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New Developments in the Optometrist's Assessment and Treatment of Common Headaches

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ABSTRACT:

Headache is pain experienced in the head and neck. It varies in types as it is caused by several reasons but is chiefly of two types, primary and secondary headaches. Primary headaches have no known cause, but secondary headaches have several causes. Tension, cluster and Migraine headaches are examples of primary headaches but hormonal, allergies, caffeine, exertional, hypertension, rebound, post-traumatic and headaches of ocular origin are secondary headaches. Primary and secondary headaches have their respective presentations, signs and symptoms. These headaches also have their peculiar management plans which have been addressed in this article. However, it is expected that the Optometrist will carry out the required eye examination procedures and/or prescribe the ideal medications, if need be, to remedy the headache complaint.

KEYWORDS:

headache, presentation, assessment, treatment & optometrist.

1. Introduction

Headache is pain experienced in the head and neck regions that may be either a disorder in its own right or a symptom of an underlying medical condition.[1] The medical term for headache is "cephalagia".[1] It is estimated that approximately 64–77% of people have a headache at some point in their lives; however, in each year, on average, 46–53% of people have been found to experience a headache.[3] Headache pain is felt when there is a lesion along specialized nerve endings called nociceptors.[4]

Nociceptors are located in the skin, walls of blood vessels, internal organs,[2] cervical spine, the trigeminal, glossopharyngeal, and vagus cranial nerves, the nerves innervating the upper part of the neck, the venous sinuses inside the head, the large arteries at the base of the brain, the large arteries innervating the dura mater, which is the outermost layer of the meninges, and the portion of the dura mater at the base of the skull.[4]

2. Materials and Method

Materials were sourced from the internet using PubMed, Google Scholar, and Science Direct. Recent literature relating to headaches, drugs used for treating headaches, and the eye were used for the review. Relevant papers were also obtained from the university library.

Classification of Headaches

Headaches can be classified into two categories based on cause, namely primary and secondary headaches.[1] Primary headaches are headaches without a known cause; tension, cluster, and migraine headaches are examples. Secondary headaches are caused by diseases, disorders, or accidents; allergies or sinus infections and caffeine. Hormonal, exertional, hypertensive, rebound, and post-traumatic headaches and headaches of ocular origin are examples. Whatever the cause may be, all headaches vary in duration, presentation, and intensity.[1]

Primary Headaches

Tension Headaches

Presentation

Tension headache presents as a reoccurring type of headache pain that lasts from minutes to weeks.[5] The headache is bilateral, pressing with mild to moderate intensity.[5] It is not throbbing in nature, and there is tenderness around the neck, forehead, scalp, and shoulder. Tension

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headaches can occur in anybody, as they are often triggered by stress.[5] Tension headache is of two subtypes. The Episodic and Chronic. The episodic tension headache occurs once in a while and can last from half an hour to several hours, while chronic tension headaches can consistently occur throughout the month. It occurs at 15 or more days per month, lasting hours or days.[8] However, both types of tension headaches share similar clinical features except for frequency.[5]

Cluster Headaches

Presentation

Cluster headaches are characterized by a severe burning and piercing pain.[8] Cluster headaches occur in series, each lasting from 15 minutes to 3 hours, with an average of 45–90 minutes in duration between 6 and 12 weeks.[16,17] It can occur from trauma and affect an eye and one side of the face at the same time. It most often comes with swelling, redness, flushing, sweating, nasal congestion, and tearing that occur on the side that is affected by the headache.[9] Cluster headaches are divided into episodic and chronic types. Episodic cluster headache attacks occur from several days to a year if untreated, and chronic occurs more frequently.[1]

Associated factors

Cluster headaches are associated with some cardiovascular risk factors causing irregularities in blood pressure leading to fluctuating blood pressure levels in the patients.[10] It is found to be associated with acute maxillary sinusitis.[11] Cluster headaches attacks may be triggered by various substances, which include but are not limited to alcohol, fumes from petroleum products, nail varnish, etc.[9,12] The administration of intravenous nitroglycerin can induce cluster headaches.[13] Most studies have shown cluster headaches to be more common in men than in women;[7] men are three times more likely to suffer from this condition than women. However, any age is possible for onset, but the typical age is 30 years.[13] There is a high incidence of cluster headaches in patients with head trauma.[14,15] Other risk factors for cluster headaches include gender, age, history of brain surgery or trauma and family history.[15,16]

