DOI: https://doi.org/10.54393/pjhs.v4i03.601

PAKISTAN JOURNAL OF HEALTH SCIENCES

https://thejas.com.pk/index.php/pjhs

Volume 4, Issue 3 (March 2023)

Original Article

Comparison of RPM (Re-positioning Maneuver) and Liberatory Maneuvers vs Betahistine on BPPV (Benign Paroxysmal Positional Vertigo) for Improving Functional Ability and Quality of Life

Muhammad Talha[1*], Somiya Asif[1], Hamza Shahid[1], Syeda Maria Nazir[2] and Kiran Haq[3]

[1]Margalla Institute of Health Sciences, Islamabad, Pakistan
[2]Riphah International University, Islamabad, Pakistan
[3]Rawal Institute of Health Sciences, Islamabad, Pakistan

ARTICLE INFO

Key Words:
CRP, Betahistine, DHI, SF-36 QoL

How to Cite:
Talha , M. ., Asif, S. ., Shahid, H. ., Nazir, S. M., & Haq, K. (2023). Comparison of RPM (Re-positioning Maneuver) & Liberatory maneuvers vs Betahistine on BPPV (Benign Paroxysmal Positional Vertigo) for improving functional ability and quality of life: Comparison of RPM and Liberatory Maneuvers. Pakistan Journal of Health Sciences, 4(03). https://doi.org/10.54393/pjhs.v4i03.601

***Corresponding Author:**
Muhammad Talha
Margalla Institute of Health Sciences, Islamabad, Pakistan
Talhakhan1271@gmail.com

Received Date: 23rd February, 2023
Acceptance Date: 15th March, 2023
Published Date: 31st March, 2023

ABSTRACT

BPPV is a vestibular disease which arises due to positional changes of head. **Objective:** To compare the efficacy of CRP & Liberatory maneuvers collectively in contrast to Betahistine alone for improving quality of life oof BPPV patients. **Methods:** After getting the approval from ERC of RIHS (Rawal Institute of Health Sciences) Islamabad, this study was conducted at Rawal General & Dental Hospital Islamabad from 20th September 2022 to 19th Jan 2023. 30 patients between age of 20-50 years with first episode of vertigo were included in this study. Two groups were formulated. Group A patients were given CRP (Epley's maneuver) & Liberatory maneuver (Semont's) whereas group B patients were given just Betahistine 16mg. Both techniques were used twice a day for one week. Tools used for assessment were DHI & SF-36. SPSS version 21 was employed for analysis. **Results:** Mean±SD of age was 32.40±10.91 in group A and 29.93±11.67 in group B. The frequency of age between 20-30 years old patients was 07(46.4%) in group A and 11(73.7%) in group B. The frequency in age group 31-40 & 41-50 was 04(26.8%) & 04(26.8%) in group A whereas in group B it was 04(26.3%) & 0(0%) respectively. within group analysis of both groups showed significant improvement ($p<0.05$) on. Between groups Analysis revealed insignificant difference ($p>0.05$). **Conclusion:** Both maneuvers in combination are equally effective as Betahistine is in improving the quality of life of BPPV patients.

INTRODUCTION

Benign Paroxysmal Positional vertigo is a vestibular condition in which positional changes of head result in short, repetitive spell of dizziness and vertigo with or without nystagmus [1]. The main complaint of patients who visit the ER are vertigo, dizziness and imbalance [2,3]. In general population it is common in second to fifth decade of their life [4, 5]. Both genders are equally susceptible for the development of this condition [6]. Among physical tests, Dix Hal Pike and Log roll tests are commonly employed for the diagnosis of BPPV [7]. All three SSC (Semicircular Canals) are equally prone to be affected by this disease. But among others Posterior SSC is more commonly affected [8]. Clinician used Dix Hal Pike as a diagnostic physical test for BPPV. By using this maneuver, the clinician elicits the nystagmus and vertigo which enable them in the diagnosis of exact SSC which is affected. This maneuver is performed in supine line position with patient head hanging over the edge of the bed [9]. Vertigo spell initiates and the repetitive movement of eyeball is noticed [10, 11]. Many treatment options are available in literature. Medical and rehabilitation interventions are employed in routine for the management of BPPV. But in some severe cases surgical intervention are also done but rarely. Among rehabilitation interventions CRP (Canalith Repositioning) & Liberatory Maneuvers are generally used. In CRP, Epley's and in Liberatory, "Semont's"

