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Original Research Article

Treatment of benign positional paroxysmal vertigo in clinical settings in India: a cross sectional pilot survey

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ABSTRACT

Background: The usage pattern and effectiveness of various treatment strategies for benign positional paroxysmal vertigo (BPPV) have not been widely reported in routine clinical settings in India. The aim of the study was to understand treatment patterns and level of symptom improvement in Indian patients presenting with symptoms of BPPV in clinical practice.
Methods: A cross-sectional pan-India survey was conducted with leading neurologists and otolaryngologists. A detailed questionnaire was shared with specialists which was followed by semi-structured telephonic interviews to gather a deeper understanding of their treatment practices. The obtained data was analyzed using appropriate statistical methods.
Results: A total of 5 neurologists and 8 ENT specialists completed the survey. Physicians reported that age, but not gender, was an important factor when selecting appropriate treatment. Specialists reported that in their clinical practice symptom improvement is better with betahistine plus maneuvers compared to betahistine only alone (97% verses 90% cure rate) and is comparable with maneuvers (97% verses 98% cure rate, respectively). Dix Hallpike and supine roll test using videonystagmography were the most recommended tests used to diagnose BPPV. Betahistine plus maneuvers was the most commonly prescribed treatment for BPPV, and clinicians observed greater decrease in the severity of BPPV symptoms with betahistine plus maneuvers versus betahistine alone or maneuvers. The Visual analog scale (VAS) was the most widely used scale for assessing severity of BPPV symptoms.
Conclusions: These findings indicate that betahistine plus maneuvers provides better control over symptom severity in patients with BPPV.

Keywords: BPPV, Betahistine, Maneuvers, VAS, Real world study

INTRODUCTION

According to the international classification of vestibular disorders, vertigo is defined as an illusion of movement, generally rotating, either of oneself or of the environment, associated with feelings of instability. Depending upon the location of the lesion in the vestibular system or in the higher centers of the body, it can be classified as central or peripheral, of which BPPV is the most common peripheral vestibular disorder. It accounts to one third of the total vestibular diagnosis in the population and has an annual incidence ranging from 10.7 to 140 cases per 100 000 people and a lifetime prevalence of 2.4%.[1] An Indian study reported that 172 out of 685 patients with vertigo were diagnosed with BPPV, and a recurrence of 10.37% was observed.[2] Most of the pathologies for vestibular vertigo have a good prognosis and are benign, but for effective therapy a process of periodic evaluation and follow-up along with pharmacological treatment is required.[3] In BPPV, patients complain of severe dizziness of sudden onset, lasting less than a minute on lying down or rising out of bed or rolling over. Although BPPV is a benign

condition, vertigo increases the risk of falls, particularly among elderly patients, and also causes psychological symptoms that can lead patients to avoid certain everyday situations.[4,5] This can negatively impact a patient's quality of life. Therefore, early diagnosis and treatment can lead to better clinical outcomes and improved quality of life in patients afflicted by this ailment.

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 theory is based on the presence of free-floating debris in the lumen of the semicircular canals (SCC).[6] The management of BPPV has changed dramatically in the past 20 years as our understanding of the condition has progressed. The most accepted treatment method for the disease is canalith repositioning procedures (CRPs). The aim of canalith repositioning maneuver is to send the otoconia back to the utricle through mobilization with correct head movements.[7] Betahistine, a histamine analog, is also gaining popularity in the treatment of BPPV because of its neurochemical, microcirculatory activity and multi-factorial mode of action.[4] In a study conducted across 13 countries, out of the 4,294 patients, 87% were prescribed betahistine, thus making it one of the most prescribed medications for the management of BPPV.[2] Furthermore, treatment with betahistine 48 mg/day improved health-related quality of life and provided satisfactory tolerability (adverse drug reactions affecting <2.5% of the study population) as observed using the dizziness handicap index, hospital anxiety and depression scale, and the short-form SF-36v2 questionnaire.[3] To the best of our knowledge, there is limited data regarding the management of BPPV in clinical practice in India specifically with respect to efficacy (symptom improvement) observed with combination treatment of betahistine plus maneuver. The objectives of this survey were to obtain a deeper understanding of the treatment patterns in patients presenting with BPPV symptoms and to understand differences in symptom improvement as observed in clinical practice when patients are treated with either maneuvers, betahistine plus maneuvers, or betahistine alone.

