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A Review on Headache: Epidemiology, Pathophysiology, Classifications, Diagnosis, Clinical Management and Treatment Modalities

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Abstract: ***With a frequency of 48.9% in the general population, headache problems are among the most prevalent of all nervous system illnesses and are a very frequent symptom. [1] People of all ages, colours and socioeconomic level can get headaches, although women are more likely to get them than males. Some headaches can be so incapacitating and detrimental to a person's quality of life that they place a tremendous financial burden on healthcare and indirectly on the economy. The majority of headache diseases may be treated without the help of a physician. A primary care by general physician may effectively treat the vast majority of patients with the right clinical diagnosis and no additional testing. Nearly 98 % of headaches are caused by primary headache disorders including migraine, tension headache, and cluster headache, but secondary headaches are very dangerous and can be fatal. The most typical headache diseases are described in this article, along with the warning signs that should prompt an immediate professional referral when they are present. In order to provide a paradigm that would work effectively in the financially strapped National Health Service (NHS) and with upcoming NHS changes, the existing pathway of headache care in the UK is explored. The British Association for the Study of Headache and patient organisations like Migraine Trust play important roles in altering the way of headache treatment which is provided in the UK by educating clinicians and the general public about headaches. The paper summarizes the evidence-based management of frequent headache diagnosis as its conclusion.***

Keywords: Headache, migraine, tension headache, cluster headache, medication overuse headache

1. Epidemiology

According to literature reviews, between 64 and 77 % of individuals have had a headache at some point in their life. [2, 3] Between 46% to 53% of persons get headaches annually. [2, 3] However, depending on how the survey was done, researchers have found that the lifetime prevalence of headaches ranges from as low as 8% to as high as 96 %. [2, 3, 4] The majority of these headaches pose little threat, only 1–5% of persons who go to the emergency room for headaches have a significant underlying condition. [5] Primary headaches account for more than 90% of headaches. [6] Tension headaches make up the majority of these main headaches. [3] Most tension headache sufferers the experience of "episodic" headaches that frequently happen. Only 3.3% of individuals get chronic tension headaches, defined as more than 15 days of headaches each month. [3] Around 12–18% of individuals worldwide suffer from migraines. [3] Migraines affect more women than males. 5 to 9 % of men and 12 to 25 % of women in Europe and North America suffer from migraines, respectively. [2] Cluster headaches don't happen very often. Only 1-3 persons per 1000 are impacted globally. Men are three times more likely than women to get cluster headaches. [3]

2. Pathophysiology

Because the brain lacks pain receptors, it is not responsive to pain. However, there are pain receptors in a few places on the head and neck, so those parts may feel pain. These include the meninges, the falx cerebri, the middle meningeal artery, the major veins, the venous sinuses, the cranial and spinal nerves, the head and neck muscles, the extracranial arteries, the teeth, the mouth lining. [7, 8] Pain is produced by the pial arteries rather than the pial veins. [9] Meningeal and blood vessel traction or irritation is a common cause of headaches. [10] Head injuries or tumours may activate the pain receptors, which results in headaches. Inflammation or infection of the meninges, blood vessel spasms, dilated blood vessels, and muscle tension can also activate pain receptors. [8] Once activated, a nociceptor signals the brain's nerve cells that a portion of the body hurts by sending a message up the length of the nerve fibre. [11] Secondary headaches are easier to comprehend than primary headaches. There is currently no recognised cure for migraines, tension headaches, or cluster headaches. [12] Over time, several theories have been put up in an effort to explain what exactly occurs in the brain to create severe headaches. [13] Currently, it is believed that malfunctioning brain nerves are the cause of migraines. [14] Before, it was believed that the main issue with the brain's blood arteries was what produces headaches. [15] This vascular hypothesis, which Wolff established in the 20th century, postulated that migraine headaches are induced by rebound dilatation of extracranial arteries (vessels just outside the brain), whereas the aura is caused by constriction of intracranial vessels (vessels inside the brain). These extracranial blood vessels expand, activating the pain receptors in the nearby neurons and resulting in a headache. But this vascular theory is no longer acceptable. [14, 16] According to studies, migraine head discomfort very slightly increases intracranial vasodilation rather than causing extracranial vasodilation. [17] The majority of medical professionals currently believe that a basic issue with the brain's nerves is what causes migraines. [14] A wave of elevated neuronal activity known as cortical spreading depression [18] followed by a period of decreased activity is assumed to be the primary source of auras. [19] Few people believe that the stimulation of sensory neurons, which releases peptides or serotonin, causes inflammation in