DOI: https://doi.org/10.54393/pjhs.v4i03.601

maneuvers are employed [12, 13]. The mechanism of these maneuvers is to reposition the dislodged Canalith towards the utricle. The Semont's maneuver is used for the resistant & chronic cases where vertigo comes frequently. In medical intervention, Betahistine (an anti-histamine) drug is used commonly [14]. The MOA of this drug is that it increases the blood circulation in inner ear canal by acting on H_1 agonist receptors along with H_3 antagonistic receptors which in turn further enhance the action of former receptors. Due to this activation of H_1 antagonists the vertigo diminishes in short duration of time. This drug is used routinely for the management of BPPV. The purpose of this study was to compare the CRP & Liberatory maneuvers in contrast to Betahistine and to evaluate whether these maneuvers are as effective as this drug is. This in turn will help us use of these maneuvers instead of medicine as these maneuvers are safe and easy to be done at home by patient him/herself.

METHODS

It was a RCT of single blind type which was conducted, after getting the approval from ERC of RIHS (Rawal Institute of Health Sciences) Islamabad, at Rawal General & Dental Hospital Islamabad from 20th September 2022 to 19th Jan 2023. Sample size was calculated by WHO calculator which was 30. Two equal groups of 15 patients were made. Patients between age of 20-50 were included in this study who had no comorbidity of any kind and who had experienced vertigo for the first time in their life. All diagnosed cases of BPPV by specialist were included in this study who had positive Dix Hall pike test as well. All those patients who had chronic or second time vertigo spells of BPPV were excluded from this study alone with those who had central type of vertigo diagnosed by clinician. Group A was of maneuvers and Group B was of Betahistine. Two treatment interventions were given to each group daily for 1 week. Both maneuvers were given in combination to group A and 16mg of Betahistine to group B. Both intervention were given at the intensity of twice a day. Data were collected at baseline and after one week of intervention. Tools used for assessments were DHI (Dizziness Handicap Inventory) for vertigo and SF-36 for quality of Life. SPSS version 21.0 was employed for the analysis of data. Firstly, normally of data were checked by Shapiro Wilk test. As our data were non-normally distributed ($p<0.05$), we employed non-parametric test for data analysis. For within- group analysis, we used Wilcoxon-rank test and for Between groups we employed Man Whitney-U test. Demographic data was depicted in the form of mean & Standard Deviation. $P<0.05$ was kept as level of significance and CI=95% as confidence interval in this study.

RESULTS

Total 30 patients were included int this study. 15 in each group. The frequency of ae between 20-30 years old patients was 07(46.4%) in group and 11(73.7%) in group B. The frequency in age group 31-40 & 41-50 was 04(26.8%) & 04(26.8%) in group A whereas in group B it was 04(26.3%) & 0(0%) respectively. The frequency of male in group A & B was 05(33.3%) & 07(46.4%) whereas of females it was 10(66.7%) & 08(53.6%) respectively (Table 1).

Variable	Group A	Group B
Age	**n (%)**	**n (%)**
20-30	07(46.4)	11(73.7)
31-40	04(26.8)	04(26.3)
41-50	04(26.8)	00(00)
Gender		
Male	05(33.3)	07(46.4)
Female	10(66.7)	08(53.6)
Marital Status		
Single	12(80)	
Married	03(20)	

Table 1: Demographic data

The mean±SD of age was 32.40±10.91 in group A and 29.93±11.67 in group B (Table 2).

Age	Mean+SD
Group A	32.40+10.91
Group B	29.93+11.67

Table 2: Descriptive statistics

Within group comparison of DHI score in group A had median & IQR (interquartile range) in pretest functional, physical, emotional & total scores were 30(10), 26(10), 204) & 7618) respectively. Whereas in post-test DHI functional, emotional, -physical & total scores were 4(6), 4(4), 2(4) & 10(12) respectively. The p-value was <0.05 in each group which depicted a significant change within group. In group B, Md (IQR) of DHI tool subgroups were 32(4), 30(8), 20(4) & 82(14) in pretest functional, -emotional, Physical and total score whereas in post-test scores of these variables were 4(4), 2(4), 2(1) and 8(6) respectively. There was also a significant difference in group B within group analysis as $p<0.05$. SF-36 QoL had also showed significant results in both groups as p-value was <0.05 in both Group A & B. Md (IQR), z & p-values of both groups SF-36 QoL & HDI are given in table 3.