Migraine Headaches

Presentation

Migraine is an intense pain experienced deep within the head. It is throbbing and usually one-sided.[18] The pain from migraine can last for days and can significantly limit the individual's ability to carry out daily routine task. Headache comes with nausea, photophobia, phonophobia, rhinorrhea, tearing, and osmophobia.[19] Migraine occurs in four phases.[1] These phases include:

Prodrome: This is the first phase of migraine attacks.[20] Here the migraine headache sufferer experiences symptoms like yawning, mood swings, lethargy, neck symptoms, photophobia, restlessness, craving, sound sensitivity, sweating, excess energy, thirst, and edema.[21]

Aura: Aura is the second phase of migraine. However, it is present in some migraines. Aura can precede a migraine headache or occur simultaneously with it.[22] Symptoms of aura include ear ringing, tingling sensation in the skin, rhythmic movements, vision loss and hearing loss.[1,18,19]

Headache: This is the third phase of migraine attack where the actual headache is felt. This headache phase can last from hours to days. Sufferers may seek relief in dark places, as the pain usually resolves in sleep.[19]

Postdrome: This is the last phase of migraine attack. Common symptoms seen include exhaustion, dizziness, difficult concentration, and euphoria.[20]Associated factors include age, family history and gender. Migraine is common amongst young adults and declines with increase in age.[1,9,18] Migraine is hereditary and is associated with other nervous system conditions.[1,2,10] Migraine also is gender based as women are three times more likely to develop a migraine than men.[9] People with post-traumatic stress disorder have an increased risk of migraine.[18]

Secondary Headaches

Allergy or Sinus Headaches

Presentation

Allergy or sinus headaches are caused by an allergic reaction or infection of any of the paranasal sinuses in the head.[1,11] When the sinuses become infected, inflammation sets in. Symptoms of inflamed sinuses include nasal congestion, running nose, nasal discharge, anosmia, pain when leaning forward and fever.[11] People who have chronic seasonal allergies or sinusitis are susceptible to this kind of headache.

Hormonal Headaches

Presentation

Hormonal headaches are headaches often experienced by women in their reproductive

years. This can take the form of migraines, however it differs from migraines because of its hormonal involvement. Associated factors include menstruation, birth control pills, and pregnancy, which can affect estrogen levels, causing headache.[2,8]

Caffeine Headaches
Presentation

Caffeine consumption can cause headache. However, the relationship between caffeine intake and headache is poorly understood,[2] but what is known is that excess caffeine intake affects the brain and this can cause headache. Also withdrawal from caffeine can trigger headache, too.[8,2,22]

Exertion or Exercise Headaches
Presentation

Prolonged physical exertion can cause these headaches. This form of headache can cause fainting, neck pain, and pain on one or both sides of the head.[11]

Hypertension Headaches
Presentation

This headache occurs when the blood pressure becomes dangerously high. It is bilateral, and it is aggravated by any physical activity. It is pulsating, and there are changes in vision, numbness or tingling in the extremities, nosebleeds, chest pain, or shortness of breath.[8]

Rebound Headaches
Presentation

Rebound headaches (RH), also known as medication overuse headaches or drug-induced headaches, occur in patients with primary headache.[31,32] This results in increased headache frequency, whereby the medication indicated for the treatment of the primary headache becomes the cause of headaches.[1,29] RH is presented like a dull, tension-type headache, or at times like a migraine.[17] Associated factors include regular intake of analgesics such as over-the-counter (OTC) pain relievers like acetaminophen, ibuprofen, aspirin, and naproxen, which will develop RH.[11] Outside OTC medications, there are other risk factors that can cause RH.[33] These include age, gender, anxiety and life style.[33,34,35] RH commonly affect those who are between 30 and 50 years.[1,36] It is more common in males than females.[37] However, metabolic syndromes are common in females with rebound headaches.[34]