the arteries, dura mater, and meninges, as well as also cause vasodilation. Triptans is used to treat migrains which block serotonin receptors and constrict blood vessels. [20] People with a family history of migraines, women, and women going through hormonal changes, taking birth control pills, or receiving hormone replacement treatment are more likely to suffer migraines without a headache. [21] Peripheral nerve activity in the head and neck muscles is regarded to be the primary source of tension headaches. [22] The trigeminal nerve and hypothalamus in the brain are overactive in cluster headaches, although the specific cause is uncertain. [12, 23]

3. International Classification of Headache Disorders

The 'International Headache Society' released The International Classification of Headache Disorders (ICHD), a thorough hierarchical classification of all headache-related disorders. In July 2013, the third edition of the International Classification of Headache Disorders (ICHD-3) was published. According to this classification headache is classified into 3 stages. These are –

Part 1: Primary Headache Disorders

1) Migraine
2) Tension type headache (TTH)
3) Cluster headache and other trigeminal autonomic cephalagias (TAC)
4) Other primary headaches

Part 2: Secondary Headache Disorders

1) Headache attributed to head and /or neck trauma
2) Headache attributed to cranial or cervical vascular disorder
3) Headache attributed to nonvascular intracranial disorder
4) Headache attributed substance or its withdrawal
5) Headache attributed to infection
6) Headache attributed to disorder of homeostasis
7) Headache or facial pain attributed to disorder of cranium, neck, eyes, ears, nose, sinuses, teeth, mouth or other facial or cranial structures
8) Headache attributed to psychiatric disorder

Part 3: Cranial neuralgias and central or peripheral causes of facial pain and other headaches

1) Cranial neuralgias and central or peripheral causes of facial pain
2) Other headache, cranial neuralgia, central or primary facial pain

4. The burden of headache

At some point in their lives, about one in two individuals' means around 95 % of the overall population have had headaches. Headaches are the most common reason for general practitioner (GP) appointments (1 in 10) [24], neurology referrals (1 in 3) [25], and acute medical hospitalizations (1 in 5) [26]. The World Health Organization lists headache as one of the top 10 causes of disability [27], and among the top five for women, with effects worse than asthma with arthritis and diabetes [28, 29]. For instance, 25 million working days are missed each year in the UK due to migraines alone [30], which has an indirect economic cost of around £2 billion annually in addition to the direct expenses of medications, GP visits, specialist referrals, and emergency room visits. The effect on a person's quality of life is difficult to measure because 50% of patients need aid from family and friends, which has a significant negative influence on their social life, and 75% of patients report functional incapacity during a migraine episode [31].

Secondary headache disorders

Primary and secondary headaches are the two main categories. Although secondary headaches are not frequent, but it is crucial to recognise them since prompt treatment might save a life. The most important step in making a diagnosis of a headache is obtaining a history (Table 1); most patients, even those with secondary headaches that are prevalent, have no symptoms, and investigations are needed to rule out a secondary headache.