Variable	Group A			Group B		
DHI	**Md (IQR)**	**z**	**p-value**	**Md (IQR)**	**z**	**p-value**
Pre-test Functional Score	30(10)	3.41	0.00	32(4)	3.42	0.00
Post-test Functional Score	4(6)			4(4)		
Pre-test Emotional Score	26(10)	3.41	0.00	30(8)	3.41	0.00
Post-test Emotional Score	4(4)			2(4)		
Pre-test Physical Score	20(4)	3.43	0.00	20(4)	3.42	0.00
Post-test Physical Score	2(4)			2(1)		

DOI: https://doi.org/10.54393/pjhs.v4i03.601

Pre-test Total Score Post-test Total Score	76(18) 10(12)	3.41	0.00	82(14) 8(6)	3.41	0.00
QOL						
Pre-test SF-36 Score Post-test SF-36 Score	39(2) 92(4)	3.40	0.00	37(3) 91(13)	3.35	0.00

Table 3: Within group Analysis

Between groups Analysis by Man Whitney U test demonstrated that there was insignificant difference between both groups as p>0.05. Mean Rank of functional score in group A & B were 17.93 & 17.19 respectively. The MR of emotional physical & DHI total score as 18.67, 18.40 and 18.70 in group A whereas MR of group B were 13.50, 13.75 & 13.40 respectively. SF-36 QoL MR in group A & B were 19.30 & 12.81 with p=0.05 which is not less than 0.05. This revealed that both DHI & QOL-SF-36 improved equally in both groups. Therefore, both groups are equally effective in improving vertigo & quality of life in BPPV sufferers. The MR, U & p-values of emotional, Physical & total score of DHI in group A & B are depicted in table 4.

Variable	Group	MR	U	p-value
DHI				
Functional	Group A	17.93	91.00	0.26
	Group B	17.19		
Emotional	Group A	18.67	80.00	0.12
	Group B	13.50		
Physical	Group A	18.40	84.00	0.16
	Group B	13.75		
Total Score	Group A	18.73	79.00	0.11
	Group B	13.44		
QOL SF-36	Group A	19.30	70.50	0.05
	Group B	12.91		

