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Open Access Journal of Ophthalmology
ISSN: 2578-465X

Ocular Consultation in Headache-A Prerequisite or an Absolute Necessity?

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Mini Review

Volume 5 Issue 2

Received Date: September 07, 2020

Published Date: September 28, 2020

DOI: 10.23880/oajo-16000200

Abstract

A vast majority of cause of headaches are ocular, prime cause being neurological. Therefore, eye care practitioners are often the first physicians to evaluate, manage or if needed refer to designated department and specialty, the patients with headaches, eye pain, and headache-associated visual disturbances. Refractive error, oculomotor anomalies and ocular diseases contribute to headache and hence these causes need to be ruled out before going for expensive, invasive and time-consuming investigation. Health care professionals should always be generous in referring the patients to fellow physician, optometrist, ophthalmologist or any other specialists as per necessity.

Keywords: Oculomotor Anomalies; Ocular Diseases; Unilateral Neuralgia; Trigeminal Autonomic Cephalgias; Nervous System Disorders

Abbreviations: GP: General Practitioner; BASH: British Association for the Study of Headache; TAC: Trigeminal Autonomic Cephalgias; SUNCT: Short-Lasting Unilateral Neuralgia Headache Attack with Conjunctival Injection and Tearing; SUNA: Short-Lasting Unilateral Neuralgia Headache Attack with Cranial Autonomic Symptoms

Introduction

Headache, also known as cephalgia, is the commonest of all symptoms and probably a universal experience at some point of life. It is not a disease in itself but merely a symptom of a disease or health condition. Collectively, headache disorders are among the most common of the nervous system disorders [1]. A headache can affect any part of the head, and pain may be present in one or several locations. Headache has been defined as the pain located above orbitomeatal line [2]. A large proportion of headaches result from benign conditions, but because the symptom can represent an early manifestation of a potentially serious disorder, it necessitates thorough evaluation. A vast majority of cause of headaches are ocular, prime cause being neurological. Therefore, eye care practitioners are often the first physicians to evaluate, manage or if needed refer to designated department and specialty, the patients with headaches, eye pain, and headache-associated visual disturbances. Most of the headaches are often accompanied by ocular or peri-orbital pain, along with some visual symptoms, therefore it is attributed to ocular disease. Although ophthalmic causes are sometimes diagnosed, most ocular pain and many types of visual disturbances are neurologic in origin [3]. Thus, there exist an inextricable relation between eye and headache. As frequent as it may sound, but the appropriate diagnosis of headache is still murky with only minority of people worldwide diagnosed with headache disorders. Headache has been underestimated, under-recognized and under-

treated throughout the world [1].

The prevalence of headache in general population is thought to around 48.9% [4]. It has been estimated that almost half of the adult population have had a headache at least once within the last year making headache one of the most frequent reasons to seek a consultation with health care practitioners [5]. Around 95% of the general population have experienced headache at some stage in their life with a 1-year prevalence of nearly one in two adults [4]. The prevalence of headache is widespread, accounting for 1 in 10 general practitioner (GP) consultations [6], 1 in 3 neurology referrals [7] and 1 in 5 of all acute medical admissions [8]. Although the evidence in the literature for a strong association between oculo-visual problems and headache is weak [5], still patients who believe that appropriate ocular examination and treatment help to lessen their headache visit optometrists and ophthalmologists very frequently [9,10]. Headache affects people of all ages, races and socioeconomic status and is more common in women.