i.	When did the headache first start?
ii.	How many different types of headache do you have?
iii.	How often do you get a headache? (to establish chronic vs episodic)
iv.	How long does a headache episode last? (with or without treatment)
v.	Have you recently noticed a change in the characteristic of your headache?
vi.	What are the intensity, location, nature and quality of pain?
vii.	What associated symptoms do you get? (such as nausea, vomiting)
viii.	Are there any aggravating or relieving factors? (early morning headaches and worse on straining suggest raised intracranial pressure)
ix.	Is there a presence of focal neurological symptoms? (visual, sensory, speech that may suggest aura)
x.	What do you do when you have a headache? (patients with migraine typically avoid physical activity)
xi.	What worries you about your headache? (most patients worry about brain tumors)

Table 1: Key questions in headache history

Additionally, it's important to avoid conducting pointless investigations because 8% of people may have unrelated incidental abnormalities. The secondary headaches that are most typical include:

- Space-occupying lesions, primarily brain tumors,
- infections of the central nervous system, including meningitis or encephalitis,
- subarachnoid hemorrhage,
- giant-cell arteritis,
- cerebral venous thrombosis, and
- Idiopathic intracranial hypertension.

The diagnosis of secondary headaches is aided by the patient's symptoms or warning signs in their medical history. Table 2 [32] lists the typical red flags.

a) Thunderclap headache (intense, exploding and hyper acute onset) b) New-onset headache in patients with the age of >50 or <10 c) Persistent morning headache with nausea d) New onset of headache in a patient with history of cancer e) New onset of headache in a patient with history of HIV infection f) Progressive headache, worsening over weeks g) Headaches associated with postural changes h) Aura symptoms that – • Last longer than an hour • Include motor weakness • Are different from previous aura • Occur for the first time on using oral contraceptive pill

Table 2: The red flag symptoms (adapted from BASH, 2010) [32]

SNOOP: Red flags for dangerous underlying conditions

The American Headache Society advises adopting the acronym "SSNOOP" a mnemonic to remember the red flags for identifying a secondary headache. These are –

- S: Systemic illness (fever, cancer, pregnancy, HIV)
- N: Neurologic signs or symptoms (confusion, focal neurologic signs, seizures, papilledema)
- O: Onset is new or sudden (especially if age over 50)
- O: Other associated features (head trauma, drugs or toxins, headache awakens from sleep or worse with Valsalva, precipitated by coughing or exertion)
- P: Previous headache history with progression or change in characteristics

The 1-year probability of a malignant brain tumor was found to be 0.045 % in a published series of individuals who presented to the primary care with a fresh start of headache that was classified as primary [33]. Early-stage brain tumors seldom produce headaches; instead, localised neurological impairment or seizure are more likely to be the first symptoms to show. In 3-4 % of tumors at a later stage, headaches may be the only symptom to appear [34]. Especially when there is no prior history of similar episodes, a rapid start of explosive headache (thunderclap) that peaks within a minute has to be checked for subarachnoid hemorrhage. Patients may also report severe photophobia, nausea, and/or neck discomfort and stiffness. Additionally, pituitary apoplexy, cerebral hypotension, arterial dissection, and reversible intracranial vasospasm may all present with thunderclap headaches. Such headaches are referred to as idiopathic and are possibly acute migraine attacks when there is no known reason. Regular thunderclap headaches, such as those that occur during sexual activity, are not likely to be dangerous (orgasmic headache or coital migraines). Conventional migraine prophylaxis can be used to effectively treat them. An immediate referral to infectious disease or neurology is necessary if the headaches are accompanied by a fever, rash, diminished or changed state of consciousness, or another central nervous system illness (meningitis or encephalitis). If the diagnosis is suspected, a loading dosage of antibiotics is administered to start the healing process. Patients over the age of 50 who have recently started experiencing headaches along with systemic symptoms including fever, malaise, night sweats, sleeplessness, lack of appetite, and weight loss should let the doctor know that giant-cell arteritis may be present. Acute inflammatory indicators such erythrocyte sedimentation rate, plasma viscosity, and C-reactive protein are frequently but not always elevated. Young women, especially those who smoke and/or take oral contraceptives, frequently get headaches brought on by cerebral venous thrombosis. The danger is greatest right after childbirth and in people who are dehydrated. Early morning headaches, nausea, altered degrees of awareness, papilloedema, and seizures are symptoms of the illness, which raises intracranial pressure. The diagnosis is clinically suspected and imaged using a computed tomography venogram or magnetic resonance angiography to confirm it. Idiopathic intracranial hypertension is present in patients with normal imaging and high cerebrospinal fluid pressure on lumbar puncture. These patients are often obese. Due to the possibility of long-term vision impairment, these individuals must have their visual fields evaluated and undergo routine ophthalmologist monitoring. In the absence of other indicative symptoms, sinus headaches are relatively uncommon, and chronic sinusitis seldom results in headaches unless there is an abrupt exacerbation [32]. Refractional errors are frequently overestimated as the root of headaches [35]. It is recommended that headaches not be assigned due to neck, dental, or temporomandibular joint issues in the absence of pertinent symptoms.

