

Role of Vestibular Suppressants (B. Histine, Cinnarizine, Meclizine) after Successful Epley's Maneuvers in Benign Paroxysmal Positional Vertigo

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ABSTRACT

Background: Benign positional paroxysmal vertigo (BPPV) is one of the most prevalent causes of dizziness, affecting between 11 and 64 people per 100,000 each year and 2.4% of the population overall. Vestibular suppressants have been shown in recent studies to be effective in reducing residual symptoms after a successful Epley's maneuvers, however to the best of our knowledge, very few research have analyzed the features of residual symptoms in BPPV patients following Epley's maneuvers. There has been no definitive research on what causes symptoms duration, canal involvement, cumulative successful rate, residual symptoms and dysregulation are among possibilities put up to explain the phenomenon.

Objective: This research focused on role of vestibular suppressants including B.histine, cinnarizine, and meclizine after successful Epley's maneuvers in benign paroxysmal positional vertigo

Study Design: Cross-sectional study

Study Setting: The study was conducted at department of ENT CMH, Multan from 01 January 2022 to 30th October 2022.

Methodology: Total 135 patients were divided into two groups. In group A 60 patients were taking vestibular suppressants and in group B 75 patients were not taking any drugs, both groups had successful Epley's maneuvers in benign paroxysmal positional vertigo Patients were considered for inclusion if they had idiopathic BPPV. A single doctor made the BPPV diagnosis after examining a patient's history and doing a hall pike test. The patients' symptoms duration, canal, cumulative success rate and residual symptoms were measured immediately after treatment, and two weeks. The statistical analysis was done by using SPSS version 20.

Results: In group A out of which 24 were taking B.histine, 26 were taking cinnarizine, and 25 were taking meclizine as vestibular suppressants. In group B, 75 participants after successful Epley's maneuver were not taking any vestibular suppressants. In this study there is 29 males and 31 females in group A and 37 males and 38 females in group B. Interestingly, the success rate with one treatment cycle was higher in the group A ($p = 0.001$). Further analysis of outcomes showed the residual symptoms in patients with a short (≤ 4 days) symptom duration revealed a correlation with the successful Epley's maneuver in group A.

Practical Implication: Vestibular suppressants have been standard practice in most hospitals for the treatment of severe vertigo for decades. Vertigo caused by vestibular imbalance can be treated with vestibular suppressants. When Epley's Maneuvers have been performed successfully in patients with BPPV, the efficacy of Vestibular Suppressants (B.Histine, Cinnarizine, Meclizine) has not been conclusively established. So, their role must be studied.

Conclusion: Finally, we found that patients who used anti-vestibular suppression medication following an Epley's technique for treating and controlling BPPV symptoms fared better than those who did not. We advise the Epley method for BPPV therapy with the maintenance of suppressants for the better management.

Keywords: B.histine, cinnarizine, meclizine, Epley's maneuvers, paroxysmal positional vertigo

INTRODUCTION

One of the most common reasons for dizziness is benign positional paroxysmal vertigo (BPPV) affects anywhere from 11 to 64 persons per 100,000 annually, with a prevalence of 2.4 percent over the course of a lifetime¹. The main symptom of vertigo is a false sense of motion, but it may also be accompanied by other vestibule-oculomotor symptoms such as oscillopsia, nystagmus, postural instability, and falling, as well as neurovegetative consequences like nausea and vomiting. Vertigo has a 2-5% annual frequency and an age-related incidence. Several illnesses of the inner ear, such as vestibular migraine, Meniere's disease, acute unilateral vestibulopathy, and labyrinthitis, may cause vertigo^{2, 3}. Although the occupational effect is minimal, the economic cost to society is significant. Otoconia are thought to cause BPPV symptoms when they get affixed to cupula in the semicircular canals after being dislodged from otolith structures⁴. It is thought that the posterior semicircular canal is most often damaged, whereas the horizontal and superior canals are seldom impacted⁵. Common medications for BPPV include the histamine antagonist and calcium channel blocker cinnarizine, which reduces vertigo by modulating these channels in the periphery of the vestibular system. As the quickest and least risky non-surgical therapy for BPPV, repositioning techniques include the patient switching their head or body's position. These treatments need

little preparation and may be completed in about 5 minutes⁶. One such procedure, the Epley, has a high success rate (85-90%) for posterior semicircular canal BPPV and has no serious consequences other from nausea and vomiting. Studies have shown that symptom recovery rates vary from 50% to 95% following one to two weeks of therapy^{7, 8}. As a result, most Iranian doctors who treat vertigo only use medicine rather than this alternative therapy. Because of this problem and the paucity of research comparing Epley maneuver with Cinnarizine was set out to evaluate their relative efficacy in treating BPPV^{6, 9}.

