REFRACTIVE ERRORS AND HEADACHE: A CLINICAL STUDY AMONG PATIENTS ATTENDING OPHTHALMOLOGY OPD IN A TERTIARY CARE HOSPITAL

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ABSTRACT
BACKGROUND-One of the most common cause for headache among patients attending ophthalmic OPD is uncorrected refractive errors. The purpose of this study is to evaluate the role of refractive errors in the etiology of headache.
MATERIALS AND METHODS-450 patients with headache attending eye OPD in GMC Jammu were included in the study. It was a crosssectional study. They were subjected to visual acuity examination, refraction, slit lamp examination, fundus examination and retinoscopy wherever required
RESULTS- Out of the total patients 40% were males and 60% were females. 41.1% of the patients had astigmatism, 31.1% of the patients had hypermetropia. chronic type of headache was more common (46.7%) followed by subacute 33% and acute in 20.3%. We found that headache was seen more commonly in frontal area (57.8%) followed by occipital (32%) and combined (10.2%). The most common type of refractive error in these patients was astigmatism 41.1% followed by hypermetropia 31.1% followed by presbyopia 16.7% followed by myopia 11.1%. Amount of refractive error between 1.25D -1.5D was seen in 40% of the patients, followed by 1.5 -2D seen in 24.4%, followed by refractive error less than 1.25D seen in 20 % of the patients, followed by refractive error more than 2D seen in 15.6% of the patients. After optical correction there was improvement in headache of patients.
CONCLUSION- Refractive errors play a major role in the Etiology of headache, which can be managed by appropriate correction of these refractive errors. So, early Diagnosis and adequate treatment is important.
Keywords-Headache, Refractive errors, Myopia, Hypermetropia, Astigmatism, Presbyopia.

I.   INTRODUCTION

Headache is a major complain of the patients attending ophthalmic OPD worldwide. It can be associated with numerous etiologies related to medicine but ophthalmological causes also form a part of etiology of headache.[1] Among the ocular causes,refractive errors play an important role. The patient presents withocular discomfort on long hours of near and distance work.[2] This is associated withheadache usually in the frontal region. Proper management and evaluation of this type of headache is important.[3]Mechanism of headache in hypermetropia is from ciliary muscles contraction, where patients accommodate to see clearly and in astigmatism, especially in lower degree, where muscles contract irregularly which causes

more severe headache.[4]The purpose of this study is to evaluate the role of refractive errors in the etiology of headache among patients attending ophthalmology OPD in a tertiary care hospital.

II.   MATERIAL AND METHODS

A cross sectional study was conducted on 450 patients attending eye OPD in GMC Jammufrom January 2018 to June 2018 after obtaining consent from institutional ethics committee.The preferred age group was 18 to 65 years of age.

The patients associated with systemic causes of headache and other ocular causes were excluded from the study. After obtaining informed consent,the patients complaining of headache were subjected to ophthalmic examination in the form of visual aquity examination,refraction,slit lamp examination,fundus examination, IOP measurement,retinoscopy wherever required. The estimation of type of refractive error and amount of refractive error was done.The patients were followed for 1 month and their symptoms improved after refractive error correction.Myopiawas defined as the spherical equivalent refraction of atleast -0.50 D,hypermetropia as the spherical equivalent refraction of atleast +2.0Dand astigmatism as the cylinder of atleast 1.0D.[5]The data was collected in excel spread sheet and analysed. P value less than 0.05 was considered significant.

III.   RESULTS

Table I Age wise distribution of patients

Age group (Years)	Number	P value
18-25	33.3%	0.05
25-35	26.7%	
35-45	22.2%	
45-65	17.8%	

Table I shows that out of 450 patients in the agegroup ranging from 18 to 65 years, incidence of headache was seen to be maximum in the agegroup 18 to 25 years(33.3%) followed by 25 to 35 years(26.7%). The incidence was seen to be lowest in the age group 45 to 65 years(17.8%).The difference was significant (P< 0.05).

Table II Gender wise distribution

Total- 450		
Gender	Male	Female
Number	40%	60%

Table II shows that females showed a higher incidence of 40% as compared to males(60%).

Table III Type of headache

Type	Percentage	P value
Acute	20.3%	0.02
Subacute	33%	
Chronic	46.7%	

Table III shows that chronic type of headache was more common(46.7%) followed by subacute 33% and acute in 20.3%. The difference was significant (P< 0.05).