Primary headache disorders

The great majority of headache disorders are primary headache disorders, with migraine and tension-type headache (TTH) being the most common types. While 15 % of people get migraines, 60-80 % of people have TTH (male 7.6 %, female 18.3 %) [30]. Cluster headaches are rare (0.1 %) [36, 37] yet frequently misdiagnosed and poorly treated [38]. Medication-overuse headache (MOH) is a secondary headache illness that frequently co-occurs and is frequently characterised with primary headache disorders.

Short-duration versus long-duration headaches

Differentiating primary headaches based on their length is a crucial initial step in the diagnostic approach. An untreated headache episode is classified according to whether it lasts less than or more than 4 hours. The majority of short-duration headaches fall under the umbrella term of "trigeminal autonomic cephalalgia" (TAC), the most common form of which is cluster headache. Cluster headache is discussed further. Either migraines or TTH are the chronic headaches.

Episodic versus chronic

This categorization is based on how many days a person has headaches in a month. Chronic headaches, also known as chronic daily headaches (CDH), are defined by the International Headache Society (IHS) as headaches that last for 15 or more days in a month and afflict 4 % of the population. [39, 40] Most episodic headaches are tension-type headaches or migraines, which are less incapacitating than the chronic kind. A sizable portion of CDH is caused by chronic migraine. The other categories are new daily

persistent headache, hemicrania continua, and chronic TTH (CTTH).

Migraine

The second most frequent type of headache is a migraine. Which is described as recurring throbbing or pulsing, moderate to severe, and frequently unilateral pain that lasts 4–72 hours with no restrictions in between episodes (episodic). The headache is accompanied by dizziness, nausea, and/or sensitivity to smell, light, or sound. The patient wants to stay motionless and avoid physical exertion while lying still in a silent, dark environment. Auras, which are progressive localised neurological symptoms that last 5 to 60 minutes, are experienced by around one-third of patients. Although unilateral sensory abnormalities and/or dysphasia may manifest simultaneously or sequentially, visual aura, shown as zigzag lines or spreading scintillating scotoma (diminished sight), is by far the most frequent. Aura can occasionally happen without causing a headache (the migraine analogue), which must be distinguished from a brief ischemic attack. A migratory aura often develops over a few minutes and moves from one place to another. As defined by the IHS as headaches on 15 or more days in a month, of which 8 or more days exhibit migrainous symptoms, around 1.3–2.4 % [41] of migraine sufferers experience chronic migraine. The most incapacitating kind of migraine, characterised by significant effects on health-related quality of life, co-morbidities, and a propensity for prescription misuse, is chronic migraine. [42] Patients with chronic migraine, as opposed to those with episodic migraine, are more likely to be jobless, to experience interpersonal and family issues, to be resistant to traditional acute and preventative therapy. [43]

Tension-type headache

Due to the lack of accompanying symptoms that migraines have, this is frequently referred to as a featureless headache. Although the illness is often identified, it is not well understood. It feels as though the head is in a vise or has a tight band around it, and the discomfort is characterised as aching or pressure. TTH is frequently episodic and hardly ever affects everyday activities. Rare and perhaps related to pharmaceutical abuse is the chronic variety.