Table 4: Between groups Analysis

DISCUSSION

In our study we have compared the efficacy of CRP & Liberatory maneuvers in contract to Betahistine. We employed DHI (Dizziness Handicap Inventory) for evaluation of vertigo and SF-36 for Quality of life. The main purpose of this study was to evaluate the outcome of these intervention in improving the quality of life of patients who had BPPV. The results of our study on the basis of DHI & SF-36 have shown improvement in both groups equally. M Cavaliere et al conducted a RCT to evaluate the efficacy of maneuvers and pharmacotherapy for the management of BPPV. In their study they formed 4 groups on the basis of Semont's maneuver, Brandt Daroff exercises alone and in combination with Betahistine. They took assessments at 7^{th}, 14^{th}, 30^{th} & at 60^{th} day of intervention [15]. The results of their study demonstrated that all types of interventions are equally effective for the BPPV management. Our study results are positively supported by this study that maneuvers alone are equally effective if used without Betahistine. Salman et al conducted a randomized control trail to compare the effectiveness of mEpley's & Semont's maneuver with or -without Betahistine for the management of BPPV. they used DHI & EQ-5D-5L tool for the assessment. The results of their study depicted that both treatments are equally effective for the management of BPPV [16]. This study also positively reinforces our results that maneuvers alone are also effective for the BPPV management if not used with Betahistine. K Stambolieva et al conducted a RCT to compare the efficacy of Epley's alone and in combination with Betahistine for BPPV along with postural stability. They formulated 4 groups on the basis of BPPV duration of onset and treatment interventions. Results depicted that if Betahistine used after maneuvers it improves vertigo and postural stability more effectively [17]. Our study is also supported by these results as well. A double blinded RCT was conducted by Lee J D et al to compare the efficacy of various maneuvers and sham intervention [18]. They formulated three groups in their study. They administered Epley's maneuver to group A, Semont's to group B and Sham maneuver to group C. Results of their study depicted that Epley's group had more improvement if compared to other two groups. But overall, all groups were effective for BPPV management. Our results are also supported that both maneuvers (Epley's & Semont's) are effective for BPPV in improving vertigo and their quality of life. A RCT conducted by KM Iqbal et al to compare the additional benefits of Betahistine & daroff exercises on BPPV patients [19]. They formulated three groups in their study. They used each of above-mentioned technique alone and in combination with Epley's maneuver. Results showed that Betahistine - mesylate and daroff exercises had additional effects in improving the BPPV patient's vertigo as compared to just maneuver alone. These results are also in coherence to ours. Ibrahim S et al carried out a RCT to demonstrate the additional effects -of the Betahistine as an add-on therapy to Epley's maneuver [20]. The formulated two groups of 100 patients. Group received Betahistine as an add-on drug to Epley's and group B just received Epley's alone. VAS & HDI tools were used for assessment purpose. Results depicted improvement in both groups but the mean change in values were greater in group A in contract to group B. Therefore, they concluded that this drugs further improves patient vertigo if used along with CRP maneuver although maneuvers alone are also beneficial. Our study is also supported by these results. The main objective of this stud was to evaluate and to compare the effectiveness of CRP maneuvers & Liberatory maneuvers in combination in contrast to Betahistine alone. The results demonstrated that maneuvers are as effective as of drug alone. Betahistine acts on receptors of inner ears and improves the flow of blood which in turn diminishes the vertigo.

DOI: https://doi.org/10.54393/pjhs.v4i03.601

Therefore, maneuvers alone can be used in the management of BPPV without any drug.

CONCLUSIONS

It was concluded from this study that CRP & Liberatory maneuvers are as effective as Betahistine is, in the treatment of vertigo and improving the quality of life of benign paroxysmal- positional vertigo patients. A larger scale double or triple blind RCT should be conducted and more than 2 groups should be formulated to evaluate the exact efficacy of each maneuver and drug. More than 2 assessment tools should also be used in that study to determine the all dimensions of improvements.

Conflicts of Interest

The authors declare no conflict of interest

Source of Funding

The authors received no financial support for the research, authorship and/or publication of this article.

REFERENCES

[1] Cetin YS, Ozmen OA, Demir UL, Kasapoglu F, Basut O, Coskun H. Comparison of the effectiveness of Brandt-Daroff Vestibular training and Epley Canalith repositioning maneuver in benign Paroxysmal positional vertigo long term result: A randomized prospective clinical trial. Pakistan Journal of Medical Sciences. 2018 May; 34(3): 558-63. doi: 10.12669/pjms.343.14786

[2] Jung I and Kim JS. Approach to dizziness in the emergency department. Clinical and experimental emergency medicine. 2015 Jun; 2(2): 75-88. doi: 10.15441/ceem.15.026

[3] Bhattacharyya N, Gubbels SP, Schwartz SR, Edlow JA, El-Kashlan H, Fife T, et al. Clinical practice guideline: benign paroxysmal positional vertigo (update). Otolaryngology-Head and Neck Surgery. 2017 Mar; 156: S1-47. doi: 10.1177/0194599816689667

[4] Choi HG, Kim G, Kim BJ, Hong SK, Kim HJ, Lee HJ. How rare is benign paroxysmal positional vertigo in children? A review of 20 cases and their epidemiology. International Journal of Pediatric Otorhinolaryngology. 2020 May; 132: 110008. doi: 10.1016/j.ijporl.2020.110008

[5] Lindell E, Kollén L, Johansson M, Karlsson T, Rydén L, Falk Erhag H, et al. Benign paroxysmal positional vertigo, dizziness, and health-related quality of life among older adults in a population-based setting. European Archives of Oto-Rhino-Laryngology. 2021 May; 278: 1637-44. doi: 10.1007/s00405-020-06357-1