Post-traumatic Headaches (PTH)
Presentation

A post-traumatic headache is a type of secondary headache that typically lasts for six to twelve months after a head injury occurs and starts seven days or several months after the shock or injury.[28] There are two types of PTH: acute, which lasts less than a year, and chronic, which lasts for a year or longer. PTH presents bilaterally, with moderate to severe intensity, pressing quality and photophobia [17,35,36] Associated factors linked to PTH include gender, age, greater severity of head injury, anxiety and depression.[37,39,40] Chronic daily headache (CDH) is another subtype of headache that may develop after a head injury.[38] CDH is a headache that occurs more than 15 days per month in a minimum of three months.[14]

Headaches of Ocular Origin
Presentation

Headaches of ocular origin are very common headaches experienced by people having ocular or visual challenges.[1,17] The pain of this type of headache is usually felt on the forehead. It can also be bilateral or localized in one eye or take any form. Symptoms of this type of headache include photophobia, lacrimation, pain, sneezing, inflammation and general ocular discomfort. Associated factors include refractive errors, binocular vision abnormalities, head trauma, family history, birth defects, and eye diseases like glaucoma, uveitis, age related macular degeneration etc.[4,41] Again, spectacles/prismatic prescriptions that are not fully corrective can also cause headaches as a result of a high demand on accommodation. Whatever the cause of these headaches, tackling the primary cause will take away the headache experienced and bring relief to the patient.[51]

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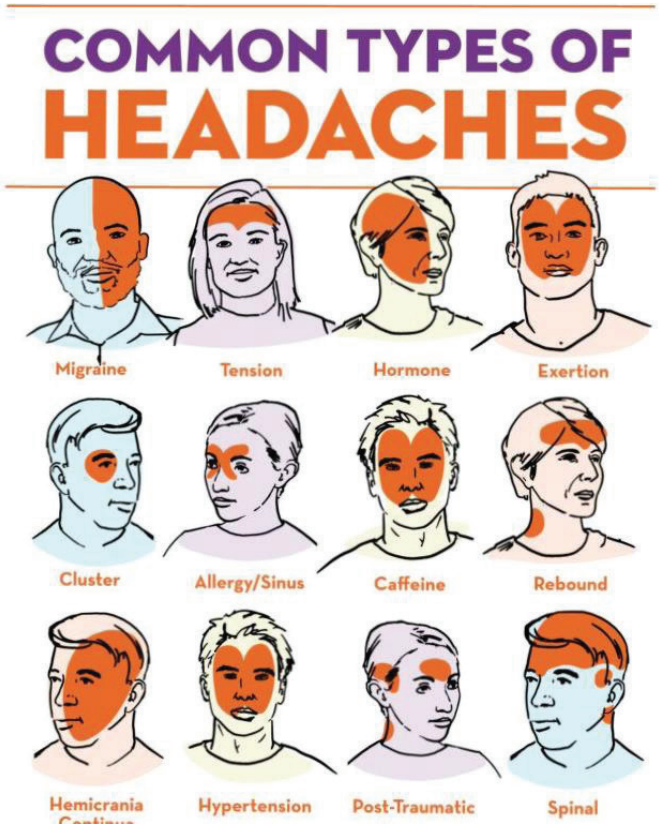

Fig 1: The different types of headaches and their facial presentations (adopted from pinterest.jpy)

3. Assessment

In tackling the primary cause of headaches the optometrist needs to make a differential diagnosis and carry out clinical procedures on the patient. The differential diagnosis and clinical procedures for eye examination for headache patients are:

Case history:

The differential diagnosis of headaches begins with a complete patient history. The history must contain the age, gender, medical, family, social and work life pattern of the patient.[4,16,18,28] The optometrist can make a diagnosis of the type of headache, if the case history is done well. In taking the case history, the following information should be obtained from the patient in a question and answer form below:[54]

