Role of Spectacles in Management of Migraine, Truth or Myth

[1]Dr Nayana P K, Post graduate, Department of Ophthalmology, HIMS, Hassan

[2]Dr Pavana Acharya, Assistant Professor, Department of Ophthalmology, HIMS, Hassan

[3]Dr Kavitha CV, Professor and HOD, Department of Ophthalmology, HIMS, Hassan

[4]Dr Sandeep K, Associate Professor, Department of Ophthalmology, HIMS, Hassan

[5]Dr Anusha K S, Postgraduate, Department of Ophthalmology, HIMS, Hassan

[6]Dr Rathod Vishakha, Post graduate, Department of Ophthalmology, HIMS, Hassan

Corresponding Author: Dr Nayana P K, Post graduate, Department of Ophthalmology, HIMS, Hassan

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Abstract

Introduction:Patients with migraine are often a cause of headache for an Ophthalmologist. Hence we aim to analyze the effect of spectacles on symptomology of migraine.

Methodology:250 patients with clinically diagnosed migraine were included in the study.A thorough history of migraine was elicited regarding number of attacks/months, associated symptomsand intensity. After thorough ophthalmologic evaluation all patients were prescribed spectacles. Grading of migraine symptoms both prior and after spectacle correction was done.

Results: Mean ageof our study was 26. Among that 53% were females,80%had grade I/II migraine.66%patients had minor refractive error (16.8% spherical error,32% cylindrical error,12.8% mixed refractive error) they were given appropriate glasses.Plano glasses were given for 95 patients who did not have any refractive error. Follow up was done 3 months later,69% patients showed improvement,4% had worsening of symptoms. Among95 patients prescribed with plano glasses72%improved.

Conclusion: Even mild &non-significant refractive errors seem to be linked to migraine & addressing this could potentially reduce the frequency and intensity of migraine headaches. Since patients with no refractive error improved with plano glasses, spectacles contributing as a psychological therapy cannot be ruled out.

Keywords: Cylindrical Error, Migraine Headaches, Psychological Therapy

Introduction

One of the most prevalent incapacitating conditions, migraine is characterized by pulsing headaches that last for several days or more and are accompanied by nausea, vomiting, sensitivity to light, and sound[1]. Around the world, 14% of people have experienced migraine occasionally[1].

There is still much to learn about the etiology of migraines. Although a number of vascular, hormonal, and neural correlates of headache have been reasonably thoroughly documented, it is still unknown whether or not these elements have a causal role in the onset of headaches[1]. Migraine patients often turn to ophthalmologists seeking evaluation and relief from headaches. Even though minor refractive errors typically do not account for significant headache symptoms, severe refractive errors can indeed contribute to headaches, and in the case of migraine patients, even those minor errors may serve as triggers[1]. Despite numerous studies exploring the relationship between refractive errors and migraines, conflicting evidence persists regarding their correlation. And there is a general belief that spectacles can cure headache. Thus, our objective is to evaluate the effectiveness of spectacle correctionas a component of migraine therapy. By shedding light on the incidence of refractive errors in this population and assessing the impact of corrective measures on migraine symptoms, we aim to provide insights that can inform more tailored and effective management strategies for migraine patients seeking relief from ophthalmological interventions.

Materials and Methods

It was a hospital-based Non randomized interventional studycarried out among the patients presenting to the outpatient department of ophthalmology of a tertiary care centre, HIMS Hassan from June 2022 to June 2023. The aims and objectives of the intended study were explained to the subjects and informed written consent was taken. Data was collected as per the proforma sheet. Institutional ethical clearance was obtained. No financial support and conflicts of interest.

Average number ofmigraine patients coming to ophthalmology OPD is 14%,so the sample size calculated was 250.All patients fulfilling the migraine diagnosis criteriaaccording to ICHD 3[2] were included in study

Any patient with other types of headaches (Cluster head ache,Tension headache,Secondary headaches) any high uncorrected refractive errors (>1D spherical/>0.5Dcylindrical)/already using spectacles , patients presenting in acute phase preventing ocular examination and pre existing ocular diseases(Glaucoma,Uveitis,Strabismus,Phorias,Tropias, Ocular Inflammations) were excluded from the study.

