ORIGINAL RESEARCH PAPER
Volume - 11 | Issue - 06 | June - 2022 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

THE EFFECTS OF BETAHISTINE IN ADDITION TO EPLEY MANEUVRE IN THE POSTERIOR CANAL BPPV MANAGEMENT

ENT

Dr. Manomoy Khan PGT ENT & Head neck surgery, CNMCH, Kolkat.
Dr. Dhirendra Kumar Gupta ENT & Head neck surgery, CNMCH, Kolkat.
Dr. Ashish Kumar Mondal ENT & Head neck surgery, CNMCH, Kolkat.
Dr. Apurba Sarkar Tutor, Department of ENT and Head neck surgery, CNMCH, Kolkat.
Prof.(Dr.) Somnath Saha Professor & Head Of The Department. ENT & Head neck surgery, CNMCH, Kolkat.

ABSTRACT

Benign paroxysmal positional vertigo (BPPV) is a common vestibular disorder that accounts for one fifth of all admissions to hospital due to vertigo although it is commonly undiagnosed.5 The most common form is idiopathic, and BPPV tends to occur at a higher rates in women than in men.6 The main mechanism underlying BPPV is accumulation of otoconia (calcium carbonate structures) in the lumen (canalolithiasis) or in the cupula (cupulolithiasis) of the semicircular canal, resulting in impaired fluid dynamics of the semicircular canal.
This randomized controlled trial and hospital based study was conducted at calcutta national medical college and hospital ENT OPD on July 2020 to June 2021. Total 75cases were taken in our study.
Group A (Epley maneuver only)
Group B (Epley maneuver only+ Tab Pentoprazol 40)
Group C: Epley maneuver with betahistine (16mg TDS)
Our study showed that in A Group, 10 patients had previous vertigo attack. In B Group, 13 patients had previous vertigo attack. In C Group, 11 patients had previous vertigo attack. Rest of the patient in our study presented with vertigo attack for 1st time in their life. Association of previous vertigo attack with group was not statistically significant (p=0.290). In A Group, the mean visual vertigo analog scale Baseline (mean± s.d.) of patients was 6.98 ± 2.133. In B Group, the mean visual vertigo analog scale Baseline (mean± s.d.) of patients was 6.27 ± 2.148. In C Group, the mean visual vertigo analog scale Baseline (mean± s.d.) of patients was 6.21+/- 2.133. Difference of mean visual vertigo analog scale Baseline with Group was not statistically significant (p=0.100).
We concluded that group-C was better result in comparison with group-B and group-A respectively. So in our study it is found that patients treated with Epley's maneuver and Betahistine got better result than the patients treated with only Epley's maneuver.

KEYWORDS

Betahistine, Epley Maneuvre and Posterior Canal Bppv

INTRODUCTION

- Benign paroxysmal positional vertigo (BPPV) is a common vestibular disorder
- 1/5 th of all admissions to hospital due to vertigo are BPPV [1,2]
- Most common form is idiopathic
- Women are more commonly effected than men [3]
- Accumulation of otoconia in the lumen or in the cupula of the semicircular canal resulting in impaired fluid dynamics of the semicircular canal causes BPPV [4]
- Regardless of the etiology and clinical picture, canalith repositioning maneuver are The treatment of BPPV
- A recent Cochrane review indicated a low quality of evidence in favor of betahistine for treating vertigo in a number of studies [2]
- This highlighted the need for additional clinical studies to understand the efficacy of betahistine in different types of vertigo.
- Our study was conducted to evaluate the effects of betahistine as add-on therapy in subjects treated with the Epley maneuver.

Benign paroxysmal positional vertigo (BPPV) is a common vestibular disorder that accounts for one fifth of all admissions to hospital due to vertigo although it is commonly undiagnosed.[5] The most common form is idiopathic, and BPPV tends to occur at a higher rates in women than in men.[6] The main mechanism underlying BPPV is accumulation of otoconia (calcium carbonate structures) in the lumen (canalolithiasis) or in the cupula (cupulolithiasis) of the semicircular canal, resulting in impaired fluid dynamics of the semicircular canal.

