OFFICE MANAGEMENT OF BENIGN PAROXYSMAL POSITIONAL VERTIGO WITH EPLEY'S MANEUVER

Sheikh Saadat Ullah Waleem, Sher Muhammad Malik*, Saeed Ullah, Zaheer ul Hassan**

Department of ENT, Military Hospital, Rawalpindi,*PNS Shifa, Karachi, **Combined Military Hospital, Abbottabad

Background: The underlying cause of benign paroxysmal positional vertigo is free floating endolymph particles (otoconia displaced from the otolithic membrane of the utricle) in the posterior semicircular canal. Particle repositioning techniques are one of the effective method of treatment. The purpose of the study was to determine the effectiveness of Epley's maneuver against expectant treatment and to find out if this treatment should be used more frequently than watchful waiting for the treatment of BPPV. **Methods:** This study was carried out at outpatient clinic, departments of ENT, Combined Military hospital Rawalpindi and PNS Shifa hospital Karachi over a three years period from Jan, 2002 to Jan, 2005. Based upon history and Dix-hallpike testing 44 patients diagnosed as benign paroxysmal positional vertigo were collected by convenient sampling from these hospital's outpatient departments and divided by non probability convenience into two groups of 22 each. The control group (group A) was given placebo and the test group (group B) received single treatment by Epley's maneuver in the OPD. The results were analyzed at the end of one and two weeks by history taking and Dix-hallpike testing. Computer software SPSS version 10 was used. **Results:** At the end of week one 14 (63.63%) patients of group B were symptom free and 2 (9.1%) patients was much better as compared to the control group where only 1 (4.5%) patient reported as symptom free and another 5 (22.7%) reported as much better. At the end of second week out of those treated by Epley's maneuver 16 (72.7%) reported as symptom free and another 2 (9.1%) as much better whereas 4 (18.2%) patients reported no improvement at all. In the control group only 4 (18.2%) patients reported as symptom free, 3 (13.6%) as much better, 6 (27.3%) as better and 9 (40.9%) reported no change in the symptoms. Chi square test was applied and the value of p came out to be 0.001 and 0.002 at week one and week two respectively. **Conclusion:** It was concluded that Epley's maneuver is a much better form of management for benign paroxysmal positional vertigo.

Key Words: Benign paroxysmal positional vertigo (BPPV); Epley's maneuver; particle repositioning technique (PRT).

INTRODUCTION

Benign paroxysmal positional vertigo (BPPV), one of the most common causes of sudden onset positional vertigo, is characterized by brief, sudden attack of vertigo precipitated by head movements.[1] It is characterized by geotropic nystagmus with the problem ear down, predominantly rotatory fast phase toward the undermost ear, latency (a few seconds), limited duration (<20 s), reversal upon return to upright position and the declining of response upon repetitive provocation.[2] All neuro-otological examination except Dix-Hallpike maneuver may be normal. It has a predilection for women and in the older population.[3] It is said that about 50% of all dizziness in older people is due to BPPV.[4] Treatment options include expectant treatment (no treatment), vestibulosuppressant medication, office treatment (Epley's maneuver, Semont maneuver[5]) also called particle repositioning technique (PRT), home treatment (Brandt-Daroff Exercises) and the surgical treatment. By far the most simple and effective treatment is the office treatment, i.e., the particle repositioning technique.[6,7]

In our hospitals most of the cases of BPPV are not offered PRT mainly because of patient overload and the lack of time in a busy ENT clinic but also because there is a general belief that expectant treatment/no treatment/watchful waiting is as good an option as is PRT. The study was conducted to assess the effectiveness of a single treatment of PRT against the other option of no treatment.