Cluster headache

The most common type of headache among TAC is a cluster headache. These particular primary headache disorders are subtypes of primary headache disorders and are characterised by short-lived, strictly unilateral headaches with ptosis, lacrimation, rhinorrhea, and other autonomic characteristics. Young males (3.5:1) who smoke (65%) are more likely to get cluster headaches, which are notoriously painful and are sometimes referred to as "suicidal headaches." [44] The duration of the assaults, which can happen up to eight times daily, ranges from 15 minutes to three hours. The patient frequently perspires a lot and is incredibly anxious and restless. Attacks occur at the same time every day, which is a notable element of the circadian rhythmicity. Almost often, drinking leads to an assault. In 80–90% of instances, cluster headaches are episodic, with attacks happening every day for a few weeks to a few months, then going away for a few months to a few years. With no symptom-free intervals or remissions lasting less than a month, attacks of the chronic form persist continuously for a year or longer. The other TAC, which are exceedingly uncommon and outside the purview of this study, include paroxysmal hemicrania and short-lasting unilateral neuralgiform headache with conjunctival tears.

Medication-overuse headache (M.O.H)

Table 3 provides a summary of the IHS definition for MOH. [45] MOH is a frequent comorbidity of several CDH illnesses and worsens primary headache syndromes often. It is still unknown if MOH is a cause or an effect of CDH and whether preventative therapy should be started prior to or following the cessation of the misused drugs. 50–80% of individuals who visit the specialised headache clinic have MOH, which affects 1-1.5 % of the general population. [46] Three times as many women as males experience this. [47] About two-thirds of individuals who misuse analgesics have migraines, and 27% experience headaches of this sort. [47]

Diagnostic criteria of Medication-overuse headache
1. Headache present on ≥15 days per month 2. Regular overuse for >3 months of one or more acute/symptomatic treatment drugs as defined under subforms of 8.2 i. Ergotamine, triptans, opioids or combination analgesics medications on ≥ 10 days per month on a regular basis for > 3 months ii. Simple analgesics or any combination of ergotamine, triptans, analgesics, or opioids on ≥ 15 days per month on a regular basis for >3 months without overuse of any single class alone 3. Headache has developed or markedly worsened during medication overuse

Table 3: Appendix criteria for medication-overuse headache (Headache Classification Committee, 2006) [45]

Any painkiller has the potential to induce MOH, but combination analgesics-especially those that contain opioids, barbiturates, and caffeine-carry a significantly higher risk. The least probable class of medications to be linked to overuse is non-steroidal anti-inflammatory drugs (NSAIDs). Despite the fact that 90% of patients take several painkillers, combination analgesics account for 39–42% of instances [48, 49] Compared to simple or combination analgesics, MOH occurs with triptan significantly more quickly and at far lower doses. Similarly, compared to other painkillers, triptans have far less and milder withdrawal effects. [50, 51] Who causes MOH and why is unknown. To obtain optimal treatment effectiveness, some experts advise treating mild migraine attacks quickly, while others believe doing so may raise the risk of prescription misuse. [52] It's noteworthy to note that people who use medications for diseases like arthritis or low back pain would only have MOH if they already have a primary headache issue. Similar to how not all individuals with primary headache disorders may get MOH after abusing excessive opioids, [53–55] this suggests that certain people may have a hereditary susceptibility. Opioids and barbiturates have been theorised to cause psychological and physical dependence [56], and those who smoke and/or have a history of alcohol or substance abuse

are at a higher risk. [57] The underlying pathophysiology may be related to the sensitization of pain pathways and the down-regulation of pain receptors at the second-order neurons. [58]

5. Diagnosis

The clinical history alone may diagnose the majority of headaches. [9] Additional testing, such as neuroimaging or a lumbar puncture, may be required if the person's symptoms seem serious. The diagnosis of headaches cannot be made by electroencephalography (EEG). Identifying whether a headache is new or old is the first step in making a diagnosis [59, 60] A "new headache" might be a recent-onset headache or a persistent headache that has evolved. [60] For instance, if a person experiences a sudden strong throbbing headache on one side of their head after experiencing chronic weekly migraines with pressure on both sides of the head, they get a new headache.