The International Headache Society [11,12] broadly classifies headache into two groups: Primary headache and Secondary headache. Primary headaches have no underlying cause and constitute the vast majority of headache disorders including migraine, cluster and tension headaches, and most common entities being the migraine and tension headache. Migraines, in general, have a prevalence of 18.2% in females and 6.5% in male patients [13]. The tension headache is the most common affecting 60-80% of the population with cluster headache being the most uncommon with estimated prevalence of 0.1% only [14]. Secondary headaches are uncommon but their recognition is extremely important as timely intervention may be lifesaving. The most common cause of secondary headaches includes: space occupying lesions-mainly intracranial tumors, infections of the central nervous system, mainly meningitis or encephalitis, subarachnoid hemorrhage, giant-cell arteritis, cerebral venous thrombosis, idiopathic intracranial hypertension, etc. Headache caused due to psychiatric problems are also considered as secondary headache. Fortunately, the vast majority of patients who present to the primary care provider for an evaluation will have a primary headache disorder. However, secondary headaches may be caused due to underlying life threatening conditions and present with certain red flags which points towards the immediate need of thorough evaluation. The red flags adapted from British Association for the Study of Headache (BASH) [15] as listed below:

- New headache in older patients
- Abnormal neurologic examination including papilledema and change in mental status
- New change in headache pattern or progressive headache
- New headache in the setting of HIV risk factors, cancer, or immunocompromised status
- Signs of a systemic illness (e.g., fever, stiff neck, rash)
- Triggered by cough, exertion, Valsalva maneuver
- Headache in pregnancy/postpartum period
- First or worst headache
- Aura symptoms that

i. Last longer than an hour
ii. Include motor weakness
iii. Are different from previous aura
iv. Occur for the first time on using oral contraceptive pill

There are many ocular conditions that causes headache, Moreover, certain secondary causes of headache also have neuro-ophthalmic manifestations. Broadly, the causes of ocular headaches can be studied in the following subheadings:

Ocular Headache Caused Due to Uncorrected Refractive Errors

Headaches caused due to uncorrected refractive error or wrongly corrected refractive error usually occur during afternoon or at the end of the day. The constant effort exerted in order see clearly causes eye strain and finally lead to headache. It starts as heaviness in eye and continuous use of eye leads to headache. The symptoms are more prominent in low grades of refractive error than in high errors and more prominent in astigmatism in comparison to myopia and hyperopia. One hypothesis states that even the minor degree of astigmatic errors of refraction causes changes to visual perception that alter the hyper-excitability in the visual cortex of the brain of headache sufferers [16]. Astigmatic blur may exacerbate the perception of striped patterns which are thought to be important in the visual triggers of different types of headaches [17]. The uncorrected refractive errors are often believed to be associated with frontal and/or occipital headache [18]. However, some research has established low prevalence of refractive error related headaches [19,20]. We have many clinical examples of refractive error being cause of headache and taking them to emergency and physician consultation. Most of these cases were normal in blood investigation, blood pressure, even CT scan and MRI. After a week of rush, spending bulk of money in investigations, taking medicines, they are not relieved and then they get to visit eye care practitioners. We have seen small refractive corrections (mostly astigmatism) alleviate their symptoms in 3-4 days of spectacle wear.

Ocular Headache Caused due to Oculomotor Anomalies

Though international headache society does not recognize it, very often some literatures tend to point out it [5]. The disruption of coordination between the muscles

of the two eyes may bring about the strain that may be transferred to the head, resulting in headache.

Most commonly, significant decompensated and large phorias and especially vertical phoria or tropia, tend to be the culprit. Ocular muscle imbalance as latent squint, accommodative and vergence dysfunctions [21] and convergence insufficiency cause headache [22]. It has been reported that in migraine headache often binocular vision anomalies in the form of decompensated heterophoria and reduced stereopsis might be present in subtle form [5]. Patients who fail Sheard's criterion (Prism Fusional Vergence less than twice the near phoria) are expected to suffer from headache symptoms [23].

Ocular Headache Secondary to Organic Eye and Systemic Disease

Headache and ocular pain are frequent complaints in ophthalmic practice. Headaches that present to an eye care practitioner include migraine, facial pain syndromes, and pain associated with cranial neuropathies, orbital, and ocular disease. Ophthalmological studies on headache have reported the role of different ocular diseases like acute glaucoma, uveitis, optic neuritis [24] etc. Headache may be associated with an ipsilateral defect in oculo-sympathetic pathways as in Horner's Syndrome. Cranial nerve palsies may also cause headaches. Acute elevation in intraocular pressure is usually associated with pain. Any inflammatory disease like acute iritis, uveitis, orbital cellulitis and pre-septal cellulitis also orbital pain and headache. Dry eye may also cause headache and the medication used to treat headache may cause or worsen pre-existing dry eye [3]. One of the most encountered symptom of computer vision syndrome is headache.

