RESEARCH ARTICLE

EFFECT OF MODIFIED EPLEY'S & SEMONT'S MANOEUVRES WITH OR WITHOUT BETA-HISTINE ON BENIGN PAROXYSMAL POSITIONAL VERTIGO

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ABSTRACT

Background: Benign Paroxysmal Positional Vertigo (BPPV) is a condition related to vestibular system accompanied by dizziness, tinnitus and balance problems leading to increased fall risk and potential disability. Various treatment options are available including pharmacotherapy and vestibular rehabilitation with varied results. **Objective:** To compare the efficacy of Modified Epley and Semont's manoeuvre with and without Beta-histine for BPPV. **Methodology:** A single blinded Randomized control trail, registered at clinicaltrial.gov under clinical trial registry NCT05309538, was conducted on n=90 patient having Benign Paroxysmal Positional Vertigo; at the Neurocouncil Hospital & the physiotherapy clinic. from June 2021- August 2021. The participants between 18 to 60 years with positive modified Dix Hil pike test were included in the study. The n=90 participants were equally divided via lottery method into Group A and B, Both group received mEpley's and Semont's Manoeuvres, Group B additionally received beta-histine. The dizziness handicapped inventory and EQ-5D-5L questionnaire were used for dizziness and quality of life respectively. The data were collected at the baseline and at the end of 4th week. The data was analyzed with SPSS version 21. **Results**: The wilcoxon rank test showed that there was significant improvement ($p<0.001$) in dizziness handicapped inventory, all domains and the total score of EQ-5D quality of life questionnaire. While comparing both groups no significant ($p\geq0.05$) additional effects of Betahistine with modified Epley's and Semont's manoeuvres on dizziness handicapped inventory and quality of life. **Conclusion**: The study concluded that the Betahistine has no additional effects in the management dizziness of BPPV

Keywords: Disability, psychological Adjustment, Stress BPPV, Modified Epley's manoeuvre, Semont's manoeuvre, vertigo, dizziness, quality of life.

INTRODUCTION

Benign paroxysmal positional vertigo (BPPV) is a vestibular condition which manifests itself in the form of short but repetitive dizziness spell along with nystagmus due to positional change of head[1]. The Vertigo and dizziness are the main complaint of patients visiting emergency department [2]. Most frequently this condition affects the persons between 20-50 years of age. But its distribution in both genders is same[3].

The diagnostic manoeuvre was used by Dix Hill pike standardized diagnostic tool for BPPV along with roll test[4].The Problem in all three semicircular canals can cause BPPV[5]. But most frequently occurring BPPV is in posterior semicircular canal[6,7]. The Posterior canal BPPV occurrence is more than 80%[8]. Clinicians confirm this condition by performing a manoeuvre knows as Dix hill pike manoeuvre [9].

Several treatment options are proposed by few clinicians[10]. Physicians generally perform Dix Hill pike manoeuvre to elicit the expected nystagmus & vertigo[11,12]. The pharmacological therapy as well as canalith repositioning manoeuvres is available treatment options for the management of BPPV but in severe cases surgical intervention may be opted[13]. For the management of benign paroxysmal position vertigo the best treatment option is canal with reposition manoeuvres[14,15].In case of resistant cupulolithiasis to move crystal to its normal position a liberatory Manoeuvre such as Semont's is used[16]. Both manoeuvres are chiefly used to move the crystal out of these semicircular canals towards utricle[17]. Brandt-Daroff exercises are also used for vestibular system, which works on the principal of central compensation or spontaneous resolution of positional vertigo which can be performed at home [18].

Betahistine is commonly used for the treatment of vertigo and meniere's disease & BPPV [19,20,21]. Betahistine is considered a safe drug for BPPV. The betahistine act as H_1 receptor agonist and also as an antagonist of H_3 receptor which in turn further augment the effects of H_1[22,23]. By this way it enhances the blood circulation in inner ear vessels and helps in postural stability as well.

Due to most prevalence of positional vertigo and excessive use of betahistine in routine we tried to compare the efficacy of this drug alone and in combination with positioning manoeuvres to show

whether beta-histine has any significant additional effects or not. The objective of this study was to compare the effectiveness of combined semont's manoeuvre & modified Epley's manoeuvre with and without Betahistine to treat benign paroxysmal positional vertigo.