Tension headache	New daily persistent headache	Cluster headache	Migraine
mild to moderate dull or aching pain		severe pain	moderate to severe pain
duration of 30 minutes to several hours	duration of at least four hours daily	duration of 30 minutes to 3 hours	duration of 4 hours to 3 days
	Occur in periods of 15 days a month for three months	may happen multiple times in a day for months	periodic occurrence; several per month to several per year
located as tightness or pressure across head	located on one or both sides of head	located one side of head focused at eye or temple	located on one or both sides of head
	consistent pain	pain describable as sharp or stabbing	pulsating or throbbing pain
no nausea or vomiting			nausea, perhaps with vomiting
no aura	no aura		auras
uncommonly, light sensitivity or noise sensitivity		may be accompanied by running nose, tears, and drooping eyelid, often only on one side	sensitivity to movement, light, and noise
	Exacerbated by regular use of acetaminophen or NSAIDS		may exist with tension headache [61]

Table 4: Differential diagnosis of headaches

Various types of diagnostic tests are done by observing the red flag symptoms and on the basis of possible causes. Because since the symptoms of high-risk and low-risk headaches are frequently identical, it can be difficult to tell them apart. [60, 62, 63] Additional blood testing and imaging are needed to detect headaches that might be hazardous. [64] Table 5 shows the various types of diagnostic tests on the basis of red flag symptoms.

Red Flag	Possible causes	Reason why red flag indicates possible causes	Diagnostic tests
New headache after age 50	Temporal arteritis, mass in brain	Temporal arteritis is an inflammation of vessels close to the temples in older people, which decreases blood flow to the brain and causes pain. May also have tenderness in temples or jaw claudication. Some brain cancers are more common in older people.	Erythrocyte sedimentation rate (diagnostic test for temporal arteritis), neuroimaging
Very sudden onset headache (thunderclap headache)	Brain bleed (subarachnoid hemorrhage, hemorrhage into mass lesion, vascular malformation), pituitary apoplexy, mass (especially in posterior fossa)	A bleed in the brain irritates the meninges which causes pain. Pituitary apoplexy (bleeding or impaired blood supply to the pituitary gland at the base of the brain) is often accompanied by double vision or visual field defects, since the pituitary gland is right next to the optic chiasm (eye nerves).	Neuroimaging, lumbar puncture if computed tomography is negative
Headaches increasing in frequency and severity	Mass, subdural hematoma, medication overuse	As a brain mass gets larger, or a subdural hematoma (blood outside the vessels underneath the dura) it pushes more on surrounding structures causing pain. Medication overuse headaches worsen with more medication taken over time.	Neuroimaging, drug screen
New onset headache in a person with possible HIV or cancer	Meningitis (chronic or carcinomatous), brain abscess including toxoplasmosis, metastasis	People with HIV or cancer are immunosuppressed so are likely to get infections of the meninges or infections in the brain causing abscesses. Cancer can metastasize, or travel through the blood or lymph to other sites in the body.	Neuroimaging, lumbar puncture if neuroimaging is negative
Headache with signs of total body illness (fever, stiff neck, rash)	Meningitis, encephalitis (inflammation of the brain tissue), Lyme disease, collagen vascular disease	A stiff neck, or inability to flex the neck due to pain, indicates inflammation of the meninges. Other sign of systemic illness indicates infection.	Neuroimaging, lumbar puncture, serology (diagnostic blood tests for infections)
Papilledema	Brain mass, benign intracranial hypertension (pseudotumor cerebri), meningitis	Increased intracranial pressure pushes on the eyes (from inside the brain) and causes papilledema.	Neuroimaging, lumbar puncture
Severe headache following head trauma	Brain bleeds (intracranial hemorrhage, subdural hematoma, epidural hematoma), post-traumatic headache	Trauma can cause bleeding in the brain or shake the nerves, causing a post-traumatic headache	Neuroimaging of brain, skull, and possibly cervical spine

