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Chronic Daily Headache Disorders and Their Management- A Study

Adilah Hamoud Al Turaifi[1], Salem Mohammed Al-Qarni[2], Ashwaq Fathi Nasser AL-Dossary[3], Khalid Abdulrahman Alsagaihe[4], Fatimah Ibrahim Alshabeeb[5], Dareen Hussain Alhendi[6], Sokinh Ahmed Almaghaslah[7], Abdullah Mohammad Alsufi[1], Zamil Jamil Alyamani, Fatimah Taqi Almozayin[9], Bassam Sameer Molawi[10]

1 Ibn Sina National College, 2 Almajaridah Health Care Center, 3 University of Imama Abdurhman Bin Faisal, 4 Almaaraefa Colleges, 5 Yemen University of Science And Technology, 6 Taibah University, 7 Pavol Jozef Safarik University, 8 Hamdard University, 9 Arabian Gulf University, Umm Alqura University

Corresponding Author: Adilah Hamoud Al Turaifi –

ABSTRACT

Background: headaches account for 10% of all consultations with the general practitioner, and the third leading cause of emergency department visits. The current prevalence of headache can go from 7.4% to 22.7% and may be associated with much comorbidity, and can cause significant disabilities in an individual's quality of life. **Methodology:** in this paper we carried out a systematic review on 32 observational (nonrandomized) studies using PUBMED. **Aim:** our aim in the study is to evaluate the prevalence, associated risk factors, pathogenesis, management, and the effect on quality of life caused due to chronic headaches. **Conclusion:** chronic headache adds to a huge burden in overall health care system, and a very frequent general practice visit. Treatment of this type of headache is very challenging due to its chronicity as well as its risk of conversion into medication onset headache. More researches that can promise better quality of life for individuals that suffer from chronic daily headache must be done.

Keywords: chronic headache, migraine, tension type headache, new daily persistent headache, hemicranias, medication induced headache, headache effect on lifestyle.

INTRODUCTION

Chronic Daily Headache (CDH) is defined as headache for more than 15 days in a month, lasting at least 4 hours, for a period of three months [(1)]. CDH is classified by the International Headache Society into four major types: chronic migraine, chronic tension, hemicranias continua, and new daily persistent headache [(2)]. The National Health and Nutrition Examination Survey noted in 2011 that 22.7% of people reported having migraine or other severe form of headaches in the past 3 months. The burden of headache was highest in women of age 18-44, reporting a 3-month prevalence of severe headache to be 26.1%. It was also noted that headache was the third leading cause of ED visits [(3)]. CDH are often preceded by gradual episodic headache, which over several years transform to chronic type, as was noted by Fayyaz A ***et al***. [(4)] in 3-6% of episodic headache cases. Other risk factors that lead to CDH are categorized as modifiable vs. non-modifiable. The modifiable ones included medication overdose, obesity, snoring, caffeine, smoking, and psychiatric co-morbidity as depression or anxiety. The non-modifiable risk factors included Caucasians, female gender, low socio-economic factor, and previous head or neck injury [(5)].

CDH are difficult to diagnose, manage, and are severely disabling and are recorded among one of the most frequent symptoms seen in general practice. They are also associated with/ or may be a cause of other comorbid disorders like depression, anxiety, mood disorders, and other chronic pain disorders. In fact, migraines can affect the health related quality of life worse than diabetes and osteoarthritis [(6)].

Therefore, in this study, we aim to review the literature for the major types of CDH with respect to their prevalence, pathology, management, and their effect on the quality life.

METHADOLOGY

We carried out a systematic review on observational (nonrandomized) studies by evaluating 32 articles, after exclusion, using search on PUBMED (January 1994 to June 2017) to identify the different types of CDH, their prevalence, pathogenesis, management, and impact on individual's quality of life. The keywords used for the search were: chronic headache disorders, chronic headache disorder & prevalence, pathogenesis, risk factors, epidemiology, causes, management, impact on life, and cost analysis; migraine, tension type

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headache, new daily persistent headache, hemicranias, and medication induced headache.

MIGRAINE

Migraine is an incapacitating chronic pain disorder. Headache totals for 4.4% of all consultations in general practice. At some point in people's lives, 20% of them are affected by migraine. Chronic migraine executes a substantial economic burden on society according to Buse ***et al***. [(7)]. Migraine is ranked in the top 40 conditions that create worldwide disability as noted by the World Health Organization's 2012 global burden of disease due to the cumulative burden caused by this disorder in daily lives and work [(8)].