[6] Sinsamutpadung C and Kulthaveesup A. Comparison of outcomes of the Epley and Semont maneuvers in posterior canal BPPV: A randomized controlled trial. Laryngoscope Investig Otolaryngol. 2021 Jul; 6(4): 866-871. doi: 10.1002/lio2.619

[7] Corsino J. Maximizing effectiveness of examination of patients with acute dizziness in the emergency department. Journal of Acute Care Physical Therapy. 2022 Jan; 13(1): 45-53. doi: 10.1097/JAT.0000000000000169

[8] Türk B, Akpinar M, Kaya KS, Korkut AY, Turgut S. Benign paroxysmal positional vertigo: comparison of idiopathic BPPV and BPPV secondary to vestibular neuritis. Ear, Nose & Throat Journal. 2021 Aug; 100(7): 532-5. doi: 10.1177/0145561319871234

[9] Zhang Y, Cao S, Lin B, Chen J, Chen X, Lin S, Zhuang C. A best evidence synthesis in practicing early active movements in ICU patients with mechanical ventilation. American Journal of Translational Research. 2021; 13(10): 11948-957.

[10] Instrum RS and Parnes LS. Benign Paroxysmal Positional Vertigo. Advance Otorhinolaryngol. 2019 Jan; 82: 67-76. doi: 10.1159/000490273

[11] Yeolekar AM, Shinde KJ, Qadri H. Innovative Use of Google Cardboard in Clinical Examination of Patients of Vertigo. Clin Med Insights Ear Nose Throat. 2019 Oct; 12: 1-3. doi: 10.1177/1179550619882012

[12] Bhandari A, Bhandari R, Kingma H, Strupp M. Diagnostic and therapeutic maneuvers for anterior canal BPPV canalithiasis: three-dimensional simulations. Frontiers in neurology. 2021 Sep; 12: 740599. doi: 10.3389/fneur.2021.740599

[13] You P, Agrawal SK, Parnes LS. Medical and Surgical Treatment of BPPV. Diagnosis and Treatment of Vestibular Disorders. 2019: 151-64. doi: 10.1007/978-3-319-97858-1_12

[14] Ramos Alcocer R, Ledezma Rodriguez JG, Navas Romero A, Cardenas Nunez JL, Rodriguez Montoya V, Deschamps JJ, et al. Use of betahistine in the treatment of peripheral vertigo. Acta oto-laryngologica. 2015 Dec; 135(12): 1205-11. doi: 10.3109/00016489.2015.1072873

[15] Cavaliere M, Mottola G, Iemma M. Benign paroxysmal positional vertigo: a study of two manoeuvres with and without betahistine. Acta otorhinolaryngologica italica. 2005 Apr; 25(2): 107-12.

[16] Salman M, Umar M, Badshah M, Naeem A. Effect of modified epley's & semont's maneuvers with or without beta-histine on benign paroxysmal positional vertigo: a randomized control trail. The Rehabilitation Journal. 2022 Jun; 6(02): 346-50. doi: 10.52567/trj.v6i02.124

[17] Stambolieva K and Angov G. Effect of treatment with betahistine dihydrochloride on the postural stability in patients with different duration of benign paroxysmal positional vertigo. International Tinnitus

DOI: https://doi.org/10.54393/pjhs.v4i03.601

Journal. 2010 Jun; 16(1): 32-6.

[18] Lee JD, Shim DB, Park HJ, Song CI, Kim MB, Kim CH, et al. A multicenter randomized double-blind study: comparison of the Epley, Semont, and sham maneuvers for the treatment of posterior canal benign paroxysmal positional vertigo. Audiol Neurootol. 2014; 19(5): 336-41. doi: 10.1159/000365438

[19] Iqbal KM and Dhanu R. Differences Effects of Additional Betahistine Mesylate and Brandt-Daroff Training After Manuver Epley on Patient Treatment Benign Paroxysmal Positional Vertigo. 2021 May; 8(5): 9-13. doi.org/10.29121/ijrsm.v8.i5.2021.2

[20] 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. 2022 Jun; 88: 421-6. doi: 10.1016/j.bjorl.2020.07.011