Table IV Distribution based on area involved

Type	Percentage	P value
Frontal	57.8%	0.01
Occipital	32%	
Combined	10.2%	

Table IV shows that headache was seen more commonly in frontal area (57.8%) followed by occipital (32%) and combined (10.2%). The difference was significant (P< 0.05).

Table V Distribution of headache according to the type of refractive error

Type	Percentage	P value
Astigmatism	41.1%	0.03
Hypermetropia	31.1%	
Presbyopia	16.7%	
Myopia	11.1%	

Table V, graph I shows the most common type of refractive error in these patients was astigmatism 41.1% followed by hypermetropia 31.1% followed by presbyopia 16.7% followed by myopia 11.1%. The difference was significant (P< 0.05).

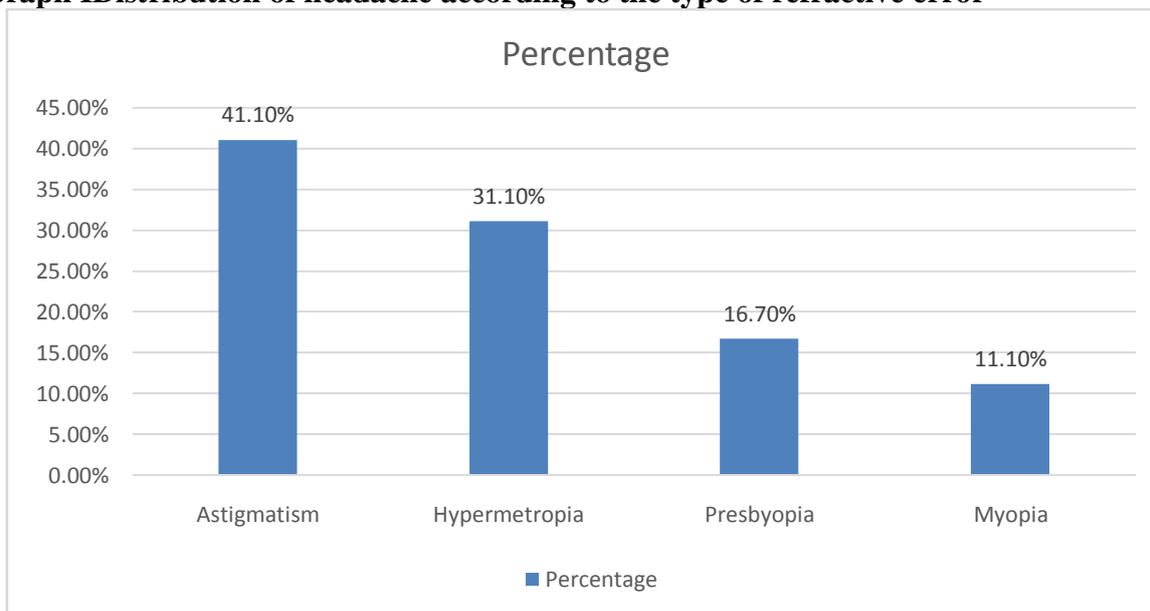**Graph IDistribution of headache according to the type of refractive error**

Table VIRefractive error according to final diopteric correction

Refractive error	Percentage	P value
1.25D -1.5D	40%	0.03
1.5 -2D	24.4%	
1.25D	20%	
2D	15.6%	

Table VI shows that amount of refractive error between 1.25D -1.5D was seen in 40% of the patients,followed by 1.5 -2Dseen in 24.4%,followed by refractive error less than 1.25D seen

in 20 % of the patients,followed by refractive error more than 2D seen in 15.6% of the patients. The difference was significant (P< 0.05).

IV. DISCUSSION

Headache and refractive errors are the common health problems in general population. The prevalence of refractive errors (RE) in the general population was reported to be from 13 to 80% based on variety of geographic areas and age group. Studies on ocular headache have reported the role of different ocular diseases like glaucoma, uveitis, optic neuritis, visual anomalies like refractive errors, accommodative and vergence deficiencies as the cause of headache.[6] The uncorrected refractive errors are often associated with frontal and /or occipital headache. The role of refractive errors in headache is very important. The patients can present with other ocular complains like watering, photophobia, diplopia, itching, redness and asthenopic symptoms associated with headache.[7]The purpose of this study is to evaluate the role of refractive errors in the etiology of headache among patients attending ophthalmology OPD in a tertiary care hospital.

In present study, females showed a higher incidence of 40% as compared to males (60%). Similar findings are seen in other studies done by Shashi Jain[8], Lanchner[9] who reported incidence of headache in females to be 56.5%, 58.3%, 56%, and 57% in their respective studies. Supriya et al[10] in their study150 patients with headache due to refractive error were included. The type and amount of refractive error were estimated. Females (72%) suffer more than males from headache.