Pathophysiology

migraine is assumed to begin with vascular constriction, creating an aura because of focal hypoperfusion of the cortex supplied by that vessel. The vasoconstriction is followed by a reactive vasodilatation which results in throbbing headache [(9)]. More recent studies have shown that migraine is considered a neurovascular disorder involving the trigeminal-vascular system. Genetically, autosomal dominant with many different type mutations is assumed to play a role in development of this disorder [(10)]. More specifically, some mutations in the calcium channel gene can make neurons unstable leading to the paroxysmal nature of migraine. The neurons then react to normal environmental stimuli in an abnormal way initiating the migraine attack [(11)]. There are two types of trigger; exogenous and endogenous. Common exogenous triggers include heat, motion, exposure to glare, loud noise, or the consumption of tyramine containing foods, or alcohol. Examples of endogenous triggers are sleep disturbance, stress, falling estrogen levels (menstruation) [(12)]. The trigeminal nerves are responsible for the sensory innervation to the intracranial vessels. It also innervates the meninges. When stimulated, these impulses travel to dural tissue and causes dilatation of the meningeal blood vessels. The dilatation causes local release of neuropeptides such as nitric oxide, Substance P, 5-HT, vasoactive intestinal polypeptide, Neurokinin A and CGRP, which are a potent vasodilator. Apart from vasodilatation, they lead to plasma protein extravasation leading to the initiation of sterile neurogenic inflammation causing debilitating pain [(13)].

Diagnosis

International Classification of Headache Disorders lays a diagnostic criterion for migraine.

At least five headache attack which fulfills criteria the following criteria [(14)]:

1) Headache attacks that last 4–72 h (untreated or unsuccessfully treated)
2) Headache has at least 2 of the following 4 characteristics:
   a. pulsating quality
   b. unilateral
   c. intensity of headache is moderate or severe
   d. aggravates by or causes avoidance of routine physical activity (
3) During headache at least one of the following associated symptoms:
   a. nausea or vomiting, or both
   b. photophobia and phonophobia
4) does not fit other headache criterea

Only 20% of migraine sufferers experience aura before the attack. 10% and 20% of migraine patients experience pre-migraine symptoms up to 48 h before their migraines. Such symptoms may include fatigue or abnormal bursts of energy, yawning, neck stiffness, and frequent urination [(15)].

Treatment

Treatment of migraine includes both preventive therapy and acute therapy. They are aimed at reducing attack frequency and severity, and for aborting the attacks. Regularity of routine with regard to meals, hydration, sleep, and avoidance of stress is always helpful in reducing the tendency to migraines [(16)]. It is crucial to treat early, when the pain is yet mild, and to use adequate drug doses. Antiemetic or prokinetic drugs must be co-administered. This helps facilitate absorption of the primary analgesic drug. A very important goal is to take steps to avoid chronification of the headache, and to prevent the development of MOH [(17)].

Several combinations of NSAIDs and triptans have been tested. The combination of sumatriptan 85 mg and naproxen sodium 500 mg has been approved by the FDA. This combination is more effective complared to each of the drugs used alone [(18)]. Medications that have shown efficacy in acute treatment of migraine attack therapy are divided into: non-specific drugs (analgesics and non-steroidal anti-inflammatory drugs—NSAIDs) and specific drugs (ergot derivatives and triptans). The drugs of first choice for prevention are three beta blockers (propranolol, timolol and metoprolol), and two antiepileptic drugs (divalproex sodium and topiramateIn a recent RCT (randomized controlled

trial) According to Lipton ***et al***. (18), a powder formulation of diclofenac potassium dissolved in water, showed good results in the treatment of moderate-to-severe migraine attacks [19].

TENSION TYPE

Tension type headache (TTH) is the most common form of headache. TTH are recurrent episodes of headache that can last for minutes to weeks. The pain is classically pressing or tightening in nature, with mild to moderate intensity. The headache is bilateral in location, and does not worsen with the routine physical activity. Nausea and vomiting is often absent, but photophobia or phonophobia may be present. Clinically, it is challenging sometime to differentiate TTH from early phase of migraine attack [20].

Pathophysiology

The exact cause of tension headache remains vague. Pericranial myofascial mechanisms are assumed to be of importance in episodic TTH. Nociceptive stimuli for a long time causes sensitization of pain pathways in the central nervous system and pericranial myofascial tissues causing the pain to convert from episodic to chronic TTH [20].

Diagnosis

The diagnosis of tension type headache is principally clinical and depends on symptoms. It is very central to eliminate secondary headaches, to distinguish comorbid conditions, and finally to decide whether TTH coexist with migraine. It is also particularly important to identify whether the headaches are being provoked by overuse of medications [21].

The pain of TTH is usually defined as dull, pressure like, constricting or giving a sense of fullness in the head. Often patients describe their pain as like wearing a tight band or a tight hat around the head. Presence of nausea and vomiting is considered to rule out the diagnosis of TTH [22].

