

Original Research

To identify the ophthalmic factors that contributes to headaches

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ABSTRACT:

Aim: The aim of this study is to identify the ophthalmic factors that contribute to headaches. **Material and methods:** All of the patients who went to the Department of Ophthalmology complaining of headaches were evaluated, and those who were found to have ocular causes were enrolled in the study. **Results:** The fraction of ocular causes of headaches increased to 30% as a result of this. In a sample of 100 patients diagnosed with headaches caused by ocular conditions, 47 of those patients (or 47%) fell into the age range of 20–30 years, while the remaining 29 patients (or 29%) were in the age range of 30–40 years. Women are more likely to suffer from headaches than men. In all, there were 69 ladies (representing 69% of the total) and 31 men (representing 31% of the total). The frontal headache is the most frequent kind of headache and may be found in 66% of cases. Patients whose final correction is less than one diopter are more likely to complain of headaches than those whose powers are greater. According to this analysis, it comes out to roughly 66%, which is a big amount. The most prevalent ocular cause of headaches is astigmatism, accounting for 36% of cases. **Conclusion:** The majority of people who have eye issues also suffer from headaches. So, while treating a patient who is complaining of headaches, it is important to consider possible ocular causes. Individuals who complain of headaches should have their eyes examined to rule out the possibility of any eye-related problems, particularly refractive errors and binocular vision abnormalities.

Keywords: Ophthalmic factors, Headaches, Astigmatism

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INTRODUCTION

One of the most common reasons people are unable to work [1] is because they suffer from headaches. One of the most prevalent symptoms for which people seek medical treatment, headache is also the cause of greater impairment than any other neurological condition. Since it mostly affects people at their most productive years and during the time of life when they are establishing their careers, it has a huge influence on the socioeconomic system. In spite of the fact that it is a rather common problem, it is often misdiagnosed and only partially addressed. There are several potential causes for a headache. The list of possible causes of headaches is extensive, and it is likely longer than the list of all diseases combined [2]. There are a large number of disorders, ranging from harmless to life-threatening, that may cause headaches. The effective identification and therapy of the underlying cause of headaches requires a

therapeutic strategy that is thoughtful and deliberate. Because of this, ophthalmologists are often the first line of defense when it comes to recognizing and treating headaches that are associated with medical crises. When it comes to the treatment of headaches, it is essential to remember the "red flags," and prompt referral to other experts is also very important [3]. It is vital to collect a complete history since the majority of headaches (90%) are uncomplicated primary headaches, which may be diagnosed solely based on the patient's medical history. If dealing with a patient who is experiencing headaches, it is imperative that the possibility of ocular causes be kept in mind at all times. Because of the strong connection that exists between the eyes and headaches, an ophthalmologist has the potential to play a significant part in both the accurate diagnosis and effective treatment of headaches. While managing headaches isn't always simple, it's usually worth the effort because of the

benefits it brings. The role of an ophthalmologist in determining the source of a patient's headache and in the overall examination of the patient is discussed in detail. Whether the patient has asthenopia because of a refractive error or an organic eye illness, the ophthalmologist will not only identify the etiology but will also treat the patient by providing them with the appropriate therapy. When a headache is the symptom of a condition that affects the central nervous system, an ophthalmologist may offer the neurologist with useful information about the nature of the process and the location of the problem.

MATERIAL AND METHODS

An investigation with a cross-sectional design was conducted out by researchers in the ophthalmology department of the hospital. This research includes participation from all of the patients who came to our department complaining of headaches. Individuals who were suffering from conditions unrelated to their eyesight, patients who were very sick or disabled, and women who were pregnant or nursing were not included in this research.

METHODOLOGY

All of the patients who went to the Department of Ophthalmology complaining of headaches were evaluated, and those who were found to have ocular causes were enrolled in the study. Prior to enrolling them, the study requirements were explained to them in a language that they could comprehend, and they gave their written informed consent. Clinical evaluations were carried out on these recruited participants. The subject's visual acuity was evaluated using Snellen's chart or the E chart at a distance of 6 meters. After that, each patient was put through an examination with a slit light, their eyes were measured with an autorefractometer, and tropicamide eye drops were used to dilate their pupils. When the pupil was dilated, a fundus examination was performed, then wet retinoscopy was performed, and finally acceptance was granted. Patients were instructed to return in three days for post-mydratic testing, following which appropriate correction was administered. Some individuals had an intraocular pressure measurement as well as a gonioscopic examination after the results of the fundus examination. In a handful of the instances, a CT scan as well as other pertinent investigations were performed to confirm the diagnosis. Individuals whose headaches were caused by factors other than their eyes were sent to the departments of medicine, psychiatry, or another relevant specialty.