Character of the headache: Here the optometrist is to inquire from the patient about the nature of the headache, if throbbing or pulsating, dull, sharp, tight pressing or mild.[1]

Location: the optometrist is to inquire from the patient about the area of the head where the headache occurs.[12,17]

Frequency: Here the optometrist is to find out how often the patient experiences the headache.[30]

Intensity: how debilitating is the headache?[1,5]

Onset: the optometrist is to inquire from the patient about the headache trigger and the time of the day the headache occurs.[11,30]

Duration: Here the timeframe of the headache pain is required from the patient [2,54]

Associated Symptom/Signs: What signs and/or symptoms accompany the headache?[54]

Relieving Mechanism: By what means is the headache easily relieved?[1,54]

In taking case history, it is expected from the optometrist to know that he or she can have patients who fall into any age group, but irrespective of the age of the patient the diagnostic approach remains. However, for very young children who may not be able to verbalize pain well, the optometrist is to observe their body language, as young child is irritated easily when they experience headache.[4]

Visual acuity (VA) testing:

In measuring the VA of a patient with a headache complaint, it is expected that the optometrist observes the reading pattern, the head movement and facial expression of the patient.[4,14,17]

External ocular examination:

The ocular adnexa is to be grossly inspected for inflammation. The face also is to be inspected for possibility of a facial scar from a post-traumatic event. Slit-lamp biomicroscopy should be performed to aid diagnosis.[4,55]

Ophthalmoscopy/Fundoscopy:

During this procedure, the optometrist is to observe the fundus for any abnormal sign, like disc cupping, tear, inflammation, exudates etc.[1,4]

Tonometry:

Tonometry is to be carried out, if glaucoma is suspected following ophthalmoscopy Results from tonometry will determine the likely treatment options to take.[1,12,17]

Refraction: When performing this procedure, the optometrist should be observant and pay close attention to the reaction and facial

expressions of the patient. The prescription that fully provides relief for the patient and a very good and comfortable vision acuity is the best prescription to be given. Again, the optometrist is to find out from the patient, if the headache is relieved as he keeps changing the lens. Most ocular headaches are relieved when the ideal prescription is given. When the prescription does not yield results, it is then obvious that the headache cannot be resolved by spectacles.[55]

Von Graeffe Technique (VGT):

Headaches from uncompensated phoria or tropia can be diagnosed with VGT. In the VGT, the Optometrist is to inquire from the patient of any likely discomfort and or headache and the prism power that relieves the headache.[19,51]

Transcranial magnetic stimulation (TMS) technique:

TMS technique is a noninvasive form of brain stimulation in which a varying magnetic field is used to induce an electric current at a specific area of the brain through electromagnetic induction. In TMS, a stimulator is connected to a magnetic coil that is subsequently connected to the patient's scalp. The stimulator generates an alternating current within the coil which creates a varying magnetic field, inducing a current within a region in the brain itself. TMS is both a diagnostic and therapeutic procedure for headaches. In the therapeutic management of headache, it is done repeatedly.[42]

Functional magnetic resonance imaging (fMRI) scan.

Magnetic resonance imaging, or MRI, is a noninvasive, painless medical scan that produces detailed images of almost every internal structure in the human body. [43] MRI scanners create images of the body using a large magnet, radio waves and a computer. Functional magnetic resonance imaging or functional MRI (fMRI) uses MRI technology to measure brain activity. It does this by measuring blood flow to certain areas of the brain.[53]