Several factors have been investigated as possible causes of BPPV, including migraine, Ménière's disease, idiopathic sudden sensorineural hearing loss, sleeping habits, osteoporosis/vitamin D insufficiency, hyperglycemia/diabetes mellitus, estrogen deficiency, neurological disorders, allergies, and others. Regardless of the etiology and clinical picture, canalith repositioning maneuvers are the mainstay of BPPV treatment with level 1 evidence in treating BPPV.[7] Although the methods used differ among physicians, BPPV canalith repositioning maneuvers have a high success rate. Quality of life and relief of dizziness are important issues during the healing process. A few medical treatment options are available, including administration of betahistine.

Betahistine acts as a weak agonist for H1 receptors and as an antagonist for H3 receptors.[8] Betahistine is the main treatment option for Ménière's disease. However, it is currently also used to treat various vestibular disorders as well as a number of other conditions, including tinnitus. A recent Cochrane review indicated a low quality of evidence in favor of betahistine for treating vertigo in a number of studies (pooled risk ratio for overall improvement, 1.30). This highlighted the need for additional clinical studies to understand the efficacy of betahistine in different types of vertigo. Previous studies have yielded conflicting results regarding the therapeutic use of betahistine in the acute phase of BPPV. The present randomized controlled trial was conducted to evaluate the effects of betahistine as add-on therapy in subjects treated with the Epley maneuver.

METHODS AND MATERIALS

Study Area: Calcutta national medical college and hospital ENT OPD

Study period: July 2020 to June 2021

Sample Size: 75 cases

Study Design: randomized controlled trial, hospital based study

Exclusion Criteria:
1. Anterior BPPV, lateral BPPV
2. Age <18 years

3. Other vestibular pathologies (Meniere's, vestibular neuritis)
4. Neurological disorder (migraine)
5. Psychiatric disorder (depression)
6. CVA, Cardiovascular disease
7. Any physical limitations that made them unsuitable for the epley maneuver

All subjects were diagnosed by the presence of rotatory upbeat nystagmus provoked by the Dix-Hallpike maneuver were included in our study.

No other diagnostic tools were used.

After diagnosis, subjects were randomized into
Group A (Epley maneuver only)
Group B (Epley maneuver only+ Tab Pentoprazol 40)
Group C: Epley maneuver with betahistine (16 mg TDS)

Epley maneuver was performed immediately after the Dix-Hallpike test

Visual Vertigo analog scale (VVAS) and Dizziness Handicap Inventory (DHI) were evaluated before the maneuver

Subjects were evaluated 1-week after the maneuver

Dix-Hallpike test was performed to verify the complete resolution of provoked nystagmus

If present a second repositioning maneuver was performed and subjects were evaluated with the VVAS and DHI.

The DHI is the scale to assess the self-perceived handicapping effect imposed by diseases of the vestibular system.

The patient answers "yes", "sometimes", or "no" to each question, and the strengths of the responses are indicated by numeric values of 0, 2,or 4. The questionnaire has 25 items, such that the total score can range from 0 to 100, with higher scores indicating a greater degree of handicap.

Statistical Analysis :
Data entered in MS EXCEL sheet and checked thoroughly and analyzed using standard statistical techniques with the help of statistical software.

Student's t test was used to compare pre- and post-treatment VVAS score between the groups with and without betahistine.

The Mann-whitney u test was used to compare pre- and post- treatment DHI scores.

In all analysis $p<0.05$ was taken to indicate statistical significance.

RESULT AND DISCUSSION

A randomized controlled trial, hospital based study was Calcutta national medical college and hospital ENT OPD feom July 2020 to June 2021 in 75 cases. Our study showed that betahistine add-on treatment resulted in better BPPV symptom improvement as verified by VVAS and DHI.

Sayin I et al [9](2020) found that benign paroxysmal positional vertigo is a common vestibular disorder that accounts for one fifth of hospital admissions due to vertigo, although it is commonly undiagnosed. During the study, eight subjects were lost to follow-up. In total, 100 subjects completed the study protocol. The mean age of the total study population was 53.34± 15.33 years, and there were no significant differences in mean age between Group A and Group B (55.68±14.534 vs. 50.96±15.911 years, respectively, p=0.126). Forty-two subjects were male. There were no significant differences in sex distribution between the two groups (p=0.349).