STATISTICAL ANALYSIS

Excel was used to create a spread sheet using the acquired information. For quantitative variables, a descriptive statistical analysis was carried out using the mean and standard deviation, while for categorical variables, analysis was carried out using frequency

and percentages. The Chi square test was used in order to investigate the degree of correlation between the categorical variables. The SPSS statistical program, version 25.0, was used to do the analysis on the collected data.

RESULTS

Throughout the course of our research, an average of one hundred patients visited our outpatient clinic complaining of headache each month. In the investigation, around 20–30 instances were discovered to have ocular causes. The fraction of ocular causes of headaches increased to 30% as a result of this. In a sample of 100 patients diagnosed with headaches caused by ocular conditions, 47 of those patients (or 47%) fell into the age range of 20–30 years, while the remaining 29 patients (or 29%) were in the age range of 30–40 years. Women are more likely to suffer from headaches than men. In all, there were 69 ladies (representing 69% of the total) and 31 men (representing 31% of the total). The incidence of headaches with an ocular origin is highest among students (approximately 37%), with housewives coming in second (about 34%). The acute and subacute forms of headache are more prevalent than the chronic form of headache. The frontal headache is the most frequent kind of headache and may be found in 66% of cases. Patients whose final correction is less than one diopter are more likely to complain of headaches than those whose powers are greater. According to this analysis, it comes out to roughly 66%, which is a big amount. The most prevalent ocular cause of headaches is astigmatism, accounting for 36% of cases. After presbyopia, hypermetropia is the second most prevalent cause of presbyopia, accounting for 29% of cases. 16% of it may be attributed to other factors. The refractive defects in that astigmatism are the most prevalent ocular cause of headaches, followed by hypermetropia, presbyopia, and other reasons such as glaucoma, papilloedema, and strabismus. Mixed type of astigmatism is observed in 15% of patients with astigmatism who came with headache, followed by simple myopic type of astigmatism which is seen in 10% of instances in astigmatism patients who presented with headache.

Table 1: Basic profile of the patients

Age Group	Number	%
below 20	8	8
20– 30	47	47
30 – 40	29	29
above 40	16	16
Gender		
Male	31	31
Female	69	69
Occupation		
Students	37	37
Housewife	34	34
Farmer	12	12
Clerk, Tailor	4	4

Technical Personnel	3	3
Others	10	10

Table 2: Distribution of Headache and its characteristics

Head ache Duration	Number	%
Acute	10	10
Sub-acute	26	26
Chronic	64	64
Headache Region		
Frontal	66	66
Occipital	11	11
Combined	23	23
Final Correction		
O D	6	6
< 1 D	66	66
1.25 - 2 D	22	22
> 2 D	6	6

Table 3: Ophthalmic causes of headache

Diagnosis	Number	%
Astigmatism	36	36
Hypermetropia	29	29
Presbyopia	19	19
Others	16	16
Type of Astigmatism		
Mixed	15	15
Myopia	1	1
Simple Myopic	10	10
Compound Myopic	6	6
Simple Hypermetropic	4	4

DISCUSSION

While headaches are the most prevalent complaint, they have a tremendous influence not only on individual health but also on the health of the whole population. While managing headaches isn't always simple, it's usually worth the effort because of the benefits it brings. In this article, we will discuss the role that an ophthalmologist plays in the process of diagnosing and evaluating a patient who is suffering from headaches. Whether asthenopia or an organic eye illness is the source of the headache, the ophthalmologist is able to not only detect the aetiology but also heal the patient by providing them with the appropriate treatment. According to the findings of our research, thirty percent of headaches may be attributed to issues with the eyes. According to the findings of the research conducted by Shashi Jain and colleagues[4], ocular headache was present in 36% of the patients.

Among the population that we studied, we discovered that those between the ages of 20 and 30 had the highest prevalence of headaches at 47%. The frequency was found to be 29% among those whose ages ranged from 30 to 40 years old. According to the findings of Shashi Jain's research, the highest occurrence was seen in those between the ages of 15 and 30 (46.8%). Dhir, Ahmed, and Zuberi all came to

the same conclusion, reporting that the largest incidence of headache occurred in the age bracket of 20–30 years and 15–20 years correspondingly [4-6].

This specific age group is more likely to suffer from headaches as a result of the psychological stress brought on by the educational requirements for professional development, the stress brought on by employment, the emotional issues brought on by family disputes, and so on.

