A Comparative Study of the Efficacy of Semont's Maneuver Against Beta Histidine in the Management of Benign Paroxysmal Positional Vertigo

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Abstract

Introduction: Benign paroxysmal positional vertigo (BPPV) is the most common type of vertigo that presents in an ENT clinic. Various repositioning maneuvers and treatment therapies exist for its management.

Objective: To compare the efficacy of Semont's maneuver and beta histidine (vasodilator) in the management of benign paroxysmal positional vertigo.

Methods and Materials:

Setting: ENT Department of Hayatabad Medical Complex Peshawar.

Study Design: Randomized Clinical Trial

Duration of study: From February 26, 2019, to August 26, 2019.

Sample Size: The total sample size will be 104 (52 in each group), keeping the efficacy of Semont's Maneuver 88% and the efficacy of Beta Histidine 57% using the level of significance 1%, power of test 90% according to the WHO formula for sample size.

Sampling technique: Non-probability consecutive sampling

Results: Group A (Semont's maneuver) was effective in 90% of patients and was not effective in 10% of patients. Whereas Group B (beta histidine vasodilator) was effective in 62% of patients and was not effective in 38% of patients.

Conclusion: Our study concludes that Semont's maneuver is more effective than beta histidine (vasodilator) in the management of benign paroxysmal positional vertigo.

Introduction

Benign Paroxysmal Positional Vertigo is a common variety of vertigo with a life time prevalance of 2.4% and is defined as a vestibular syndrome of peripheral origin (Fife and Von Brevern, 2015). It is characterized by transient episodes of vertigo associated with a predominantly horizontal rotational nystagmus precipitated by change in head posture (Von Brevern et al., 2015).It mostly affects females greater, compared to males (Kerber, 2015) . Its incidence increases with increasing age and reaches peak in sixth and seventh decade (Martin, 2005). It is considered the most common cause of vertigo in elderly (Martin, 2005). Benign paroxysmal positional vertigo may occur as an idiopathic form when it is termed as primary while the common causes of secondary benign paroxysmal positional vertigo are head trauma, viral neurolabyrinthitis, Meniere's disease, and Cogan's syndrome (Parham and Kuchel, 2016, De Stefano et al., 2014).

The two main hypotheses which explain the development of BPPV are the cupulolithiasis theory and canalithiasis theory. Cupulolithiasis theory is based on the attachment of otolithic debris to the cupula in the crista ampullaris while the canalolithiasis is based on the presence of free-floating debris in the lumen of the canal. Simply the presence of foreign particles in the SCC is the cause of vertigo (Nuti et al., 2016, Abbott et al., 2016).

Patients are instructed to avoid positions that induce nystagmus. Drugs like beta histine and cinnarazine reduce vestibular vertigo (Najam-Ul-Hasnain Khan et al., 2000, De Stefano et al., 2014). Various manouvers like Semont and Epleys are the noninvasive and simple techniques

adopted for correction of pathology. Both these techniques aim to move the inorganic fragments located on the cupula of the posteriorcanal or floating in the canal (Mandalà et al., 2012, Karanjai et al., 2010). The percentage of patients who experienced subjective improvement after semonts maneuver is 94% while beta histine was effective in ameliorating the symptoms in 55%-65% patients (Mandalà et al., 2012, Kulcu et al., 2008).

In this study, of 35 cases managed by Semont's Maneuver, 31(88%) cases showed relief of symptoms after 15 days. Out of 35 cases managed by Beta Histidine, 20(57%) cases recovered after 15 days (Ashfaq et al., 2015).

Patients of BPPV can be treated with both beta histine and Semonts maneuver. However, Semont is an easy to perform, office and home based manouvere with no overhead costs (Karanjai et al., 2010).The rationale of my study is to compare the efficacy of Semonts manouvere with beta histine which might change our approach in management of such patients in our setup. This will not only help in reducing the unnecessary use of medication but will also make it more efficient in terms of cost and symptomatic relief. To compare the efficacy of semonts maneuver and beta histine (vasodilator) in the management of benign paroxysmal positional vertigo. Semont maneuvere is better in efficacy than beta histine in management of BPPV.

Methods and materials

Setting: ENT Department of Hayatabad Medical Complex peshawar.