Several different procedures have been offered for the number of cycles involved in each repositioning method. Traditional therapy for positional nystagmus is cycling through several procedures until the condition resolves¹⁰. High treatment effectiveness has led some procedures to use a single treatment cycle throughout each repositioning surgery. The majority of people may only need a single treatment, although there are always exceptions. Several individuals describe continuing discomfort after a successful relocation⁷. Individuals may report feeling unsteady or dizzy without vertigo. By capturing positional nystagmus with video nystagmography, we can distinguish between residual dizziness (RD) and failed repositioning¹¹. Medication, including vestibular suppressants and anti-anxiety medications, is not advised as a first line of treatment for BPPV,

according to professional practice standards¹². While conventional vertigo and nystagmus often resolve after a successful Epley's maneuvers, some studies revealed that persistent nonspecific symptoms may linger. A trace degree of canalith in the semicircular canal or heightened sensitivity to emotions during postural control might account for these lingering symptoms¹³. Another factor that may affect the severity of ongoing symptoms in people with BPPV is any underlying utricular dysfunction. Furthermore, linked to the presence of these lingering symptoms are mental health issues including anxiety and sadness. Vestibular suppressants have been shown in recent studies to be effective in reducing residual symptoms after a successful Epley's maneuvers^{9, 10}, however to the best of our knowledge, very few research have analyzed the features of residual symptoms in BPPV patients following Epley's maneuvers. There has been no definitive research on what causes residual symptoms, symptoms duration, canal involvement, cumulative successful rats and dysregulation are among possibilities put up to explain the phenomenon¹¹. That's why the study designed to role of vestibular suppressants after successful Epley's maneuvers in benign paroxysmal positional vertigo.

METHODS

Study Design and Setting: This cross-sectional study was carried out at department of ENT CMH, Multan from 01 January 2022 to 30th October 2022. In this case-control study, the demographic details were recorded on a questionnaire.

Inclusion and Exclusion Criteria: Patients were considered for inclusion if they met the following criteria: 1) they had idiopathic BPPV, 2) they had successful (resolution of positional nystagmus and symptoms) on the day of their first visit, and 3) they were not currently taking any medications. These were some of the criteria that were disqualified: A history of inner ear illness or surgery and trauma, chronic dizziness, or headache, psychological or neurological diseases, and involvement of more than two semicircular canals are all contraindications for Epley's maneuvers.

Sample Size Calculation: On the WHO sample size calculator, a total of 135 subjects were chosen based on a prevalence of vertigo 2.4%¹ prevalence with 95% confidence interval and margin of error was 5%.

Study Participants: Total 135 patients were divided into two groups. In group A 60 patients were taking vestibular suppressants and in group B 75 were not taking any drugs, both groups had successful Epley's maneuvers in benign paroxysmal positional vertigo. A single doctor made the BPPV diagnosis after examining a patient's history and doing a hall pike test. All patients provided their written informed permission. Patients were randomly divided into two groups of one each using the clinic's automated turn system, with a block size of four ensuring a 1:1 ratio of allocation. Both groups' hall pike test results were documented on the first visit, and following the initial Epley maneuver, patients in Group A were instructed to sleep with their heads elevated 45 degrees above their bodies for the next two days. The patients' symptoms duration, canal, cumulative success rate and residual symptoms were measured immediately after treatment, and two weeks later.

Statistical Analysis: The data analysis for this study was carried out using version 20.0 of the IBM-SPSS. Descriptive analysis was performed on demographic factors. Independent t test was used to determine the mean and standard deviation of anatomical parameters. If the p-value was lower than 0.05, the data were statistically significant.

RESULTS

One hundred and fifty-five people with confirmed BPPV were found. Twenty people were left out of the analysis because of various reasons, including thirteen who had head injuries, two who developed vestibular neuritis, and two who were lost to follow-up. Two groups were formed from the remaining 135 patients. 60

patients were included in group A out of which 24 were taking B.histine, 26 were taking cinnarizine, and 25 were taking meclizine as vestibular suppressants. In group B, 75 participants after successful Epley's maneuver were not taking any vestibular suppressants as shown is table 1. Moreover, in terms of the average score on the visual analog scale, the score was (5-6) in group A and 6-7 in group B. In terms of the VAS score, there was not a clear difference between the A group and the B group. The VAS scores of female patients were found to be the highest across both groups.