Temporal headache in an elderly person should alert one to a possibility of giant cell arteritis, which is an emergency [25]. Headache from elevated blood pressure may be accompanied by bilateral disk swelling or Papilloedema. Pituitary apoplexy is a neurological emergency presenting with headache, vision loss, ophthalmoparesis and delirium.

Primary Headache Disorders Presenting with Ophthalmic Manifestations

Migraine with Aura and Ocular Migraine: Aura symptoms of migraine include amaurosis fugax, scintillating scotoma, blurred visions, entopic phenomenon (phosphenes), visual hallucinations, etc [3]. Retinal migraine (otherwise known as ophthalmic migraines, anterior visual pathway migraines, or ocular migraines) causes monocular visual loss for 10–20 minutes which can be associated with diffuse or unilateral headache [26].

Trigeminal Autonomic Cephalgias (TAC): TACs are characterized by unilateral pain in the ophthalmic division of the trigeminal nerve. It may present with lacrimation, eye lid oedema, Horner's syndrome and conjunctiva injection. The most common form of TAC is cluster headache.

Cluster Headache: It is the most common form of TAC, presenting with pain centered around eye or temporal region of ipsilateral side lasting for about 15 to 180 minutes. During cluster attack, frequently post ganglionic Horner's syndrome, miosis and anisocoria are observed along with other symptoms of TACs.

Beside the above-mentioned type of headaches, paroxysmal hemicranias, short-lasting unilateral neuralgia headache attack with conjunctival injection and tearing (SUNCT) and short-lasting unilateral neuralgia headache attack with cranial autonomic symptoms (SUNA) also presents with ocular manifestation but these headaches are very infrequent.

It is necessary to perform a detail evaluation of patients presenting with headache, and more precautions should be taken if the history points towards a secondary headache because it may harbor a life-threatening disease. Since majority of patients consider eye to be the culprit behind their headache, eye care practitioners like optometrist and ophthalmologist may be the first one to detect secondary headaches and their cause by finding certain ophthalmic manifestations like papilledema, early field defect, cranial nerve involvement etc. In these cases, early diagnosis may be lifesaving. From the perspective of an eye care practitioner, the following work-up of headache should be done if a patient present with complains of headache in eye OPD:

- A detailed history on type of headache, onset, frequency, whether episodic or continuous, time to peak, time and duration, aggravating and relieving factors should be taken.
- A thorough general examination including vital signs, general appearance, scalp examination, palpitation of temporal artery and temporomandibular joint should be done
- Visual acuity should be assessed
- Meticulous refraction
- Binocular vision assessment and ocular motility- Cover test
- Detailed anterior segment evaluation
- Gonioscopy and Tonometry
- Pupillary response
- Visual field assessment
- Detailed funduscopy
- Depending upon signs in suspected cause and associated symptoms, X ray PNS, CT or MRI, Carotid flow study, Lumbar puncture may be required.
- Prompt referral in suspected case of secondary

headaches

Conclusion

In conclusion, headache is very common among general population. Not every headache imposes serious ramifications, but those which do may be life threatening which requires urgent neurological evaluation and management. Though only few literatures have established strong association between eye and headache, in general practice most cases of headaches have certain aspect of ocular symptoms. Ophthalmologic aspects of headache thus encompass problems that range from simple and benign to complex and formidable. Careful ophthalmic examination including visual acuity, eye movements, pupils, anterior eye segments and dilated fundoscopy is the key to successful management of cases of headaches presenting to the eye clinic. Our recommendation for those with headache is to have ocular examination first, it being less invasive, less expensive and more sensitive. Health care professionals should always be generous in referring the patients to fellow specialists, physician, optometrist, ophthalmologist or any other specialists to be involved.

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