We found that in A Group, the mean Age (mean± s.d.) of patients was 55.68 ± 14.534. In B Group, the mean Age (mean± s.d.) of patients was 50.96 ± 15.911. In C Group, the mean Age (mean± s.d.) of patients was 50.31 ± 14.935. Difference of mean Age with Group was not statistically significant (p=0.226). In A Group, 12 patients were male and 13 patients were female. In B Group, 10 patients were male and 15 patients were female. In C Group, 13 patients were male and 12 patients were female. Association of Sex vs group was not statistically significant (p=0.449).

Parfenov VA et al (2017)[10] observed that vestibular vertigo is associated with substantially reduced quality of life. Betahistine is effective in improving vertigo-associated symptoms, with longer treatment periods leading to greater improvements; however, it is not known whether these effects persist after treatment cessation. 309 patients were enrolled and 305 completed the study. Clinical response was rated as good, very good or excellent in 74.1% of patients at end of treatment, with vertigo severity significantly decreased from baseline ($p < 0.001$). Monthly vertigo attack frequency decreased significantly during the 2 months of treatment ($p < 0.001$ from baseline) and further decreased during the 2-month follow-up ($p < 0.001$ from end of treatment).

Our study showed that in A Group, 10 patients had previous vertigo attack. In B Group, 13 patients had previous vertigo attack. In C Group, 11 patients had previous vertigo attack. Association of previous vertigo attack vs group was not statistically significant (p=0.290). In A Group, the mean visual vertigo analog scale Baseline (mean± s.d.) of patients was 6.98 ± 2.133. In B Group, the mean visual vertigo analog scale Baseline (mean± s.d.) of patients was 6.27 ± 2.148. In C Group, the mean visual vertigo analog scale Baseline (mean± s.d.) of patients was 6.21+/- 2.133. Difference of mean visual vertigo analog scale Baseline with Group was not statistically significant (p=0.100).

İnan HC et al [11](2019) Benign paroxysmal positional vertigo (BPPV) is the most common peripheral vestibular system disease causing dizziness. It occurs more in the 5th decade of life and affects the posterior canal in 90% of the patients. The most effective treatment method is canalith repositioning (CRP) maneuver. The aim of this study is to evaluate the effects of betahistine and dimenhydrinate therapies in addition to CRP maneuver on BPPV patients Dizziness handicap inventory (DHI) was completed and outcomes were reviewed for therapeutic efficacy. Mean DHI scores in all patient groups statistically significantly decreased from a pre-treatment level of 52.16 (range, 20–100) to a post-treatment level of 17.84 (range, 0–78) ($p<0.001$). No statistically significant differences were found in terms of DHI scores between Group 1 (repositioning maneuver only) and Group 2 (repositioning maneuver plus betahistine or dimenhydrinate).

Benecke H et al (2010)[12] this was a 3-month multicentre, open-label post-marketing surveillance study of betahistine (24 mg b.i.d. or 16 mg t.i.d.) in patients with vertigo of peripheral vestibular origin. Study endpoints comprised on-treatment changes in the Dizziness Handicap Index (DHI), Hospital Anxiety and Depression Score (HADS) and the Short-Form (SF)-36v2. Total DHI score improved 37.2 points (of a 100-point scale) following betahistine treatment. Corresponding improvements occurred in all three DHI scale domains (all $p < 0.001$ vs baseline).

Sayin I et al [9](2020) found that to evaluate the effects of betahistine add-on therapy in the treatment of subjects with posterior benign paroxysmal positional vertigo. Subjects were evaluated before and 1-week after the maneuver using a visual analog scale and dizziness handicap inventory. Groups A and B had similar baseline visual analog scale scores (6.98±2.133 and 6.27±2.148, respectively, p=0.100). After treatment, the visual analog scale score was significantly lower in both groups, and was significantly lower in group A than group B (0.74±0.853 vs. 1.92±1.288, respectively, p=0.000). The change in visual analog scale score after treatment compared to baseline was also significantly greater in group A than group B (6.24±2.01 vs. 4.34±2.32, respectively, p=0.000). Betahistine add-on treatment in posterior benign paroxysmal positional vertigo resulted in improvements in both visual analog scale score and dizziness handicap inventory.