Patients fulfilling the inclusion criteria were recruited into the study.Socio-demographic data was collected. Along with presenting complaints, past history, family history, personal history detailed history aboutmigraine was be elicited regarding no. of attacks/month, associated symptoms & intensity.

Intensity of migraine will be graded into mild moderate and severe

Mild	Mild throbbing type Not limiting any functional activity
Moderate	More intense and throbbing Functionally impaired
Severe	Excruciating pain Incapacitated

Patients presenting in acute phase will be managed with oral medications and called up later for evaluation

Finally migraine attack of each patient will be graded[3]

Grade 1(mild)	No. of attack / month- $\leq$ 1 Intensity: mild Duration: up to 8 hours
Grade 2(moderate)	No. of attack / month- $\leq$ 2 Intensity: moderate Duration :8 to 24 hours
Grade 3(severe)	No. of attack / month- $\leq$ 3-4 Intensity: severe Duration :12 to 48 hours

A thorough ophthalmological workup was done as follows:Unaided visual acuity using Snellen's chart, Refractive error calculation using Automated refractometer and Manual wet refraction using 0.4% tropicamide and streak retinoscope. Appropriate spectacle correction was given apart from medical therapy and participants were advised to use spectacles at least for 4 working hours a day. Anterior segment examination using slit lamp and fundus examination using indirect ophthalmoscope was done as part of routine ophthalmologic work up. After 3 months patients were followed up and detailed history was again taken regarding number of attack /month duration and intensity of migraine.

Statistical Methods

Categorical data were represented in the form of frequency and percentage. Quantitative data were represented as mean. Resultswere analysed using Independent-t test. $P < 0.05$ was considered statistically significant.

Results

Out of 250 patients in our study Mean age was26.66 years. With a female preponderance of 53.6%.The age distribution of our study is give in Table 1.

Age	No of Cases	Percent
20	73	29.2
21-30	119	47.6
31-40	38	15.2
41-50	15	6.0
51-60	5	2.0

Table 1: Age distribution

Grading of migraine was done at the beginning of examination.>80% had mild and moderate grade of migraine. (Table 2)

Baseline Grade of Migraine	No of Cases	Percent
Mild(Grade1)	119	47.6
Moderate(Grade2)	111	44.4
Severe(Grade3)	20	8.0

Table 2: Baseline grading of migraine

66%patients had mild refractive error, among that 16.8% had spherical error,32% had cylindrical error,12.8%had mixed refractive error, all were prescribed appropriate glasses. 38 %(95 patients)of patients had no refractive error hence prescribed with plano glasses.(Table 3)

| Refractive error	No of cases	Percentage
Spherical error	42	17
Cylindrical error	81	32
Combined error	32	13
No refractive error	95	38

Table 3: Refractive status

Out of 250 patients 69% showed symptomatic improvementat the end of 3 months.27 % continued to be in same grade and 4 % showed worsening. Among 95

patients with no refractive error who were prescribed with plano glasses 72 % showed improvement.

Among 155 patients with mild refractive error who were prescribed glasses based on their refractive error 65% had improved 25 % continued with same grade 4 % had worsening. Patients who had cylindrical refractive error had better improvement (71 %) (Graph 1)