METHODOLOGY

After taking written approval from ethical committee of the Physiotherapy clinic, Rawalpindi a single blind RCT registered (NCT05309538) was conducted. The participant's age, between 18-60 with positive Modified Dix Hill Pike test and repetitive vertigo spells affecting activities of daily livings (ADLs) to a greater extent were included in this study. A total of n=97 subjects were evaluated for inclusion and n-90 met the criteria. Whereas those participants suffering from any cervical spine problem or vertigo due to central disease, having tumors, systemic disease, cardiac disease, Parkinson disease or totally immobile patients were excluded from the study.

The lottery methods were used to randomly allocate the participants into both groups. Both groups were managed with modified Epley and Semont's manoeuvres twice a day for two weeks. The Group B received additionally beta-histine 8mg twice a day for two weeks.

The demographic data was included age, gender marital status and onset BPPV. While outcome measures were dizziness handicap inventory questionnaire for dizziness and Euro Quality of life 5-dimension questionnaire to measure the quality of life were used [24,25]. The data was collected at the baseline and after two weeks after the intervention. The assumptions of parametric tests were not met so non-parametric tests for applied. For within group analysis Wilcoxon Sign Rank test and Mann Whitney U test for between groups analysis. The mean, standard deviation, median, interquartile range was used to demonstrate the descriptive statistics. The level of significance was set at less than p<0.05. For the analysis of data, IBM software SPSS version 21 was employed.

RESULTS

The mean age of study participants was 31.565±11.27 years. A total of n=32(35.56%) were males and remaining n=58(64.44%) were females in the study. The data marital status showed that n=73(81.11%) married and n=17(18.89%) were unmarried. For within group analysis, the wilcoxon rank test showed that there was significant improvement (p<0.001) in dizziness handicapped inventory, all domains and the total score of EQ-5D quality of life questionnaire. (Table 1)

Table 1 With Group changes (DHI & EQ-5D-5L)

Variable	Groups	Pre		Post		Z	*p-value*
		Median	IQR	Median	IQR		
Dizziness	Group A	74	18	10	11	-5.81	0.000*
	Group B	82	12	8	8	-5.84	0.000*
Exercise	Group A	4	1	2	1	-5.54	0.000*
	Group B	4	1	2	2	-5.33	0.000*
Self	Group A	4	1	1	1	-5.78	0.000*
	Group B	3	1	2	1	-5.39	0.000*
Daily	Group A	4	0	2	1	-5.76	0.000*
	Group B	4	0	2	0	-5.89	0.000*
Pain	Group A	5	1	2	1	-5.79	0.000*
	Group B	4	1	2	1	-5.77	0.000*
Anxiety	Group A	5	1	2	0	-5.80	0.000*
	Group B	4	1	2	1	-5.77	0.000*
Total EQD5	Group A	20	18	80	20	-5.84	0.000*
	Group B	25	10	77	17	-5.84	0.000*

Significance level: p<0.05, p<0.01**, p<0.001****

While comparing the both groups after two weeks, no significant (p≥0.05) additional effects of beta-histine on dizziness handicapped inventory and quality of life. (Table 2).

Table 2: Comparison between the groups (DHI & EQ-5D-5L)

Variable	Groups	Median	IQR	U	*p-value*
Dizziness	Group A	10	11	780.00	0.06
	Group B	8	8		
Exercise	Group A	2	1	944.500	0.55
	Group B	2	0.5		
Self	Group A	1	1	867.500	0.20
	Group B	2	1		
Daily	Group A	2	1	943.500	0.51
	Group B	2	1		
Pain	Group A	2	1	906.500	0.33
	Group B	2	0		
Anxiety	Group A	2	0	946.500	0.56
	Group B	2	1		
Total EQD5	Group A	80	20	821.500	0.12
	Group B	77	17		