Inability to move a limb	Arteriovenous malformation, collagen vascular disease, intracranial mass lesion	Focal neurological signs indicate something is pushing against nerves in the brain responsible for one part of the body	Neuroimaging, blood tests for collagen vascular diseases
Change in personality, consciousness, or mental status	Central nervous system infection, intracranial bleed, mass	Change in mental status indicates a global infection or inflammation of the brain, or a large bleed compressing the brainstem where the consciousness centers lie	Blood tests, lumbar puncture, neuroimaging
Headache triggered by cough, exertion or while engaged in sexual intercourse	Mass lesion, subarachnoid hemorrhage	Coughing and exertion increases the intra cranial pressure, which may cause a vessel to burst, causing a subarachnoid hemorrhage. A mass lesion already increases intracranial pressure, so an additional increase in intracranial pressure from coughing etc. will cause pain.	Neuroimaging, lumbar puncture

Table 5: shows the various types of diagnostic tests on the basis of red flag symptoms.

6. Management

Primary headache syndromes have many different possible treatments. In those with chronic headaches the long term use of opioids appears to result in greater harm than benefit. [65]

- **Tension-type headaches**

TTHs, whether they are acute or chronic, are rarely incapacitating, and over-the-counter analgesics such ibuprofen and paracetamol are a useful therapy option for uncommon occurrences. Tricyclic antidepressants, including amitriptyline, can be used for a few months to stop those that happen more regularly. [66]

- **Migraine**

Paracetamol or ibuprofen 600–800 mg, or aspirin 900 mg, with or without anti-emetics such domperidone 10–20 mg, are the first-line treatments for a migraine episode. [32] Patients are recommended to take them as soon as they recognise that they have a migraine because these are over-the-counter (OTC) medication. Aura sufferers should begin the medication at the beginning of the headache phase. Those who can distinguish between migraine and non-migraine headaches are best served by such guidance, according to critics who claim that early treatment while the headache is light may result in medication misuse. [67] Naproxen and diclofenac are two more NSAIDs that are similarly effective but need a prescription to be used. [68, 69, 70] Avoid using combination analgesics with caffeine, barbiturates, and opioids, and limit the consumption of acute medicines for not more than 2 days/doses per week. Triptans are administered to patients who do not react to or are unable to tolerate the first line of treatment (stepped-care strategy), yet they may also be used as the first line of treatment if deemed to be the most effective acute therapy.

Sumatriptan	Over the counter as Imigran Recovery/Migraleve Ultra (50 mg tablets) Tablet 50 mg, 100 mg, nasal spray 10 and 20 mg, subcut injection 6 mg
Zolmitriptan	Tablet 2.5 mg, 5 mg, nasal spray 5 mg
Rizatriptan	Tablet 5 mg, 10 mg
Naratriptan	Tablet 2.5 mg
Almotriptan	Tablet 12.5 mg
Eletriptan	Tablet 20 mg, 40 mg, 80 mg
Frovatriptan	Tablet 2.5 mg