Graph 1: Follow up migraine grading after 3 months

REFRACTIVE ERROR

- improved migraine grade
- same migraine grade
- worsening of migraine grade
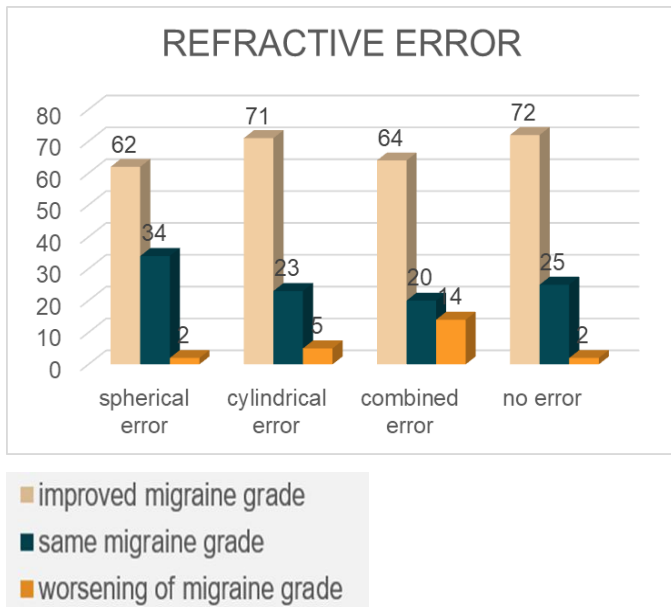
Discussion

The findings of this study provide valuable insights into the relationship between refractive errors and migraine symptoms, shedding light on the potential role of spectacles in managing migraine. The inclusion of 250 clinically diagnosed migraine patients allowed for a comprehensive analysis of symptomology before and after spectacle correction. The majority of patients exhibited mild to moderate migraine severity, with a significant proportion presenting with refractive errors. This was similar to the previously published studies by Harle et al titled "The Correlation Between Migraine Headache and Refractive Errors" and found that higher degrees of astigmatism in the migraine group[4] ,Akinci et al did a study on "The correlation between headache and refractive errors" and the conclusion was Compound and mixed types of astigmatism, anisometropia, and mis correction of refractive error were found more often in patients with headache than in control subjects[5] and Gunes et al's study on "Refractive Errors in Patients with Migraine Headache" concluded that Migraine patients may have higher degrees of astigmatism, SE, and anisometropia[1].

Interestingly, the study revealed that even non-significant refractive errors were prevalent among migraine patients, with a considerable proportion benefiting from appropriate spectacle correction. The observed improvement in migraine symptoms following spectacle intervention suggests a potential link between refractive errors and migraine pathophysiology. This highlights the importance of considering ophthalmologic evaluation as part of the diagnostic workup for migraine patients, particularly in cases where refractive errors are present.

Furthermore, the significant improvement noted in patients prescribed plano glasses, despite having no refractive error, raises intriguing questions about the psychological aspect of spectacle use in migraine management. While the mechanism behind this phenomenon remains unclear, it underscores the multifaceted nature of migraine treatment and the potential role of psychological factors in symptom relief. Overall, these findings support the notion that addressing even mild refractive errors could contribute to reducing the frequency and intensity of migraine headaches. However, further research is warranted to elucidate the underlying mechanisms and to explore the broader implications of spectacle therapy in migraine management. Additionally, considering the psychological impact of spectacles on migraine

symptoms opens new avenues for holistic approaches to migraine care, emphasizing the importance of interdisciplinary collaboration in optimizing patient outcomes.

However, several questions remain unanswered, necessitating future research endeavours. For instance, the specific mechanisms through which refractive errors contribute to migraine pathophysiology warrant further investigation. Additionally, elucidating the psychological factors underlying the observed symptom improvement with plano glasses could provide valuable insights into alternative therapeutic approaches for migraine.

Conclusion

Even though a common notion exist in society believes that spectacles have a significant role in management of headaches we were trying to assess the actual impact of this belief. The findings suggest a notable association between even minor refractive errors and migraine symptoms, highlighting the potential significance of addressing this connection in migraine management. Exploring the relationship between mild refractive errors and migraines could offer crucial insights into mitigating both the frequency and intensity of these debilitating headaches. Moreover, the role of plano glasses emerges as an intriguing aspect, potentially serving as a psychological intervention in migraine therapy. Further investigation into this relationship holds promise for advancing our understanding of migraine pathophysiology and optimizing therapeutic strategies for individuals affected by this prevalent and burdensome condition.

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