METHODS

Survey conduct

A cross sectional pan-India survey with leading specialists (neurologists and otolaryngologists) was conducted over a period of 2 months from January 2021 to March 2021. As this was a pilot study, we identified and enrolled a small group of experts/specialists with >10 years of experience in treating patients with BPPV. All participating specialists provided a written consent before participating in the survey. No patient level data was collected for the study; hence, ethics committee approval was not obtained. Subsequent to this, the study questionnaire was shared with them using a password protected secure Weblink. In an effort to obtain an understanding of treatment practices in a real-world setting, the survey included questions regarding region of practice, and specific questions around diagnosis, treatment, and clinical improvements in BPPV symptoms post treatment with either of the three treatment modalities. After survey completion, telephonic interview was conducted to obtain deeper insights based on practice patterns of specialists with regard to clinical outcomes following BPPV treatment. All interviews were conducted by a trained qualitative research expert. During the telephonic interviews, participating specialists were asked to respond to questions based on their clinical practice experience of treating the last 15 patients with either maneuvers, betahistine with maneuvers, or betahistine (ideally five patients each receiving either of the three treatments). The questions regarding clinical outcomes focused on understanding symptom improvement in terms of severity and frequency from start of treatment to end of treatment (Table 1). Based on their clinical experience, doctors were also requested to provide the average number of days from when they observe symptom improvement post start of treatment.

Table 1: Physician questionnaire.

No.	Questions
1.	On average, how many patients do you see presenting with benign paroxysmal positional vertigo (BPPV) symptoms?
2.	a. Please indicate the average age of patients presenting with BPPV to your clinical practice
	b. Please indicate the % males and % females who present to your clinic for treatment of BPPV
3.	Which of the following tests do you use to diagnose BPPV in your clinical practice?
	-The Dix Hallpike or Supine roll test using videonystagmography
	-Video head impulse or thrust test
	-Vestibular evoked myogenic potentials
	-Other tests to diagnose BPPV
	-No other tests to diagnose BPPV
4.	What are the additional examination/s do you prescribe for suspected BPPV?
5.	What is your preferred first line of treatment for patients presenting with BPPV symptoms for the last 100 patients that you treated for BPPV?
6.	In your clinical practice what factors govern the decision of treatment that a patient presenting with BPPV might receive?

Continued.

No.	Questions
7.	For patients who you treat with maneuvers, which is the most commonly used maneuver in your clinical practice?
8.	In your clinical experience, please indicate the most common side effects that you have observed in patients who are treated with maneuvers.
9.	Please indicate the preferred dose, frequency, and duration of betahistine that you prescribe to your BPPV patients in clinical practice.
10.	For patients receiving treatment with betahistine, how often do you call your patients for follow up visits/check-ups?
11.	Please enlist the common side effects that you observe with betahistine medication in your clinical practice.
12.	Please indicate the preferred dose, frequency, and duration of betahistine when given along with maneuvers?
13.	Please indicate the number of sessions of maneuvers that you perform while treating patients along with betahistine?
14.	Please indicate the common side effects that you observe in patients receiving treatment with betahistine + maneuver in your clinical practice.

Survey analysis

Data obtained from the survey are presented as mean [standard deviation (SD)] for normally distributed continuous variables and frequencies for categorical variables. The statistical package for social sciences (SPSS) for Windows version 10.0 (SPSS Inc., Chicago) was used for the analyses.

RESULTS

Demographic profile and treatment patterns

A total of thirteen specialists completed the survey (5 neurologists and 8 otolaryngologists). Mean years of practice of specialists was ≥20 years. The thirteen participating physicians also provided aggregate data on a total of 195 patients. On an average, specialists reported that they see 34 patients with BPPV symptoms per month. Detailed patient history and Dix Hallpike test was commonly used test to diagnose BPPV on first visit followed by magnetic resonance imaging (MRI) and computed tomography (CT) scans in some patients. In addition to clinical assessment, all specialists reported that they record symptom severity using the VAS during a patient's first visit as well as on their follow-up visit (at week 4) post start of treatment to determine improvements in BPPV symptoms.

Specialists reported that the mean age of patients presenting with BPPV to their clinics was 53 years, with the incidence of BPPV being slightly higher in females (53%) compared with males (47%). While specialists asserted that age was an important factor while selecting between treatment options, gender did not play an important part. Specialists were more inclined to prescribe betahistine treatment to elderly patients (≥60 years) with a history of unstable spine, cardiovascular conditions, or those who are unwilling to undergo treatment with maneuvers. Specialists also treat younger patients (<50 years of age) with maneuvers alone or with betahistine plus maneuvers. Epley's followed by Semont were the most commonly performed maneuvers in clinical practice. On an average, patients required two sessions of Epley or Semont during their first month of treatment and about 2-3 follow-up visits over a three-month follow-up period. For patients who are treated with betahistine plus maneuvers, the most commonly prescribed dose was 24 mg two times a day, while for patients receiving betahistine alone, the dose ranged between 16 mg three times a day and 48 mg once a day.

All patients receiving betahistine in combination with maneuvers or alone were required to come only once for follow-up visit, which is lower than the follow-up visits that are required for treatment with maneuvers only. This can help reduce not only the economic burden on patients, but it also reduces the hassle of traveling to the clinic for repeated maneuvers.