Table 1: Demographic details.

Vestibular Suppressants		No Vestibular Suppressants		P Value
Mean	Std. Dev	Mean	Std. Dev	
Age				
30.52	15.08	27	6.887	0.04
BMI				
22.07	3.354	23.87	4.275	0.56

Table 2: Comparison of with and without vestibular suppressant group.

Groups	Vestibular Suppressants		No Vestibular Suppressants		P Value
	Frequency	Percent	Frequency	Percent	
Gender					
Male	29	48.3	37	49.3	<0.001
Female	31	51.7	38	50.7	
Symptom Duration					
4 days	33	55.0	12	16.0	<0.001
5-8days	19	31.7	40	53.3	
>9days	8	13.3	23	30.7	
Canal					
Successful treatment	21	12.1	17	9.8	<0.001
Posterior Canal	23	13.3	44	25.4	
Horizontal canal	15	8.7	6	3.5	
Anterior Canal	1	.6	8	4.6	
Cumulative success rate					
With one cycle	33	19.1	12	6.9	<0.001
With two cycles	14	8.1	26	15.0	
Residual dizziness	13	7.5	34	19.7	
Recurrence	0	0.0	3	1.7	
Residual symptoms					
Lightheadedness	7	4.0	21	12.1	<0.001
floating sense	3	1.7	3	1.7	
Vertigo	3	1.7	3	1.7	
earfullness	2	1.2	12	6.9	
General Weakness	1	.6	2	1.2	

The data is presented as mean and standard deviation (SD). The result was analyzed by using an independent t-test. The p<0.05 is significant.

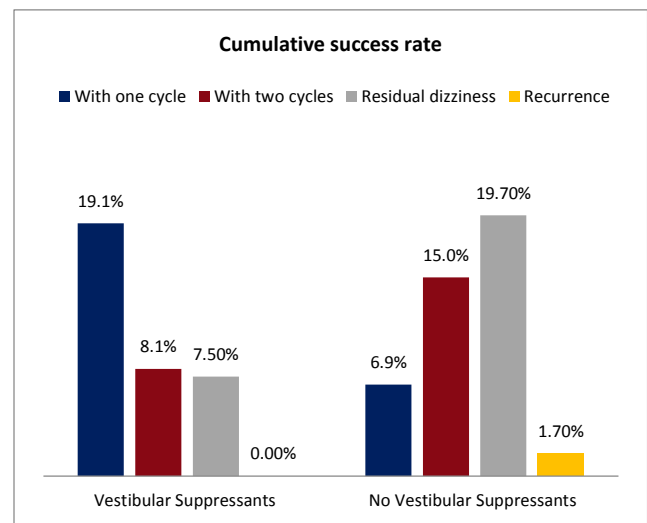


Figure 1: Comparison of cumulative success rate in both groups

In this study there is 29 males and 31 females in group A and 37 males and 38 females in group B. Cumulative success

rates were 78.6 % with one cycle and 94.5 % after two cycles of therapy. The canal shows that 21 successful treatments in successfully treated cases, residual dizziness was present in 47.6% of patients with short, in 26.7% with medium, and in 28.7% with long symptom durations. Individuals with short symptom duration were more likely to report residual symptoms ($p < 0.001$). Parameters of the two groups are presented in Table 1. A right-side preponderance was detected in both groups, and the phenomenon was more significant in the group A ($p = 0.04$). There was difference between the groups in terms of canal involvement, overall success rate, cumulative success rate during two treatment cycles, or recurrence. Interestingly, the success rate with one treatment cycle was higher in the group A ($p = 0.001$). Further analysis of outcomes showed the residual symptoms in patients with a short (≤ 4 days) symptom duration revealed a correlation with the successful Epley's maneuver in group A.