According to the findings of our research, the prevalence of headaches is much greater among females (69%) than it is among men (31%) across all age categories. In additional investigations carried out by Shashi Jain, Lanchner, Donahue, and Dhir, similar results were discovered. These researchers stated that the incidence of headaches in females was 56.5%, 58.3%, 56%, and 57%, respectively, in their separate studies[4-8]. Marasini et al. identified an increased prevalence of headaches among females in their study[9]. There is a larger likelihood of emotional instability, hormonal fluctuation, and psychological stress in females, which may be the cause of the increased occurrence of headaches in females. According to our research, those with ocular conditions were more likely to suffer from headaches (37%), followed by housewives (34%). In their respective studies, Shashi Jain and Brown and Kronfeld observed very comparable findings, with 52% and 60% of the student group experiencing headaches respectively [4,10]. It's possible that the family and school environments that place so much emphasis on academic success are to blame for headaches experienced by children of this age group [9]. According to the results of our research, persistent headaches are more prevalent, as they were present in 64% of the cases. According to the results of our research, frontal headache was the most prevalent kind, occurring in around 66% of the patients. According to the findings of Shashi Jain and colleagues' research, 67.7% of patients suffered from anterior headache. In addition, Marisani et al. showed that frontal headache was present in 49% of the patients that were investigated [9]. Although the ophthalmic division of the trigeminal nerve is represented most caudally, the origin of ciliary discomfort is most often found towards the front of the head. According to the results of our research, the prevalence of headaches was rather greater in those who had refractive errors (65%), followed by presbyopia (19%) and then other reasons (16%), such as muscle imbalance and anomalies in the anterior and posterior segments. Shashi Jain [4] came to the same conclusions based on his own observations. Moreover, Uzma fasih found that 14.78% of presbyopics suffered from headaches [11]. Inflammatory diseases of the eye and sudden increases in intraocular pressure (IOP) are two potential causes of discomfort in and around the eye, as well as headaches. An abrupt rise in intraocular pressure is often accompanied with a painful sensation

in the eye, but an eye that has seen a comparable rise in pressure over a longer period of time may not exhibit any symptoms. The most prevalent kind of painful glaucoma is called acute angle-closure glaucoma, and other types of secondary glaucoma, such as lens-induced glaucoma, are also linked with abrupt pressure spikes and pain [12,13]. Dhir also observed that muscular imbalance for near, namely exophoria, had a more significant role in the development of headaches. The extraocular muscles, which are under the regulating effect of fusion, are responsible for maintaining both binocularity and parallelism. When there is an imbalance in the muscles, the extraocular musculature is stressed, and since it is densely packed with nerve endings that are sensitive to pain, this may cause ocular asthenopia as well as headaches [14]. In the research conducted by Uzma fasih [11], papilledema was seen in two out of eleven patients (0.53%). Papilledema is a condition that often requires immediate neuroimaging in order to rule out potential causes such as a tumor, hydrocephalus, or hemorrhage [15]. According to the findings of our research, astigmatism was the most prevalent kind of refractive error, occurring in 36% of instances. This was followed by hypermetropia, which happened in 29% of cases. According to another study conducted by Shashi Jain, astigmatism accounts for 42.33 percent of all headaches, with hypermetropia coming in second place at 21.46 percent [4]. In addition, Ahmed and Zuberi discovered that 59% of patients with headache also had astigmatism and that 11% of patients also had hypermetropia [16]. In addition, Marasini discovered that astigmatism occurred in 63.63% of cases, hypermetropia occurred in 27.27% of cases, and myopia occurred in 9.09% of cases [9]. Patwardhan and Sharma both claimed to have found the similar trend regarding the occurrence of refractive errors in headache patients [17]. Mechanism of headache from ciliary muscles contraction in hypermetropia of equal or different degrees where patients accommodate to see clearly and in astigmatism, especially of low degree or moderate degree, where muscles contract irregularly, which may cause more severe headache [4]. In hypermetropia of equal or different degrees, patients accommodate to see clearly. Of the patients who participated in our research, 66 percent of them had a refractive error of less than 1 dioptre, and 22 percent of them fell between the range of 1.25 to 2 dioptres. Shashi Jain and Griffith both reported similar findings, and both of them emphasized that even minor astigmatism errors might be the cause of more severe ocular asthenopia [4,18]. Cogan also found that headaches were caused by minor refractive defects, particularly hypermetropia and astigmatism [19]. According to the results of our research, the significance level is more than 0.001. The involuntary, prolonged, and excessive accommodative efforts that people with hypermetropic and mixed astigmatism are forced to do place a strain on their

eyes. This may be the cause of the greater occurrence of headaches that are associated with these conditions.

CONCLUSION

The majority of people who have eye issues also suffer from headaches. So, while treating a patient who is complaining of headaches, it is important to consider possible ocular causes. Individuals who complain of headaches should have their eyes examined to rule out the possibility of any eye-related problems, particularly refractive errors and binocular vision abnormalities. When dealing with a patient who is experiencing headaches, it is crucial to place a focus on doing a comprehensive examination and sending the patient to the proper expert.

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