4. Treatment

Headache is a common complaint reported by patients visiting the eye clinic. As primary eye care providers, patients with headache complaints will likely meet the optometrist first before other healthcare providers. Optometrists also get referrals from general practitioners and others in the health sector. Whatever the case maybe, the optometrists first line of treatment should be to carryout a detailed case history and eye examination which should culminate in giving the patient the ideal lens or prism prescriptions that will solve the headache problem. Outside of lenses and prisms, the optometrist may add some drugs to the treatment regimen. For tension headache, pain relievers, like Acetaminophen 500mg should be included.[4] If this fails, refer the patient to a general practitioner. The optometrist can also recommend a hot compress for the patient. This is done by placing a hot pad on the patient's neck or the back of the head and massaging for a few minutes the patient's forehead, neck, and temples until the patient is relieved of the headache. Also, for these headaches, amitriptyline and mirtazapine can be prescribed as they have been found to be effective at reducing the frequency and intensity of headaches. Again, both drugs have no associated adverse-effect profile.[7] In treating cluster headaches oxygen therapy, sumatriptan and or lidocaine can be used to provide pain relief.[8] Migraines can be treated or relieved with pain relievers, like oral ergotamine and caffeine since they are efficacious in the treatment of migraine.[9] However, if the pain relievers fail, then triptans such as the sumatriptans should be prescribed. The triptans are available in oral, intranasal powder, liquid nasal spray and subcutaneous injection forms.[4] Rimegepant,[45] a relatively new drug can be used for the treatment of acute migraine and can also be used as a prophylactic treatment for migraines in adult. Pharmacologically, rimegepant is a receptor antagonist to the calcitonin gene related peptide (CGRP).[46] CGRP has been implicated as a cause for migraines.[47] Rimegepant is available in 75mg tab and can be given orally, on or under the tongue once a day. [28]

Another way to treat migraines is by prescribing drugs that prevent its occurrence. These drugs decrease the frequency of migraine attacks and improve the patient's response to acute migraine medications. These drugs also greatly help to improve the quality of life and productivity of people with migraine. Useful preventive medications are propanolol, metoprolol, topimarate, amitriptyline and cold ice.[48] Butterbur,[49] an extract of Petasite has been found to be effective for the prevention of migraine. This natural remedy has no risk of hepatotoxicity.[49,50] This reason makes it more useful for patients who prefer natural remedies. Since migraines come with photophobia, patients and sufferers are to be counseled on the need to use blinds on windows and screens, to be on sunglasses or photochromic lenses when outdoors, to use anti-glare screens when using the computer and to use daylight-spectrum

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fluorescent bulbs in light fixtures. Same time using nasal steroid sprays, phenylephrine, and antihistamines like cetirizine, as these will be useful in relieving the headache.[14, 24] A tentative remediation is by placing a warm cloth on the area that hurts. Hormonal headache treatment is like migraine headache treatment except for the use of alternative remedies that may have a role in decreasing the headache pain. Alternative remedies include relaxation, taking part in yoga and modifying one's diet.[25]

Caffeine headache can be prevented by keeping caffeine intake at a very low level or quitting it entirely.[4,27,28] Exertion headaches usually resolve within a few minutes or several hours. However, if headache continues, analgesics, such as aspirin and ibuprofen should be prescribed to ease the symptoms.[28,29] However, if this fails, then medical attention is required.[23] Hypertension headaches rescind when blood pressure is under control. Medications like Acetazolamide can be prescribed to ease the symptoms.[14,30] The only treatment for rebound headaches is to wean the patient off the medication he/she has been taking to control pain. Patient education and motivation.[31,33] Patient should be educated on the condition and motivated to discontinue the over-used drug.[32] For patients with a high risk of drugs toxicity, it is advised to prescribe an alternative medication that will run for two weeks or less. Post-traumatic headache (PTH) can be treated in several ways. Neutralizing prisms have been found to be a treatment modality for PTH in patients with vertical heterophoria (VH).[51]

Paracetamol and ibuprofen tablets can be prescribed to manage mild to moderate headaches. However, like all analgesics, these drugs should be prescribed with caution especially for young people, as it is shown to cause sterility.[20] But when headache is chronic, Tricyclic antidepressants, or antiepileptic medications such as amitriptyline can also be prescribed. Onabotulinum toxin A given intravenously, has been found to be effective in treating PTH.[52,53] Repetitive transcranial magnetic stimulation (rTMS) is another way for treating PTH. But this is the therapeutic procedure for TMS.[17] Cognitive behavioral therapy, physical therapy, biofeedback and relaxation techniques are psychological approaches that can be used for PTH treatment. Patient counseling and health education should be followed alongside any treatment option the optometrist desires to choose. However, if all this fail, the patient should be referred immediately.