Table 6: Various triptans and their formulations

Table 6 provides a list of the different triptans available. In contrast, others, like naratriptan and frovatriptan, have a slower onset of pain relief but are better at preventing recurrence. Some have a rapid onset of action, such as zolmitriptan 5 mg, rizatriptan 10 mg, and eletriptan 40 or 80 mg, though recurrence of symptoms within 24 hours is a problem due to their short half-life. [67] There is proof that taking a triptan with an NSAID like naproxen is more beneficial than doing so alone. Around one-third of individuals are triptan non-responsive, and patients who do not respond to one triptan after three incidents of migraine may do so after taking a different triptan. [32] Some triptans are now available in injectable or nasal formulations, which may be more suitable for people who have severe nausea at the start of a migraine episode. If a patient experiences frequent migraine episodes or do not respond well to acute medicine, preventive therapy should be taken into account. To ensure that the medication is effective, it must be continued for at least 4-6 months before considering a gradual withdrawal, unless there are side effects or issues with tolerance. Beta-blockers like propranolol, tricyclic antidepressants like amitriptyline, and the anticonvulsant topiramate are among the first-line preventative therapies. The National Institute of Clinical Excellence now advises onabotulinumtoxinA (Botox), which got its licence for prevention in adult patients with chronic migraine in 2010, to individuals who have not responded to at least three preventative therapies. [71] If after two sessions there is still no improvement or if the migraines start to come and go, the therapy must be stopped. When someone has a persistent migraine, a greater occipital nerve block with local anaesthetic and either or both steroids can occasionally result in a temporary relief. [72] Although the data is still equivocal, non-drug therapies such Indian head massage, acupuncture, homoeopathy, butterbur, and cognitive behaviour therapy may be beneficial.

- **Cluster headaches**

If not contraindicated, injectable, nasal, or zolmitriptan work effectively for treating acute cluster headaches. [73] Oxygen at 100% an assault can be stopped in 10–20 minutes if 10-15 per minute are sent using a customised mask. [74] This may be ordered from the nearby provider using a home oxygen order form. In rare circumstances, a brief course of a high-dose steroid for a few days might result in a quick and successful remission. Allowing the preventative medication to take effect may need prednisolone 60 mg every day for 5 days with a decrease of 5–10 mg each day. The primary

therapy for both episodic and chronic types of the illness is verapamil. The first dose of the medication is 80 mg twice day, and up to 960 mg per day may occasionally be needed. On rare occasions, verapamil can prevent the conduction of cardiac impulses. Atrio-ventricular block is indicated by a PR interval in the ECG of 0.2 milliseconds or longer (AV block). In the short term, methylsergide could be a good alternative treatment for episodic cluster headaches. Another treatment option for cluster headaches is lithium, which can be taken daily in doses of 800-1600 mg. The therapeutic window for the medication is small, and frequent blood testing is necessary. Topiramate, gabapentin, melatonin, and pizotifen are other medications with some evidence of effectiveness. [32]

- **Medication-overuse headache**

Simple analgesics are the first line of defence in any situation since patients taking them are less likely to respond to both acute and preventative therapy. [75] Simple analgesics can be immediately terminated by overusing patients, but opioid-containing analgesics need to be withdrawn gradually over a few weeks. In the great majority of patients, an outpatient withdrawal with justification and assurance is adequate. [76] It's important for patients to understand that headaches may grow worse before they go better. Rebound symptoms range in length, with triptans having the shortest and combination analgesics having the longest. [77] There are no recommendations for managing rebound symptoms, although it is often advised to take NSAIDs such naproxen 500 mg twice a day for two weeks. [78] Steroids' function is yet unknown. It is still up to the treating doctor to decide whether to employ preventative care before or after discontinuing drugs. Continuous or irregular intravenous dihydroergotamine infusions combined with antiemetic medications are frequently beneficial for those who need in-patient care to manage the withdrawal process. [79]

7. Conclusion

One of the most typical symptoms in the general population is headache. The majority of headaches are migraine and tension-type headaches, which may be identified and treated in primary care settings or by general and emergency physicians practicing acute medicine with little knowledge and training. Local champions (GPs with a specialist interest or Level 2) could be developed through the training of GPs through affiliation with headache clinics. These GPs should be able to treat some of the more complex patients and only refer those who are untreatable or rare to the specialist headache clinic. Since the NHS will not be able to handle the great majority of headache referrals to secondary and tertiary care in the current budgetary context, this would serve as the foundation for a three-level system of cost-effective care for headaches in the general population.

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