MATERIAL AND METHODS

The study was a quasi experimental study carried out at CMH Rawalpindi and PNS Shifa hospital Karachi over a three year period, from 2000-03. The objectives of the study were to determine the effectiveness of Epley's maneuver against expectant treatment in the alleviation of troublesome vertigo and to ascertain if this treatment should be used more frequently for the treatment of BPPV. A total of 44 patients of comparable age were collected by convenient sampling from ENT OPD of these hospitals. Only those patients having a clear cut diagnosis of BPPV, i.e., presenting with history of sudden onset positional vertigo with positive Dix-hallpike testing, were included. Other vestibular and inner ear pathologies were ruled out before including the patients in the study. Those patients suspicious of having vertigo due to any other cause or having any medical condition that may cause vertigo were excluded from the study. Patients having cervical spondylosis,

vertigo of aging or those who received treatment but could not follow up were also excluded from the study. Since the Dix-Hallpike testing is pathognomonic no laboratory investigation was carried out. The patients were divided into two groups of 22 each by non probability convenience sampling. Group A was treated with placebo (multivitamin tablets) and group B underwent a single treatment with Epley's particle repositioning maneuver in the office according to the standard technique[8]. No vibration was applied during the technique and the treatment was not repeated. Post treatment the patients were instructed to sleep in semi-recumbent position for the next two nights and avoid provoking head positions that might bring on BPPV again. At the end of first and second week they were instructed to put themselves carefully into provocative position that used to induce vertigo and tell us how they felt. Effectiveness of treatment was determined by history and clinical reevaluation with Dix-Hallpike testing at 1 and 2 weeks after treatment and was categorized on a scale of 1 to 4. Those who reported that their symptoms were completely cured were labeled as 1; some reported that they were much better although they still felt occasional imbalance in provocative position but the symptoms were not bothersome any more were labeled as 2; those who said that they still felt frequent bouts of positional vertigo however they were better than before were labeled as 3 and those who reported that there was no improvement at all were labeled as 4. Those categorized as 1 and 2 showed negative dix-hallpike testing whereas for 3 and 4 the dix-hallpike testing was positive. Computer software SPSS 10 was used for data analysis and chi-square test was applied to evaluate if there is any significant difference in proportion between groups A & B. A *p*-value of less than 0.05 was taken as significant.

RESULTS

There were 30 women and 14 men in the study and there was no significant difference in the age or sex distribution of the two groups. At the first assessment, at week one, 16 (72.73%) out of the test group of 22 felt either completely relieved(14) or much better (2) and upon Dix-Hallpike testing no nystagmus could be elicited in these patients. On the other hand in the control group only 6 (27.27%) patients either felt completely cured (1) or much relieved (5) and the Dix-Hallpike testing was found to be negative in these patients. Six patients in the test group and 16 in the control group still showed nystagmus upon dix hallpike testing.

At week two, out of the test group 18 (81.82%) patients reported as completely cured or much relieved with negative dix hallpike testing whereas in the control group the total number of such patients was only 7 (31.81%).

Chi-square test was applied and the value of *p* was 0.001 and 0.002 at one and two weeks respectively which supported our hypothesis that Epley's maneuver is a significantly better treatment than watchful waiting in the treatment of BPPV. The results are further elaborated in Table-1 and the comparative effectiveness of the two modalities of treatment becomes more evident by looking at Figure-1 and 2. The results of chi-square test are shown in Table-2 and 3.

Table-1: Outcome measurements.

Outcome measurements	Week one		Week two	
	Case	Control	Case	Control
Cured	14 (63.63%)	1 (4.5%)	16 (72.7%)	4 (18.2%)
Much better	2 (9.1%)	5 (22.7%)	2 (9.1%)	3 (13.6%)
Better	2 (9.1%)	4 (18.2%)	0 (0.0%)	6 (27.3%)
No change	4 (18.2%)	12 (54.5%)	4 (18.2%)	9 (40.9%)

Table-2: Test result of chi square at week one.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	17.219	3	0.001
Likelihood Ratio	19.640	3	0.000
Linear-by-Linear Association	12.869	1	0.000
N of Valid Cases	44		

a) 4 cells (50.0%) have expected count less than 5. The minimum expected count is 3.00.