5. Conclusion

Headache is a very common complaint encountered in any healthcare facility as it is a general health burden and because of its association with various health conditions including those that affect the eyes. Thus, making it necessary for optometrists not to overlook and underestimate headache cases irrespective of the type or frequency. Being primary healthcare providers, it is the duty of optometrists to properly diagnose and manage effectively headache complaints that come to them from time to time. Since headache is both a systemic and ocular problem, optometrists should also consider following an interdisciplinary approach.[20] But this should come after the eye examination procedures. The optometrist, whether working single handedly or not, should refer headache cases that are beyond his or her scope of practice and should follow up such cases to ensure complete treatment.

Optometrists are encouraged to know the various examination techniques required in the diagnosis of headache to advise their patients properly on the best treatment to take. Even as more studies are ongoing to further alleviate this global health burden, optometrists are encouraged to be part of these studies by carrying out research that promotes effective patient care in the examination and management of headaches. The management of multidisciplinary and specialist hospitals are to equip their facilities to promote further works on headache and ensure headache patients are given full and complete treatment.

References

1. Headache Classification Committee of the International Headache Society (IHS) The International Classification of Headache Disorders, 3rd edition. Cephalalgia. 2018 Jan 25;38(1):1–211.

2. Manzoni GC, Stovner LJ. Epidemiology of headache. In 2010. p. 3–22.

3. Stovner LJ, Andree C. Prevalence of headache in Europe: A review for the Eurolight project. Vol. 11, Journal of Headache and Pain. 2010.

4. Longo D, Fauci A, Kasper D, Hauser S, Jameson J., Loscalzo J. Harrison's Principles of Internal Medicine, 18th Edition. 18th Ed. New York: McGraw-Hill; 2012.

5. Chowdhury D. Tension type headache. Annals of Indian Academy of Neurology.2012;15(5):83.

6. Freitag F. Managing and Treating Tension-type Headache. Vol. 97, Medical Clinics of North America. 2013.

7. Ghadiri-Sani M, Silver N. Headache (chronic tension-type). Vol. 2016, BMJ clinical evidence. 2016.

8. Wei DY, Khalil M, Goadsby PJ. Managing cluster headache. Practical Neurology. 2019;19(6).

9. Hoffmann J, May A. Diagnosis, pathophysiology, and management of cluster headache. Vol. 17, The Lancet Neurology. 2018.

10. Lasaosa SS, Diago EB, Calzada JN, Benito AV. Cardiovascular Risk Factors in Cluster Headache. Pain Medicine. 2016 Dec 29;pnw305.

11. Edvardsson B. Cluster headache associated with acute maxillary sinusitis. Springerplus. 2013;2(1).

12. Nesbitt AD, Goadsby PJ. Cluster headache. BMJ. 2012 Apr 11;344(apr11 1):e2407–e2407.

13. Tfelt-Hansen PC, Tfelt-Hansen J. Nitroglycerin headache and nitroglycerin-induced primary headaches from 1846 and onwards: A historical overview and an update. Vol. 49, Headache. 2009.

14. Barloese MCJ, Beske RP, Petersen AS, Haddock B, Lund N, Jensen RH. Episodic and Chronic Cluster Headache: Differences in Family History, Traumatic Head Injury, and Chronorisk. Headache. 2020;60(3).

15. Waung MW, Taylor A, Qualmann KJ, Burish MJ. Family History of Cluster Headache: A Systematic Review. JAMA Neurology. 2020;77(7).

16. Hoffmann J, May A. Diagnosis, pathophysiology, and management of cluster headache. Lancet Neurology. 2018 Jan;17(1):75–83..

17. Robert D, Gerald F, Joseph J, John M. Headache and other craniofacial pain. In: Bradley's Neurology in Clinical Practice, 7th Ed. 7TH ed. Philadelphia, PA : Elsevier/ Saunders; 2016.