We showed that in A Group, the mean visual vertigo analog scale Post-Epley maneuver (mean± s.d.) of patients was 0.74 ± .853. In B Group, the mean visual vertigo analog scale Post-Epley maneuver (mean± s.d.) of patients was 1.92 ± 1.288. In C Group, the mean visual vertigo analog scale Post-Epley maneuver (mean± s.d.) of patients was 2.31± 2.102. Difference of mean visual vertigo analog scale Post-Epley maneuver with Group was statistically significant ($p<0.0001$). In A Group, the mean dizziness handicap inventory Baseline (mean± s.d.) of patients was 55.60 ± 22.732. In B Group, the mean dizziness

handicap inventory Baseline (mean± s.d.) of patients was 45.59 ± 17.049. In C Group, the mean dizziness handicap inventory Baseline (mean± s.d.) of patients was 46.31 ± 16.019. Difference of mean dizziness handicap inventory Baseline with Group was statistically significant (p=0.048).

The purpose of this study is to evaluate the effects of betahistine in addition to Epley maneuver on the quality of life of patients with posterior semicircular canal benign paroxysmal positional vertigo (BPPV) of the canalithiasis type. Seventy-two patients were enrolled in the study. The first group was treated with Epley maneuver only Epley maneuver, alone or combined with betahistine or placebo, was found to be very effective with a primary success rate of 86.2%. Betahistine in addition to Epley maneuver is more effective than Epley maneuver alone or combined with placebo with regard to improvement of symptoms in certain patients. However, future clinical studies covering more patients to investigate the benefit of medical treatments in addition to Epley maneuver are needed by **Guneri EA (2012)**[13].

Sayin I et al (2020) showed that To evaluate the effects of betahistine add-on therapy in the treatment of subjects with posterior benign paroxysmal positional vertigo. One hundred subjects completed the study protocol. The Epley maneuver had an overall success rate of 95% (96% in group A; 94% in group B, p= 0.024). The Epley maneuver is effective for treatment of benign paroxysmal positional vertigo.

Also we found that in A Group, the mean dizziness handicap inventory Post-Epley maneuver (mean± s.d.) of patients was 52.44 ± 21.42. In B Group, the mean dizziness handicap inventory Post-Epley maneuver (mean± s.d.) of patients was 35.71 ± 13.51. In C Group, the mean dizziness handicap inventory Post-Epley maneuver (mean± s.d.) of patients was 37.13 ± 7.852. Difference of mean dizziness handicap inventory Post-Epley maneuver with Group was statistically significant (p<0.0001). In A Group, 20(80.0%) patients had Epley maneuver success. In B Group, 21(84.0%) patients had Epley maneuver success. In C Group, 24(96.0%) patients had Epley maneuver success. Association of Epley maneuver success vs group was statistically significant (p=0.046).

CONCLUSION

We concluded that group-C was better result in comparison with group-B and group-A respectively. So in our study it is found that patients treated with Epley's maneuver and Betahistine got better result than the patients treated with only Epley's maneuver.

LIMITATION OF STUDY

1. Lack of betahistine only and placebo group
2. Exclusion of any untreated or placebo control groups for ethical reason
3. Further long term evaluation of residual dizziness not performed

Association Of Table Under All Parameters: Group

		Total	Group A (n=25)	Group B (n=25)	Group C (n=25)	p value
Sex	Male	35	12	10	13	0.449
	Female	40	13	15	12	
Previous vertigo attack	Present	34	10	13	11	0.290
	Absent	41	15	12	14	
Epley maneuver success		65	20 (80.0%)	21 (84.0%)	24 (96.0%)	0.046