Table-3: Test result of chi square at week two.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.323	3	0.002
Likelihood Ratio	18.202	3	0.000
Linear-by-Linear Association	10.253	1	.001
N of Valid Cases	44		

a) 4 cells (50.0%) have expected count less than 5. The Minimum expected count is 2.50.

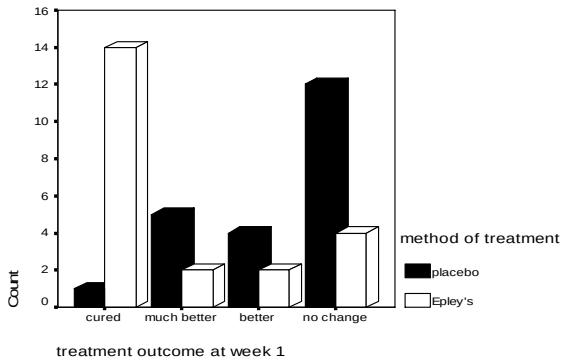

Figure 1: Treatment outcome at week 1.

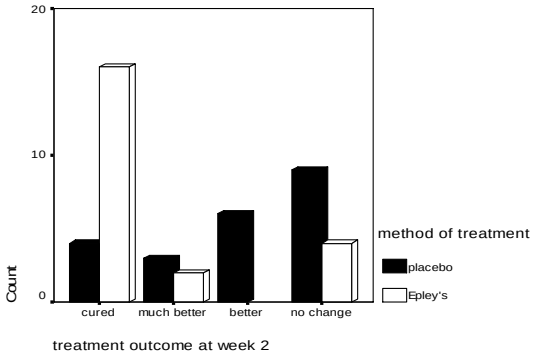

Figure 2: Treatment outcome at week 2.

DISCUSSION

The onset of BPPV is typically sudden, mostly as a result of inflammatory insult (viral), trauma or idiopathic etiology[1]. The underlying cause is free floating endolymph particles (otoconia displaced from the otolithic membrane of the utricle) in the posterior semicircular canal. They typically settle in the dependent posterior semicircular canal and render it sensitive to gravity.[9] The patient is asymptomatic at rest and in between the attacks and the attacks are precipitated by the change in position.

Watchful waiting or vestibulosuppressant medication is being used as the first line treatment measure in most of the cases. Although the condition resolves without treatment, watchful waiting involves weeks or months of discomfort and vertigo with the danger of falls and other mishaps. Vestibulosuppressant medication on the other hand does not address the underlying cause although it may provide temporary relief for some patients by masking the symptoms. These medicines cannot be given for more than a few days, are not free of side effects and may itself cause dizziness and sleepiness. 'Habituation exercises'[7] are sometimes useful in the situation where other maneuvers (Epley's, Semont) have been tried—in essence these consist of a more intense and prolonged series of positional exercises. Surgery is the last option in resistant cases only as it is not free of complications.

Although particle repositioning technique (Epley's maneuver) requires a little bit of time to be spent with the patient, it is, in our opinion, the time rightfully spent as the technique is simple, rewarding, and cost-effective and rids the patient immediately of the troublesome vertigo after a single therapy. It aims at repositioning of the offending particles back to the utricle and therefore addresses the underlying cause of positional vertigo.[10,11] Moreover, it doesn't bear any major complications or side effects and can be repeated if required. Our results suggest Epley's maneuver to be a highly effective single treatment approach towards BPPV as 81.8% of our patients were found to be totally symptom free at the end of two weeks. Dix hallpike testing of these patients did not reveal any positional vertigo indicating their complete cure. This result is comparable to other studies published internationally[12–14] which report complete resolution of symptoms in up to 74% to 95% of cases of BPPV by a single treatment with Epley's maneuver. Two patients of group B who initially reported as not much improved after Epley's maneuver at the first evaluation (week one) reported as cured at the end of week two. This could be the delayed effect of Epley's maneuver but more likely seems to be not a result of PRT. The long term results of this treatment could not be evaluated as many of the patients lost follow up at around 3–6 months. Out of the test group only two patients reported with recurrence, one after 6 months and the other after 9 months, and another treatment with Epley's maneuver yielded satisfactory results in them.