18. Vetvik KG, MacGregor EA. Sex differences in the epidemiology, clinical features, and pathophysiology of migraine. Vol. 16, The Lancet Neurology. 2017.

19. Tonini MC. Gender differences in migraine. Neurological Sciences. 2018 Jun 12;39(S1):77–8.

20. Karsan N, Goadsby PJ. Imaging the Premonitory Phase of Migraine. Vol. 11, Frontiers in Neurology. 2020.

21. Laurell K, Artto V, Bendtsen L, Hagen K, Häggström J, Linde M, et al. Premonitory symptoms in migraine: A cross-sectional study in 2714 persons. Cephalalgia. 2016;36(10).

22. Hansen JM, Lipton RB, Dodick DW, Silberstein SD, Saper JR, Aurora SK, et al. Migraine headache is present in the aura phase : A prospective study. Neurology. 2012;79(20).

23. Hansen JM, Charles A. Differences in treatment response between migraine with aura and migraine without aura: Lessons from clinical practice and RCTs. Vol. 20, Journal of Headache and Pain. 2019.

24. Maurya A, Qureshi S, Jadia S, Maurya M. "Sinus Headache": Diagnosis and Dilemma?? An Analytical and Prospective Study. Indian Journal of Otolaryngology and Head and Neck Surgery. 2019;71(3).

25. Sacco S, Ricci S, Degan D, Carolei A. Migraine in women: The role of hormones and their impact on vascular diseases. Vol. 13, Journal of Headache and Pain. 2012.

26. Zduńska A, Cegielska J, Zduński S, Domitrz I. Caffeine for Headaches: Helpful or Harmful? A Brief Review of the Literature. Vol. 15, Nutrients. 2023.

27. Nowaczewska M, Wiciński M, Kaźmierczak W. The ambiguous role of caffeine in migraine headache: From trigger to treatment. Vol. 12, Nutrients. 2020.

28. Nappi G, Moskowitz M. Headache. In: Handbook of Clinical Neurology. 1st Ed. Saunders Elsevier, Philadelphia, Pa ; 2010.

Advances in Medical, Pharmaceutical and Dental Research Journal (AMPDR)- ISSN 2812-4898
http://dx.doi.org/10.21622/AMPDR.2025.05.1.1116

29. González-Quintanilla V, Madera J, Pascual J. Update on headaches associated with physical exertion. Vol. 43, Cephalalgia. 2023.

30. Arca KN, Halker Singh RB. The Hypertensive Headache: a Review. Current Pain and Headache Reports. 2019 May 14;23(5):30.

31. Vandenbussche N, Laterza D, Lisicki M, Lloyd J, Lupi C, Tischler H, et al. Medication-overuse headache: a widely recognized entity amidst ongoing debate. Vol. 19, Journal of Headache and Pain. 2018.

32. Scher AI, Lipton RB, Stewart WF, Bigal M. Patterns of medication use by chronic and episodic headache sufferers in the general population: Results from the frequent headache epidemiology study. Cephalalgia. 2010;30(3).

33. Hagen K, Linde M, Steiner TJ, Stovner LJ, Zwart JA. Risk factors for medication-overuse headache: An 11-year follow-up study. the Nord-Trøndelag Health Studies. Pain. 2012;153(1).

34. He Z, Dong L, Zhang Y, Kong Q, Tan G, Zhou J. Metabolic syndrome in female migraine patients is associated with medication overuse headache: A clinic-based study in China. European Journal of Neurology. 2015;22(8).

35. Roper LS, Nightingale P, Su Z, Mitchell JL, Belli A, Sinclair AJ. Disability from posttraumatic headache is compounded by coexisting posttraumatic stress disorder. Journal of Pain Research. 2017;10.

36. Levy D, Gruener H, Riabinin M, Feingold Y, Schreiber S, Pick CG, et al. Different clinical phenotypes of persistent post-traumatic headache exhibit distinct sensory profiles. Cephalalgia. 2020;40(7).