Treatment

For patients with frequent episodic TTH, simple analgesics and NSAIDSs, such as Aspirin and acetaminophen, are the primary option for acute therapy. Other non-steroidal anti-inflammatory drugs for example, ibuprofen, naproxen sodium, ketoprofen, and diclofenac potassium all have been proved to be effective [21]. Furthermore, headaches must be prevented by avoiding trigger. The role of muscle relaxants in prevention of TTH is under study. Centrally acting muscle relaxant like tizanidine may have some advantage but is not suggested routinely. Peripherally acting muscle relaxants have no efficacy. Aside from drugs, the non-pharmacologic management includes physical therapy and psychological treatment. Preferably these should be tried in all patients as assistants to pharmacotherapy [23].

NEW PERSISTANT HEADACHE

New persistent daily headache (NDPH) is a new-onset headache occurring in a person who did not have a past history of frequent headaches, and which then persists on a daily basis for more than three months. The noticeable feature of a NDPH is that the patient usually remembers the date or the circumstance when the headache first began. The headache is unremitting from the beginning, or from within three days of its onset [24]. The striking feature of the condition is its abrupt (although not acute) onset. The pain has been described by patients as variable. Some say it is a throbbing pain while others noted a dull aching pain. Most patients claimed it as bilateral. NDPH can occur up to decades after first onset and can be tremendously disabling for the patient. NDPH do not improve, and is also the most treatment refractory of all headache disorders [25].

Treatment

For acute treatments, symptomatic therapy with triptans is used. Intravenous methylprednisolone recently has been reported to cause partial or complete remission in those patients who reported infectious trigger with NDPH [26].

MEDICATION OVERUSE HEADACHE

Medication-overuse headache (MOH) is one of the most common chronic headache disorders, with a worldwide prevalence of 1–2%, and a public health problem. It is a disorder characterized by chronic headache along with overuse of different headache medications [27].

Pathogenesis

All of the acute headache medication have the ability to cause MOH. Mechanisms may vary from one class of overused medication to another and different possible pathogeneses for each class have been suggested. Pre-existing chronic headache disorders, like migraine and tension-type headache, have a higher possibility for evolving into MOH than other primary forms of headaches. Patients with cluster headaches may also develop MOH [28]. Strikingly, MOH does not develop in people without a history

of headache, even when the same medication is taken regularly for other pain conditions such as arthritis or inflammatory bowel disease. Thus, there is a connection between headache-specific pain pathways and headache medication [(27)].

Treatment

There is no worldwide agreement for the management of these patients, except that termination of medication overuse is desirable and suggested. Most patients in the beginning experience withdrawal symptoms lasting 2–10 days after detoxification of the drug [(28)]. The most common symptom of withdrawal is an initial worsening of the headache, accompanied by other associated symptoms as various degrees of nausea, vomiting, sleep disturbances, restlessness, hypotension, tachycardia, anxiety and nervousness. Prevention is the key, and general practitioners must instruct patients about the MOH. The different strategies for management include: advising patients; using a multidisciplinary approaches; use of drugs like antiemetics, tranquilizers, and neuroleptics. Changing to a rescue medication, which is another analgesic than the one which was being overused can be helpful. Intravenous hydration, and/or administration of oral, nasal or intravenous ergotamines must also prove to be effective [(29)].

AFFECT OF CHRONIC HEADACHE ON QUALITY OF LIFE

Patients with CHD have high frequencies of psychiatric comorbidity or psychological distress. The presence of psychological distress contributes to poor quality of life in patients with chronic daily headache. Unfortunately, in spite of medical advancement, the prevalence of migraine has remained yet constant over 17 years. Additionally The American Study II pointed that the condition is highly underdiagnosed and undertreated [(30)]. A study done by Burton WN ***et al.*** [(31)] has estimated that a person with chronic migraine headache on average 8.2 hours of work per migraine attack, which adds up to 88 hours lost in a year. The connection between depression and migraine is bidirectional. Some patients develop depression following to migraine while others have a history of depression prior to migraine onset [(32)].

With regards to chronic tension type headache, **Holroyd K *et al.*** [(33)] 74% of patients reported severely impaired work and social functioning. Their sleep, emotional well-being, and energy level were strictly impacted. Patients with chronic tension-type headache were also 3-15 times more likely than others to develop mood disorders, anxiety, and depression. Patients of all types of frequent recurring headache are at a high risk of developing medication overuse headaches, which are more sever in quality and more difficult to manage, leading to further increase in disability [(34)].

CONCLUSION

As we have seen in the study that chronic headache adds to a huge burden in overall health care system, and a very frequent general practice visit cause. It is also one of the most disabling, yet under-estimated condition. Treatment of CDH is also challenging due to its chronicity as well as the risk of conversion into MOH. More researches that can promise better quality of life for individuals that suffer from CDH must be done.

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