Study Design: Randomized Clinical Trial

Duration of study: From February 26, 2019 to August 26, 2019.

Sample Size: Total sample size will be 104(52 in each group), keeping efficacy of Semont's Maneuver 88%[14] and efficacy of Beta Histine 57%[14] using level of significance 1%, power of test 90% according to WHO formula for sample size.

Sampling technique: Non-probability consecutive sampling

Sample Selection

Inclusion criteria:

- Patients having positive dix-hallpike test will be considered having benign paroxysmal positional vertigo.
- All the patients in age range 18-65 years
- Either gender
- Patients having normal hearing thresholds on pure tone audiometry.

Exclusion criteria:

- Patients having associated medical illnesses including Diabetes Mellitus, anemia and Cardiovascular disorders like Ischemic heart disease, hypertension,Carotid artery stenosis and postural hypotension. (on the bases of history and clinical examination)
- History of Recent head and neck injury. (on the bases of clinical examination)
- History of Tinnitus and aural fullness (on the bases of history)
- Cervical spondylosis

Data Collection procedure:

All the patients fulfilling the inclusion criteria will be enrolled in the study though OPD and ENT department. Informed consent will be taken from all the patients.

The detailed history, examination and Dix-Hallpike test will be done for the diagnosis of benign paroxysmal positional vertigo on 1st visit. All the patients will be randomly divided in two groups. Patients in Group A will be treated with maneuver while patients in Group B will be treated with beta histine (16mg) 1 tablet thrice daily. Efficacy will be determined on the bases of VAS after 14th day. All the procedure will be done under the supervision of FCPS ENT specialist having minimum of 5 years' experience.

All the information above like name, age, gender will be recorded on a pre-designed pro forma. Strict exclusion criteria will be followed to control confounders and bias in the study result.

Data Analysis

All the data will be analyzed in SPSS Version 22. Mean and standard deviation will be computed for quantities variable like age while the qualitative variables like gender. Efficacy of both groups will be compared using the Chi square test. P value ≤ 0.05 will be considered significant. Efficacy will be stratified with age and gender to see effect modification. Post stratification chi square test will be applied in which P value ≤ 0.05 will be considered as significant value. All the results will

be presented in the form of table sand charts.

Results

In this study mean age in Group A was 52 years with SD ± 7.93 while mean age in Group B was 54 years with SD ± 8.05. In Group A 42% patients were male and 58% patients were female. Where as in

Group B 40% patients were male and 60% patients were female. Moreover, Group A (semonts maneuver) was effective in 90% patients and was not effective in 10% patients. Whereas Group B (beta histine vasodilator) was effective in 62% patients and was not effective in 38% patients.

Table 1. Age distribution (n=104)

AGE	GROUP A	GROUP B
18-30 years	4(8%)	5(10%)
31-40 years	14(27%)	13(25%)
41-50 years	20(38%)	19(37%)
51-65 years	14(27%)	15(29%)
Total	52(100%)	52(100%)
Mean and SD	52 years ±7.93	54 years ±8.05

Group A: Semonts maneuver, **Group B:** Beta histine (vasodilator), T Test was applied in which P value was 0.2047

Table 2. Gender distribution (n=104)

GENDER	GROUP A	GROUP B
Male	22(42%)	21(40%)
Female	30(58%)	31(60%)
Total	52(100%)	52(100%)

Group A: Semonts maneuver, **Group B:** Beta histine (vasodilator), Chi Square test was applied in which P value was 0.8421

Table 3. Efficacy (n=104)

EFFICACY	GROUP A	GROUP B
Effective	47(90%)	32(62%)
Not effective	5(10%)	20(38%)
Total	52(100%)	52(100%)

Group A: Semonts maneuver, **Group B:** Beta histine (vasodilator), Chi Square test was applied in which P value was 0.0005

Table 4. Stratification of efficacy w.r.t age distribution

AGE	EFFICACY	GROUP A	GROUP B	P value
20-30 years	Effective	3	3	0.6352
	Not effective	1	2	
Total		4	5	
31-40 years	Effective	13	8	0.0504
	Not effective	1	5	
Total		14	13	
41-50 years	Effective	18	11	0.0217
	Not effective	2	8	
Total		20	19	
51-60 years	Effective	13	10	0.0818
	Not effective	1	5	
Total		14	15	