Significance level: p<0.05, p<0.01**, p<0.001****

DISCUSSION

The objective of the current study was to compare the effects of Semont's and modified epley's manoeuvre (mEpley) with or without Betahistine on benign paroxysmal positional vertigo. It was observed that both treatment options are effective in reducing the symptoms of BPPV and improving QoL. The result also showed that behistine has no additional effect in combination with Semont's and modified epley's manoeuvre on dizziness and quality of life. There are several studies that showed that positioning manoeuvres including eplay's, semont significantly improve the symptoms of BPPV[26,27,28]. The Steenerson RL et al conducted a

retrospective study on 923 patients suffering from benign paroxysmal positional vertigo. The patients were treated by positioning manoeuvres, liberatory along and log roll methods for 6 months. The results revealed that 94% of cases suffering from posterior canal BPPV were cured by positioning manoeuvres and 98 % by liberatory manoeuvres and 100% by log roll methods[26]. The results of this study support the treatment used in current study which were both the repositioning (Modified Epley's) and Liberatory (Semont's) manoeuvres.

A retrospective review as done in March 1993 to June 1995 by JS Wolf et al for the patients diagnosed with BPPV. The diagnostic tool used for this condition was dix hil pike manoeuvre. They performed modified Epley's on patients and asked to remain upright for a duration of 48 hours. If patients were not cured by single treatment, they further executed this manoeuvre for three times after that patient's evaluation was done. It was observed that around 93.4% patients were cured by mEpley's manoeuvre[27]. The results also support the current study

Richard et al conducted a student in 376 patients of positional vertigo and treated them by Canolith repositioning manoeuvres and liberatory manoeuvres. It was observed that after a single treatment sessions 79% patients cured and after two treatments 17% and after three session 3.5% patients cured. And patients treated via semont's manoeuvre had low recurrence rate[28]. A study conducted by Lee J.D et al compared the epley, Semont and sham manoeuvres and the result revealed that eplays manoeuvre is more effective for management of BPPV and higher success rate then other manoeuvres [29].

A randomized control trail conducted by WU Wan-yu et al for the efficacy of modified epley manoeuvre with and without betahistine. They randomized participants in two groups the control group of those who were given just position manoeuvre and experimental group received mEpley along with 60 mg of Betahistine in T.D (thrice daily). After one month all the participants were evaluated. The results showed that experimental group had more successful outcome as compared to control group. But the current study showed no significant difference after adding the betahistine for the management of BPPV[30].

Another RCT study conducted by K Stambolieva et al to evaluate, the efficacious effects of betahistine in combination of Epley's manoeuvre in postural stability of BPPV patients. In this study, they divided participants into four groups based on duration of BPPV and treated then by epley's manoeuvre with and without betahistine hydrochloride. They observed that if betahistine is administered after this manoeuvre it increases the postural stability along with BPPV. After removal of otoconia from inner ear canal by Epley's this betahistine increases the blood flow to inner ear and helps in stabilizing posture of BPPV patients[31]. Betahistine is more effective if administered within 60 days of positional vertigo onset. Betahistine increases microcirculation in the inner ear by creating vasodilatation. This mechanism is reported to be effective in recurrent BPPV by increasing vestibular compensation[33].

A prospective study was conducted by M Cavaliere et al to compare the effectiveness of positioning manoeuvres with and without pharmacological treatment. They randomized patients into four groups first group was given Semont with and without betahistine and Brandt Daroff with and without betahistine. Evaluation was carried out on 3rd, 7th, 14th ,30th and 60th day. On the 14th day a group administered with semont manoeuvre with betahistine showed improvement of 100% the other group with betahistine who showed 96% improvement as compared to just alone semont & Brandt Daroff groups. But, at the end of this study all groups demonstrated significant results which support our results that both interventions show marked improvement with and without betahistine[32].

The limitation of the current study was short duration study and assessment was done at the baseline and at the end of two week, so the changes if occurred between to assessment were missed.

CONCLUSION

As positioning manoeuvres along liberatory manoeuvres have much beneficial effects on the quality of life and DHI score to enhance the patient's functional ability with and without Betahistine use. This study suggests combination of positioning manoeuvres along with liberatory

manoeuvres can be adopted without any drug. A large scale double blinded study should be conducted to evaluate the effectiveness of these manoeuvres with and without pharmacological intervention. At each week readings should be taken, and proper follow up should be done for more the 6 months.

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