PRISM MANAGEMENT AS INITIAL THERAPY IN OCULAR NERVE PARESIS / PALSY

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ABSTRACT

PURPOSE: *To use prisms as first line management in patients of diplopia secondary to ocular nerve palsy/paresis.*

METHODS: *This cross- sectional study included 32 patients who had symptomatic diplopia secondary to third, fourth and sixth nerve palsy were investigated in Orthoptic Clinic. Data on the onset and duration of diplopia, Hess charting, sensory assessment, motor examination, prism trial and amount of prism prescribed were recorded. The success of prescribed prismatic correction was assessed by the patient's self-reporting of satisfaction with prism use and follow-up. The main outcome measure was to relief diplopia with the use of prisms as first line management in patients with ocular nerve palsy.*

RESULTS: *Out of 32 patients of diplopia 23(71%) patients were with ocular nerve palsy and 09(28%) patients with nerve paresis. Prisms were prescribed to 30 patients. Among 23 patients who had diplopia due to nerve palsy, 95% of the patients reported satisfaction with prisms. During the length of follow-up, which ranged from 1-2 months 86% continued using prisms. 13 patients who had deviation greater than 10 PD, 80% of the patients were happy with prisms. Overall, 90% of patients were satisfied with the use of prisms.*

CONCLUSION: *The study concludes that prisms are effective for the management of patients with symptomatic diplopia due to third, fourth and sixth nerve palsy. Prisms should be considered as initial therapy in symptomatic diplopia due to ocular nerve palsy/paresis. Even in patients with larger deviations who were prescribed greater than 10 PD of correction, the success rate of prisms in alleviating diplopia was high.*

KEYWORDS: *Diplopia, prism, palsy & paresis.*

INTRODUCTION

Diplopia was a frequent complaint in neurological practice in both in-patients and out-patients. A bit by bit regular move toward each patient with diplopia will assist in avoiding misdiagnosis and extended patient care.[1]

Diplopia is known to occur after various ophthalmic surgical procedures for perceptual, neuro-ophthalmology, strabismus and even unknown causes. Diplopia non-surgical treatment included no therapy, partial or complete occlusion, prisms and vergence exercises to raise amplitudes of fusional reserve.[2]

Double vision, visual uncertainty, and vestibular ocular reflex disturbance may all lead acute start of ophthalmoplegia. These manifestations may be called as diplopia, which was a general presenting problem to the clinician and a upsetting symptom for the patient.[3]

Prisms remove diplopia by adjusting the direction of light to represent the fixing object on the fovea of both eyes in spite of misaligned eyes. The path of light was deflected toward prism base. Therefore, in patients with comitant variations, prisms were most effective in removing diplopia. As the point of fixation fall on each eyes fovea, prism can also provide fusion and stereopsis.[4]

Optically, prism is a translucent optical constituent with plane and refined surfaces refracting light. The precise angles among surfaces depend on the application. The conventional geometric form is that of a trigonal base and oval sides and, in common usage, the "prism" usually indicates to this type. Prisms are prepared from any matter translucent to the wavelength for which they were intended.[5]

Prisms are used in identification and treatment of ophthalmic disorder. Prism treatment gives symptomatic aid not merely in various types of squints, moreover in non strabismic condition like convergence insufficiency, nystagmus, hemianopia etc. One of the most significant curative proficiency obtained in this route, is the localization of such medical needs and the appropriate use of the astonishing curative functions of prisms for the liberation of such conditions.[6]

By balancing the off-axis corrective lenses, the images can be moved in similar way as a prism moves the images. Clinicians make use of prisms to cure different orthoptic complications. Glasses with only prism make a comparative shift of the two eyes. On the other hand ,equal power prism glasses for both eyes, called caliper prisms change the visual field of both eyes equivalently.[7]

Ocular nerve palsies are well-recognized disorder in ocular motility. A large population trial showed higher proportion of sixth nerve palsies followed by third and then fourth nerve palsies, the prevalence of third, fourth and sixth nerve palsies were recorded.[8]

Ocular nerve palsies are commonly found in clinical practice and generally demonstrate a central, regional or general underlying disease. It is necessary to conduct a thorough anamnesis, a clinical analysis as well as complementary investigations in order to find out etiology.[9]

Eye motor nerve can be damaged anywhere along its path, from the nucleus to the orbital apex. If several nerves are involved, the localization can be apparent based on the knowledge of where the nerves move together or other localization hints.[10] Patients with clinically diagnosed single cranial nerve paralysis linked with diabetes or hypertension are likely to get better spontaneously within 5 months and need monitoring initially only.[11]

Managing eye motor paralysis first requires careful etiology judgment. Occlusion in one eye may be used in the initial phase of acute ocular motor dysfunction to remove diplopia. Options involve patching or adding transparent or stain tape to one of the eyes, which avoids diplopia. A prismatic correction put on or in the glasses can also boost performance and regain binocularity.[12]