37. Åhman S, Saveman BI, Styrke J, Björnstig U, Stålnacke BM. Long-term follow-up of patients with mild traumatic brain injury: A mixed-methods study. Journal of Rehabilitative Medicine. 2013;45(8).

38. Shaw L, Morozova M, Abu-Arafeh I. Chronic post-traumatic headache in children and adolescents: Systematic review of prevalence and headache features. Vol. 8, Pain Management. 2018.

39. Mavroudis I, Ciobica A, Luca AC, Balmus IM. Post-Traumatic Headache: A Review of Prevalence, Clinical Features, Risk Factors, and Treatment Strategies. Vol. 12, Journal of Clinical Medicine. 2023.

40. Kristoffersen ES, Lundqvist C. Medication-overuse headache: epidemiology, diagnosis and treatment. Therapeutic Adverse Drug Safety. 2014 Apr 6;5(2):87–99.

41. Sergott RC. Headaches associated with papilledema. Current Pain and Headache Reports. 2012;16(4).

42. Mollica A, Safavifar F, Fralick M, Giacobbe P, Lipsman N, Burke MJ. Transcranial Magnetic Stimulation for the Treatment of Concussion: A Systematic Review. Vol. 24, Neuromodulation. 2021.

43. Li ML, Zhang F, Chen YY, Luo HY, Quan ZW, Wang YF, et al. A state-of-the-art review of functional magnetic resonance imaging technique integrated with advanced statistical modeling and machine learning for primary headache diagnosis. Vol. 17, Frontiers in Human Neuroscience. 2023.

44. Hassan M, Asaad T. Tension-type headache, its relation to stress, and how to relieve it by cryotherapy among academic students. Middle East Current Psychiatry. 2020;27(1).

45. Lipton RB, Croop R, Stock EG, Stock DA, Morris BA, Frost M, et al. Rimegepant, an Oral Calcitonin Gene–Related Peptide Receptor Antagonist, for Migraine. New England Journal of Medicine. 2019;381(2).

46. Hargreaves R, Olesen J. Calcitonin Gene-Related Peptide Modulators – The History and Renaissance of a New Migraine Drug Class. Headache. 2019;59(6).

47. Dubowchik GM, Conway CM, Xin AW. Blocking the CGRP Pathway for Acute and Preventive Treatment of Migraine: The Evolution of Success. Vol. 63, Journal of Medicinal Chemistry. 2020.

48. Holland S, Silberstein SD, Freitag F, Dodick DW, Argoff C, Ashman E. Evidence-based guideline update: NSAIDs and other complementary treatments for episodic migraine prevention in adults: [RETIRED].

Neurology. 2012 Apr 24;78(17):1346–53.

49. Diener H, Freitag F, Danesch U. Safety profile of a special butterbur extract from Petasites hybridus in migraine prevention with emphasis on the liver . Cephalalgia Rep. 2018;1.

50. Borlak J, Diener HC, Kleeberg-Hartmann J, Messlinger K, Silberstein S. Petasites for Migraine Prevention: New Data on Mode of Action, Pharmacology and Safety. A Narrative Review. Frontiers of Neurology. 2022 Apr 26;13.

51. Rosner MS, Feinberg DL, Doble JE, Rosner AJ. Treatment of vertical heterophoria ameliorates persistent post-concussive symptoms: A retrospective analysis utilizing a multi-faceted assessment battery. Brain Injury. 2016;30(3).

52. Yerry JA, Kuehn D, Finkel AG. Onabotulinum toxin A for the treatment of headache in service members with a history of mild traumatic brain injury: A cohort study. Headache. 2015;55(3).

53. Hranilovich JA, Legget KT, Dodd KC, Wylie KP, Tregellas JR. Functional magnetic resonance imaging of headache: Issues, best-practices, and new directions, a narrative review. Headache. 2023;63(3).

54. Grosvenor T. Primary Care Optometry. 5th Edition. Butterworth-Heinemann, Oxford; 2006.

55. Benjamin WJ. Borish's Clinical Refraction. Borish's Clinical Refraction. 2006.