Symptom improvement associated with treatment methods

Based on their clinical experience, all specialists reported that they observe improvements in vertigo symptoms in about 5 days' post start of treatment with betahistine plus maneuvers as opposed to about 9 days with betahistine alone. Furthermore, they reported that improvements in vertigo and its associated symptoms (such as lightheadedness, dizziness, nausea, headache, and vomiting) were better in patients receiving betahistine plus maneuvers compared to patients receiving betahistinealone. They reported a 97% cure rate with betahistine plus maneuvers versus 90% cure rate observed with betahistine alone and comparable cure rate of 98% with maneuvers only treatment.

Based on clinical assessments, specialists reported observing an almost equivalent reduction in the severity of BPPV symptoms with betahistine plus maneuvers versus maneuvers alone. Based on the VAS scale, all specialists reported that they had observed severity of BPPV symptoms to decrease the most with betahistine plus maneuvers as opposed to the two other treatments. Specialists also reported that reduction in symptom severity (based on VAS score) is higher with betahistine plus maneuvers at end of treatment versus maneuvers alone.

DISCUSSION

BPPV is the most common vestibular disorder.[8,9] BPPV is popularly believed to be due to small cupular deposits that cause endolymph to deflect the cupula and stimulate the hair cells. This faulty stimulation causes the sensation of vertigo in BPPV. BPPV is characterized by sudden episodes of dizziness that occur with the movement of the head. This condition more commonly emerges between the fifth and seventh decades of a person's life and tends to occur at higher rates in women than in men.[10] Similar findings were observed in our study. Furthermore, given that BPPV occurs most commonly in the second half of the life span, patients suffering from BPPV often have medical comorbidities that may impact the management of BPPV.[11] In this survey, participating specialists reported that about 45% of the patients with BPPV that they treated had hypertension and about 20% had hypothyroidism. This finding is also supported by previously published case-control studies that have found higher relative rates of migraine (34% in BPPV patients verses 10% in non-dizziness control group), diabetes (14% verses 5%), and hypertension (52% verses 22%).[1] Therefore, clinicians should assess patients with BPPV for these comorbidities as their presence may modify the management and influence treatment outcomes.

Though maneuvers constitute the main stay of treatment for BPPV, the symptoms of vertigo are also commonly treated with medications. Betahistine serves as a coadjuvant treatment option for disorders related to dizziness and vertigo. The level of evidence for betahistine is sparse for overall vertigo treatment. However, literature supports its use in various types of vertigo with a good safety profile.[3] Recent studies have also indicated that two thirds of subjects diagnosed with vertigo are prescribed betahistine regardless of the etiology.[12] In the multicenter virtuoso study including 305 subjects with vertigo, the clinical response to daily betahistine was reported to be good/excellent by 95.4% of patients and by 94.4% of participating specialists in routine settings. The beneficial effects of betahistine on monthly vertigo attacks were also evident during the 2-month treatment period.[13]

In a study of 90 subjects consisting of 30 subjects each treated with the Epley maneuver plus betahistine, Epley maneuver alone, or betahistine alone, a better response was observed in subjects receiving Epley maneuver plus betahistine. Subjects were evaluated at 1 and 4 weeks, and those receiving Epley maneuver plus betahistine experienced less recurrence and relapse.[14] Similarly, findings from our study reported that treatment with maneuvers plus betahistine showed better improvement in the mean VAS severity score at follow-up compared to maneuvers alone. Moreover, as observed the cure rate was greater post treatment with maneuvers plus betahistine and maneuvers alone as compared to betahistine alone. Lastly, the ease of use of betahistine coupled with the reduced economic burden of follow-up visits makes treatment with betahistine in combination with maneuvers a favorable option for older as well as younger patients compared to maneuvers alone. For younger patients in workforce, the combination treatment can lead to less time-off from work which would otherwise be required if they were treated with maneuvers alone.

Limitations

Though this survey provided invaluable insights, we acknowledge some inherent limitations. First, as this was a pilot survey, i.e., the sample size of participating specialists was low. Second, we relied on aggregate estimates provided by participating specialists. Therefore, future studies should focus on assessing the clinical, economic, and humanistic benefits in terms of quality of life associated with the use of BPPV treatments in real-world settings with longer follow-ups (6 months to 1 year) to substantiate the results of the present study.

CONCLUSION

Though maneuvers remain the gold standard of treatment, findings from our survey have shown that clinicians are now observing betahistine add-on therapy to result in better improvements in vertigo symptoms and severity compared to maneuvers alone. As BPPV negatively impacts quality of life and can cause loss of productive days, early diagnosis and combination treatment with betahistine plus maneuvers can lead to optimal clinical outcomes.

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