DISCUSSION

When it comes to relieving symptoms associated with BPPV, we discovered that the Epley maneuver in all the patients of group A and B were successfully done but showed the much better outcome after vestibular suppressants when compared with those who only did Epley maneuver. Before the intervention, there were no significant differences in any of the group's symptoms, with the exception of disequilibrium. As for the mean visual analog scale (VAS), there was no discernible difference between the A and B groups. In both groups, VAS scores were highest for female patients, those with longer illness duration, those who had spontaneous worsening of symptoms, and those who experienced all three ototoxic symptoms (perspiration, nausea, and vomiting). Those with a history of head trauma or other inner ear illness and otalgia had considerably lower levels of this. Our results corroborate the findings of LID et al., who examined the efficacy of the Epley maneuver in conjunction with recommendations for a comfortable sleeping position for patients with BPPV¹⁴, and Joshi D et al., who examined the impact of repositioning maneuvers on the management of BPPV¹⁵. The current investigation considered the cautions raised by Yadav H et al. and evaluated potential confounding factors including patients' histories of head trauma and other inner ear diseases¹⁶. We compared medical therapy with Epley technique in two groups of patients, whereas Saeedi M et al., assessed the adjunctive efficacy of labyrinth sedatives¹⁷. Patients in the Sharif S et al. research received medication for one week and were followed up with for another four weeks¹⁸. The current research's findings that the Epley technique with suppressants is effective in relieving patients' symptoms are consistent with those of the previous study¹⁹. Joshi D and his team also evaluated the efficacy of medicinal therapy as well as repositioning procedure (Epley maneuver) for the treatment of BPPV¹⁵. Khaftari MD et al., verified the efficacy of the Epley maneuver in the management of BPPV, as shown in the current investigation. Exercises like the "Half somersault" have been suggested as an alternative to the Epley that is more resistive but also has less risks²⁰.

BPPV is one of the many forms of peripheral vertigo, but it is also one of the most common, the symptoms include a spinning sensation that lasts for a few seconds to a few minutes and positional nystagmus that responds to the patient's head orientation changes²¹. Treatments (vestibular suppressants) for BPPV that work when individuals report continuing to have symptoms after a successful Epley's maneuvers. Many explanations have been proposed for these persistent signs and symptoms²⁰. According to Knoll RM et al., those who have persistent symptoms often experience psychological distress or dread of more episodes of dizziness. Moreover, the persistence of symptoms may lead to a decline in self-assurance or general health. Degeneration of vestibular nerve findings in BPPV patients' temporal bones other writers have also proposed organic causes including neuritis or viral infection²².

Our investigation revealed that the of patients who had successful Epley's maneuvers and were given no extra medication complained of persistent dizziness, which is not consistent with B.histine, cinnarizine, meclizine efficacy in treating posterior canal BPPV after effective Epley's maneuver was also reported by Sayin et al., in a randomized controlled experiment. In contrast, our research is the biggest randomized controlled trial to date examining the role of medicine in the management of persistent symptoms. We found that the participants in the (vestibular suppressor) group developed good effects of Epley's maneuvers than those in the no-medication group²³. Also, dizziness was greatly reduced in those using vestibular suppressants. Temporary vestibular function deficiencies in the afflicted ear may occur in BPPV patients, however we were unable to conclusively pinpoint the explanation for this. This is based on assumptions about lingering symptoms. Hence, vestibular suppressants might lessen the severity of recovery-stage vestibular neuritis. Researchers postulated that utricular dysfunction, an abnormality in the otolithic organ's function, would be another reason for persistent discomfort even after effective Epley's maneuvers. Utricular dysfunction has been linked to BPPV in several studies²⁴.

We don't know whether the dysfunction is long-term or short-term, but some patients may continue to have symptoms like dizziness over the follow-up period. As a result of the removal of all but the tiniest otoliths, positional nystagmus is no longer a concern following a successful Epley's maneuvers; instead, the patient may report feeling dizzy or as if they are floating. We believe vestibular suppressants may help with utricular dysfunction and with the elimination of any remaining, microscopic otoliths^{17, 25}. We assessed the rating based on a physical, emotional, and functional scale²⁶. The physical measures were developed to evaluate the patient's capacity to do daily tasks following dizziness, while the emotional and functional items were created to evaluate the patient's level of social and psychological adjustment²⁷. There was statistically significant difference was identified between the groups after effective Epley's maneuvers, but the potent role of vestibular suppressant enhances the way of treatment related to symptoms duration, canal and cumulative successful rate and residual symptoms in this research population.

CONCLUSION

In conclusion, we discovered statistically significant difference between the patients on anti-vestibular suppressant and without after successful Epley's maneuver for treating and managing BPPV symptoms. As the Epley technique is less expensive than medicine, we recommend it for the treatment of BPPV with the continuation of suppressants for more positive outcome. This may be particularly useful in geriatric patients, who often take many medicines, by reducing side effects and the overall number of pills they have to take each day. Further studies are recommended, ideally with longer follow-up periods and the use of standardized questionnaires to evaluate patients' quality of life. Patients should be divided into further groups so that the efficacy of various medicines, with and without repositioning interventions, may be determined.

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