CONCLUSION

Epley's maneuver is a non invasive and very effective procedure for the management of BPPV which can be performed in the office and gives immediate results. It also reduces repeated visits to the OPD and can be repeated without any fear of complications if the results are not desirable after the first session. Taking into account the result of our study and the above mentioned benefits Epley's maneuver should be recommended as a treatment of choice for all patients of BPPV.

REFERENCES

1. Arthur Logan Turner. Vertigo. In: A.G.D. Maran, editor. Logan Turner Diseases of the Nose Throat and Ear, Great Britain: Redwood Books, Trowbridge, and Wiltshire;1988. p 332–3.
2. R.R. Gacek. Pathology of the vestibular system. In: Alan G. Kerr, John B. Booth, editors. Scott-Brown's Otolaryngology, volume 3, Great Britain: Bath Press, Bath; 1997. p 3/5/4.
3. John Li, John Epley . Benign paroxysmal positional vertigo (online) 15 April, 2002 (cited 2004, Jan13).Available from www.emedicine.com/ent/topic761.htm.
4. Timothy C. Hain MD. Benign paroxysmal positional vertigo (online). Feb, 2003(cited 2004, jan11).Available from www.dizziness-and-balance.com/disorders/bppv/bppv.html
5. Lopez-Escamez J, Gonzalez-Sanchez M, Salinero J. Meta-analysis of the treatment of benign paroxysmal positional vertigo by Epley and Semont maneuvers. Acta Otorrinolaringol Esp. 1999;50(5):366–70.
6. Simhadri S, Panda N, Raghunathan M. Efficacy of particle repositioning maneuver in BPPV: a prospective study. Am J Otolaryngol. 2003;24(6):355–60.
7. Mujeeb M, Khan N. Epley's manoeuvre: treatment of choice for benign paroxysmal positional vertigo. J Laryngol Otol. 2000;114(11):844–7.
8. Johanna Beyts. Rehabilitation of balance disorders. In: Alan G. Kerr, John B. Booth, editors. Scott-Brown's Otolaryngology, volume 2, Great Britain: Bath Press, Bath; 1997. p 2/22.
9. Hall HF, Ruby RR, McClure JA: the mechanism of benign paroxysmal vertigo. J Otolaryngol. 1979;8:151–8.
10. Lorne S. Parnes, Sumit K. Agrawal, Jason Atlas. Diagnosis and management of benign paroxysmal positional vertigo (BPPV) Ear, Nose and Throat CMAJ 2003;169 (7):130–3.
11. Kaplan DM, Nash M, Niv A, Kraus M. Management of benign paroxysmal positional vertigo. Otolaryngol Head Neck Surg. 2005;133(5):769–73.
12. Pino Rivero V, Pantoja Hernández CG, González Palomino A, Mora Santos ME, Marcos García M, Montero García C, et al. Treatment of the benign paroxysmal positional vertigo (BPPV) by Epley maneuver. An Otorinolaryngol Ibero Am 2007;34(1):67–73.
13. Nunez RA, Cass SP, Furman JM. Short- and long-term outcomes of canalith repositioning for benign paroxysmal positional vertigo. Otolaryngol Head Neck Surg. 2000;122(5):647–52.
14. Blatt PJ, Georgakakis GA, Herdman SJ, Clendaniel RA, Tusa RJ. The effect of the canalith repositioning maneuver on resolving postural instability in patients with benign paroxysmal positional vertigo. Am J Otol. 2000;21:356–63.

Address for Correspondence:
Dr. Saeed Ullah, Department of ENT, Combined Military Hospital, Abbottabad. Tel: +92-992-3516130
Email: saeedyz@yahoo.com