In our study maximum patients (33.3%) were in age group 18-25 years. Krishna et al[11] found maximum patients in age group 36-45 years of age. We found that chronic type of headache was more common (46.7%) followed by subacute 33% and acute in 20.3%. We found that headache was seen more commonly in frontal area (57.8%) followed by occipital (32%) and combined (10.2%).Supriya et al[10] also found that refractive errors are more commonly associated with frontal headache (67%). Shashi Jain[8] in their study also reported that 67.7% of patients had anterior headache.

We found that the most common type of refractive error in these patients was astigmatism 41.1% followed by hypermetropia 31.1% followed by presbyopia 16.7% followed by myopia 11.1%.Marasini[12] also found that astigmatism was seen in 63.63%, hypermetropia in 27.27%, and myopia in 9.09% cases. Patwardhan and Sharma[13] also claimed the same trend of refractive error prevalence in headache patients. Krishna et al[11] found that a majority (75%) of the patients with headache were diagnosed to have asthenopia attributed to refractory errors.

We found that amount of refractive error between 1.25D -1.5D was seen in 40% of the patients, followed by 1.5 -2D seen in 24.4%, followed by refractive error less than 1.25D seen in 20 % of the patients, followed by refractive error more than 2D seen in 15.6% of the patients.Shashi Jain[8], Griffith[14], who stressed that small astigmatism errors were responsible for more severe ocular asthenopia. Cogan[15] also reported that small refractive errors, especially hypermetropia and astigmatism, causes headache.

V. CONCLUSION

As we noted in the study that after optical correction,the symptoms improved.Headache caused due to ophthalmological causes was relieved.Higher incidence of headache in hypermetropes and astigmatic patients may be related to ciliary muscle contraction and accommodation in them.Ocular causes leading to headache need to be treated, the refractive errors as a cause of headache need to be evaluated and corrected,after complete ophthalmological evaluation.

VI.   REFERENCES

1. Kempen JH, Mitchell P, Lee KE, Tielsch JM, Broman AT. The prevalence of refractive errors among adults in the United States, Western Europe, and Australia. Arch Ophthalmol. 2004; 122: 495-505.
2. Dandona R, Dandona L, Naduvilath TJ, Srinivas M, McCarty CA. Refractive errors in an urban population in southern India: the Andhra Pradesh Eye Disease Study. Invest Ophthalmol Vis Sci. 1999; 40: 2810-2818.
3. Bellows JG. Headache and the eye. Headache.1968;7:165-170.
4. Thomas E, Boardman HF, Ogden H, Millson DS, Croft PR. A device and care for headaches: who seeks it, who gives it?Cephalalgia.2004;24:740-752.
5. Arsen Akinci, Alev Güven, Aydan Degerliyurt, Esin Kibar, Murad Mutlu, Mehmet Citirik. The correlation between headache and refractive errors. J AAPOS 2008 Jun;12(3):290-3.
6. WhittingtonTD. The art of clinical refraction.London:Oxford University Press; 1958. 7
7. Gordon DM. Some Headaches in an ophthalmologist's office. Headache. 1966;6:141-146.
8. Jain S, Chandravanshi SL, Dukariya L, Tirkey ER, Jain SC. Clinical study of headache with special reference to ophthalmic cause. Int J Med Sci Public Health 2015;4:292-7.
9. Lanchner AJ. Headache in ophthalmic practice. Neurology 1952;2:471–6.
10. Supriya, Lokesh HM. To study the clinical correlation of headache and refractive error subtypes. JMSCR 2019; 687-691.
11. Krishna KSR. A clinical study on causes, characteristics and management of headache in patients attending ophthalmology OPD at an apex eye hospital. J. Evolution Med. Dent. Sci. 2017;6(79):5598-5601.
12. Marasini S, Khadka J, Sthapit PRK, Sharma R, Prasad B. Ocular morbidity on headache ruled out of systemic causes- A prevalence study carried out at a community based hospital in Nepal. Nepal J Optom 2012;5:68-74.
13. Patwardhan SD, Sharma P, Saxena R, Khanduja SK. Preferred clinical practice in convergence insufficiency in India: a survey. Ind J Ophthalmol. 2008;56:303- 306
14. Griffith A. The eyes as a cause of headache. Br Med J 1934;2:296–7.
15. Cogan DG. Popular misconceptions pertaining to ophthalmology. New Engl J Med 1941;224:462–6.