Distribution Of Mean Under All Parameters: Group

		Total	Group A (n=25)	Group B (n=25)	Group C (n=25)	p value
Age		53.34 ± 15.33	55.68 ± 14.534	50.96 ± 15.911	50.31 ± 14.935	0.226
Visual vertigo analog scale	Baseline	6.63 ± 2.160	6.98 ± 2.133	6.27 ± 2.148	5.21± 2.133	0.100
	Post-Epley maneuver	1.32 ± 1.236	1.74 ± .853	1.92 ± 1.288	1.31± 2.102	<0.0001
	Difference	5.30 ± 2.36	6.24 ± 2.01	4.34 ± 2.32	3.90 ± 0.031	<0.0001
Dizziness handicap inventory (dhi)	Baseline	50.65 ± 20.640	55.60 ± 22.732	45.59 ± 17.049	40.31 ± 16.019	0.048
	Post-Epley maneuver	6.48 ± 7.467	9.16 ± 4.002	9.88 ± 8.616	5.18 ± 8.167	<0.0001
	Difference	44.16 ± 19.73	52.44 ± 21.42	35.71 ± 13.51	30.13 ± 7.852	<0.0001

REFERENCES

1. Jalali MM, Gerami H, Saberi A, Razaghi S. The impact of betahistine versus dimenhydrinate in the resolution of residual dizziness in patients with benign paroxysmal positional vertigo: a randomized clinical trial. Ann Otol Rhinol Laryngol.2019:3489419892285.
2. Murdin L, Hussain K, Schilder AG. Betahistine for symptoms of vertigo. Cochrane Database Syst Rev. 2016:CD010696.
3. Kaur J, Shamanna K. Management of benign paroxysmal positional vertigo: a comparative study between epleys manoeuvre and betahistine. Int Tinnitus J. 2017;21:30-4.
4. Stambolieva K, Angov G. Effect of treatment with betahistine dihydrochloride on the postural stability in patients with different duration of benign paroxysmal positional vertigo. IntTinnitus J. 2010;16:32-6.5.
5. L. Murdin, K. Hussain, A.G. Schilder Betahistine for symptoms of vertigo Cochrane Database Syst Rev (2016), Article CD010696
6. J. Kaur, K. ShamannaManagement of benign paroxysmal positional vertigo: a comparative study between epleys manouvre and betahistine Int Tinnitus J, 21 (2017), pp. 30-34
7. M. Mandalà, L. Salerni, D. Nuti Benign positional paroxysmal vertigo treatment: a practical update Curr Treat Options Neurol, 21 (2019), p. 66
8. V.A. Parfenov, V.A. Golyk, E.I. Matsnev, S.V. Morozova, O.A. Melnikov, L.M. Antonenko, et al. Effectiveness of betahistine (48 mg/day) in patients with vestibular vertigo during routine practice: the VIRTUOSO study PLoS One, 12 (2017), Article e0174114
9. Sayin I, Koç RH, Temirbekov D, Gunes S, Cirak M, Yazici ZM. Betahistine add-on therapy for treatment of subjects with posterior benign paroxysmal positional vertigo: a randomized controlled trial. Brazilian Journal of Otorhinolaryngology. 2020 Sep 12..
10. Parfenov VA, Golyk VA, Matsnev EI, Morozova SV, Melnikov OA, Antonenko LM, Sigaleva EE, Situkho MI, Asaulenko OI, Popovych VI, Zamergrad MV. Effectiveness of betahistine (48 mg/day) in patients with vestibular vertigo during routine practice: The VIRTUOSO study. PloS one. 2017 Mar 30;12(3):e0174114.
11. İnan HC, Kıraç M. An evaluation of the effects of betahistine and dimenhydrinate on posterior canal benign paroxysmal positional vertigo. Turkish Archives of Otorhinolaryngology. 2019 Dec;57(4):191..
12. Benecke H, P'rez-Garrigues H, Bin Sidek D, Uloziene I, Sondag E, Theeuwes A. Effects of betahistine on patient-reported outcomes in routine practice in patients with vestibular vertigo and appraisal of tolerability: experience in the OSVaLD study. International Tinnitus Journal. 2010 Jun 1;16(1).
13. Guneri EA, Kustutan O. The effects of betahistine in addition to epley maneuver in posterior canal benign paroxysmal positional vertigo. Otolaryngol Head Neck Surg. 2012;146:104-8.