Third nerve palsy clinical treatment is most difficult among all three motor nerve palsies as four out of six extra ocular muscles are involved and therefore must be treated accordingly.[13] Because of long intracranial route, the abducent nerve is vulnerable to injure with various kind intra-cranial pathologies, the sixth nerve is prone to toxic substance similar to other cranial nerves.[14]

It is generally believed that prism glasses are most successful in eliminating diplopia in patients with commitant deviations of less than 10-12 prism diopters.[15] The asymmetric deviation and fourth nerve palsy have the highest satisfaction levels for the patients with vertical diplopia.[16]

MATERIALS AND METHODS

This descriptive cross-sectional study included 32 patients who were prescribed prisms for symptomatic diplopia secondary to third, fourth and six nerve palsy were investigated in Orthoptic Clinic. Data on the onset and duration of diplopia, Hess charting, sensory assessment, motor examination, prism trial and amount of prism prescribed were recorded. The success of prescribed prismatic correction was assessed by the patient's self-reporting of satisfaction with

prism use and follow-up. The main outcome measure was to relief diplopia with the use of prisms as first line management in patients with ocular nerve palsy. All data analysis was performed in SPSS 20.0 Software.

RESULTS

This study included 32 patients who had diplopia due to nerve palsy/paresis. 23 patients (71.9%) with nerve palsy and 6 patients (28.1%) with nerve paresis were recorded. There were 24 males and 8 females in this study. Prisms were prescribed to 30 patients (93.8%). Table 1 shows that diplopia was relieved with the use of prism in 29 patients (90.6%). Among 23 patients who had diplopia due to nerve palsy, 95% of the patients reported satisfaction with prisms. During the length of follow-up, which ranged from 1-2 months 86% continued using prisms. 13 patients who had deviation greater than 10 PD, 80% of the patients were happy with prisms. Overall, 90% of patients were satisfied with the use of prisms. The gender, nature and magnitude of diplopia, type and strength of prism, history of prism use, duration of diplopia, and duration of follow-up were not statistically associated with the success of prism use.

Table - 1: Diplopia relieved with prism

	Frequency	Percent
Yes	29	90.6
No	3	9.4
Total	32	100

Table shows relief in diplopia In 29 patients(90.6%) with use of prisms.

DISCUSSION

There were a few reports of patients with fourth nerve palsy in whom a low-power prism prescription effectively treated the diplopia. Apers and Bierlaagh described the effectiveness of prisms in 75 patients with paralytic squint, 18 of who had fourth nerve palsy. The success of prisms in alleviation of diplopia was reported to be 53% in all patients with paralytic squint. Flanders and Sarkis assessed the effectiveness of prisms in 141 patients with horizontal and vertical deviations. These included 55 patients in whom vertical prism was prescribed. The authors reported an overall success rate of 80%, although the results were not separately reported for the fourth nerve palsy group. Overall, the success rate of prisms in our cohort was high at 90%.

Although this study included patients who had been previously given prism, 93% success was noted in patients with no previous prismatic correction.

It had been suggested that for larger deviations, prisms may not be as effective since larger prism increases the weight of the glasses, were more unsightly and can cause asthenopic symptoms. Yet we found that in patients who were prescribed over 10 diopters of prisms over 80% reported satisfaction with prisms. It is therefore recommended that prisms should be tried as initial management even in patients who have large deviations.

Older age was the only factor associated with a satisfaction score that was statistically significant. Differences in gender, type of palsy (congenital or acquired), duration of diplopia, type of prisms (Fresnel or permanent), prior history of prism use and length of follow-up were not associated with greater prism satisfaction scores. Similarly the amount of prism prescribed also was not predictive of the success of prism use. This may be in part due to inadequate sample size of the patients who received larger prism prescriptions.

The characteristics of patients undergoing successful prism treatment were different to those who failed prism treatment. Specifically, Patients who ended up failing prism treatment had poorer quality of life than those who ended up being successfully treated.

In local clinics, it has been observed that occlusion

is given to the patients with diplopia usually which is a temporary management and have effect on activities of daily life like reading writing especially driving. Successful correction of diplopia using prism result in significant improvements in visual function. Prism correction of diplopia provides a valuable non-surgical treatment option and may be especially beneficial in patients with small angle strabismus.

The limitations of our study include data collection that was performed in a retrospective manner with satisfaction scores derived from the patient's own self-reporting rather than a validated questionnaire of patient satisfaction.

In summary, prisms are an effective therapy for management of patients with diplopia due to ocular nerve palsy/paresis. They should be considered in the initial treatment plan for patients with both congenital and acquired nerve palsies.

CONCLUSION

Prisms are an effective modality for the management of patients with symptomatic diplopia due to ocular nerve palsy/paresis. Even in patients with larger deviations including those who were prescribed greater than 10 PD of correction, the success rate of prisms in alleviating diplopia was high. Prisms should be considered as initial therapy in symptomatic patients with third, fourth and sixth nerve palsy.

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