Group A: Semonts maneuver, **Group B:** Beta histine (vasodilator)

Table 5. Stratification of efficacy w.r.t gender distribution

GENDER	EFFICACY	GROUP A	GROUP B	P value
Male	Effective	20	13	0.0244
	Not effective	2	8	
Total		22	21	
Female	Effective	27	19	0.0092
	Not effective	3	12	
Total		30	31	

Group A: Semonts maneuver, **Group B:** Beta histine (vasodilator)

DISCUSSION

Benign Paroxysmal Positional Vertigo is the most common type of vertigo with a life time prevalance of 2.4% and is defined as a vestibular syndrome of peripheral origin (Fife and Von Brevern, 2015). It is characterized by transient episodes of vertigo associated with a predominantly horizontal rotational nystagmus precipitated by change in head position (Von Brevern et al., 2015).It commonly affects females greater than males (Kerber, 2015). Its incidence increases with age and reaches peak in sixth and seventh decade. It is considered the most common cause of vertigo in elderl,. Benign paroxysmal positional vertigo may occur as anidiopathic form when it is termed as primary while the common causes of secondary benign paroxysmal positional vertigo are head trauma viral neurolabyrinthitis, Meniere's disease (De Stefano et al., 2014) , and Cogan's syndrome (Parham and Kuchel, 2016). Our study shows that mean age in Group A was 52 years with SD ± 7.93 while mean age in Group B was 54 years with SD ± 8.05. In Group A 42% patients were male and 58% patients were female. Where as in Group B 40% patients were male and 60% patients were female. Moreover, Group A (semonts maneuver) was effective in 90% patients and was not effective in 10% patients. Whereas Group B (beta histine vasodilator) was effective in

62% patients and was not effective in 38% patients.

In this study all the participant was suffering from sudden, episodic vertigo and most categorized their vertigo of moderate intensity that is 66% in Semont's maneuver group and 71% in Beta Histidine group. After 15 days of treatment, both groups showed significant improvement but the rate of recovery was higher in Semont's maneuver group in which 89% of patients became disease free. In Beta Histidine group, only 57% patients became disease free. In Semont's maneuver group, only 3% patients remained in severe vertigo group while in Beta Histidine group 11% patients remained with severe vertigo. There is no significant difference in vertigo at baseline ($P > 0.05$). Group wise distribution shows that in Semont's maneuver group 31 (88%) patients were completely cured, but in Beta Histidine group 20 patients (57%) were cured after 15 days of treatment. There was a significant association between treatment groups and cure rates after 15 days of treatment. In Semont's maneuver group the complete cure rate was significantly higher (88% vs. 57%, $P < 0.05$) as compared to Beta Histidine group Similar results were observed in another study conducted by Mandala et al, in which A total of 342 patients with unilateral PC BPPV were recruited for a multicenter study(Mandalà et al., 2012). Patients were randomly assigned to treatment by SLM (n = 174) or sham treatment (n = 168). Subjects were followed up twice (1 and 24 h) with the Dix-Hallpike maneuver by blinded examiners. At the 1 and 24 h follow-up, 79.3 and 86.8%, respectively, of patients undergoing SLM had recovered from vertigo, compared to none of the patients undergoing the sham maneuver ($p < 0.0001$). Patients who manifested liberatory nystagmus at the end of SLM showed a significantly higher percentage of recovery (87.1 vs. 55.7%; $p < 0.0001$). To the best of our knowledge, this is the first Class I study on the efficacy of SLM. SLM proved highly effective with respect to the sham maneuver ($p < 0.0001$). Liberatory nystagmus was demonstrated to be a useful prognostic factor for the efficacy of treatment. The present Class I study of efficacy of SLM changes the level of recommendation of the maneuver for treating PC-BPPV from level C to level B. In another study conducted by Karanjai et al, had reported that semonts maneuver was effective in 92% cases while beta histine vasodilator was effective in 62% cases (Karanjai et al., 2010).

CONCLUSION

Our study concludes that Semont maneuvere is more effective than beta histine (vasodilator) in management of benign paroxysmal positional vertigo.

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