraine attacks can also be decreased with the help of medicinal interventions, lifestyle modifications, and techniques like stress management. To create an efficient management plan that meets their needs, people with migraines must collaborate closely with healthcare professionals.

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HOW TO CITE: Vakiti Tejaswini*, E. Honey, Novel Pharamacology Approaches of Migraine Therapy, Int. J. of Pharm. Sci., 2025, Vol 3, Issue 2, 398--414. https://doi.org/10.5281/zenodo.14824925