ISSN: 0975-3583,0976-2833 VOL15, ISSUE 01, 2024

A study on efficacy of epley's maneuver on a series of 28 patients in treatment of vertigo

Type of study: Original Research Article

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ABSTRACT

Background: Ménière's disease, benign paroxysmal positional vertigo (BPPV), and acute peripheral vestibulopathy (vestibular neuritis and labyrinthitis) are the three most prevalent causes of vertigo. The study was done to assess the comparative effect on the recovery of a series of 28 patients suffering from vertigo, by performing epley's maneuver in comparison with medical management only without maneuver. **Material & Methods:** A study was conducted on series of 31 patients who were admitted under physician in medicine department of a private medical facility at Noida, Uttar Pradesh, suffering from vertigo. Study period was extended from July 2022 to March 2023. Out of these 31 patients 03 were drop outs of study and among rest 28 patients 13 patients were treated conservatively with only medical therapy and other 15 patients received treatment along with epley's maneuver. Results were compared using average length of stay (ALOS) in the hospital and its financial implications. **Results:** In study it was observed that all patients of vertigo admitted in medicine department should get an ENT reference done as in patients treated with epley's manoeuvre as compared to conservative management unnecessary higher and prolonged use of medication can be avoided to reduce financial burden to patients as well as average length of stay (ALOS) can be shortened. **Conclusion**: Benign paroxysmal positional vertigo [BPPV] being a common cause of vertigo, this manoeuvre should be first line of treatment in all such patients.

ISSN: 0975-3583,0976-2833 VOL15, ISSUE 01, 2024

Keywords: Vertigo, BPPV, Meniere's Disease, Epley's Manoeuvre, Efficacy, Average Length Of Stay (ALOS).

INTRODUCTION

Dizziness is a condition of spatial orientation that is often reported by patients who visit the emergency room and primary care physician. A subtype of dizziness known as vertigo is the illusion of motion brought on by an inconsistency between information received by the vestibular, proprioceptive, and visual systems. There are two types of vertigo: central and peripheral. Central vertigo is comparatively more serious than the peripheral type.[1]

Ménière's disease, benign paroxysmal positional vertigo (BPPV), and acute peripheral vestibulopathy (vestibular neuritis and labyrinthitis) are the three most prevalent causes of vertigo. BPPV is the most common cause of vertigo. [2]

BPPV was first described in 1921 by Barnay and it was attributed to otolith disorder.[3] Diagnosis of this disorder was first defined by Dix and Hallpike through classic positioning test.[4] It is characterized by transient bouts of vertigo and nystagmus that are brought on by specific adjustments in head posture in relation to gravity.[5] Mean age of onset is fourth and fifth decade. Common etiologies resulting to BPPV are head injury, vestibular neuritis, surgical procedures including cochlear implant insertion and stapedectomy and Meniere's disease.[6-7] Dizziness in BPPV on head movements is due to presence of calcium carbonate crystals. These crystals may get deposited in the cupula (cupulolithiasis) or would float freely in the semicircular canal (canalithiasis).[8-9]

A suitable history and the bedside Dix-Hallpike test are essential for diagnosing the condition. Possible treatment of this disorder includes chemical labyrinthectomy and eighth nerve sectioning. However, repositioning maneuvers stay as the first line of therapy. In most patients of vertigo, Epley's canalith repositioning manoeuvre is adequate treatment.[10] The study was done to assess the comparative effect on the recovery of a series of 28 patients suffering from vertigo, by performing epley's maneuver in comparison with medical management only without maneuver.

Material and Methods

This retrospective observational study was conducted among the patients admitted under physician in the Medicine Dept., Hospital, Noida. Study period was from July 2022 to March 2023. The clinical case patients above 12 years of age with vertigo were included in this study. Informed written consent was taken from all the patients included in this study. 31 patients were included in our study. Out of 31 patients, 28 patients were diagnosed with BPPV. Out of 28 patients, 13 patients were treated conservatively through medical therapy, while other 15 patients received treatment through Epley's manoeuvre. Results were compared after treatment with and without Epley's manoeuvre using Average Length Of Stay(ALOS) in the hospital.

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The head was first positioned in the Dix-Hallpike posture in order to induce dizziness. The patient was then seated on an examination table, with their legs extended and head turned at a 45-degree angle. The patient was laid back quickly, with their head hanging slightly over the edge of the table and turned to the side of the affected ear. This position was held for about 30 seconds.The patient's head was then rotated 90 degrees in the opposite direction while maintaining the lying position for another 30 seconds. The patient was asked to roll onto their side, facing the unaffected ear. This position was held for 30 seconds. Finally, the patient was guided to sit up while keeping their head tilted downward.

If nystagmus in the same direction continued to be triggered in each of the different placements, the manoeuvre was likely to be effective. Until no nystagmus was induced, the manoeuvre was repeated. We collected baseline information and clinical history and documented procedures and treatment assigned to the study participants. Our study protocol got clearance from Institute Ethical Committee.

RESULTS

In our study most of the patients were above 45 years of age(61%). 11 patients(36%) were in the age group of 20-45 years and 1 patient(3%) was in the age group of 12-19 years. (Table 1)

Table 1- Age distribution

Age of patients	**% of patients**
Above 45 years	61%
20-45 years	36%
12-19 years.	3%

Among all patients, 18 patients(58%) were female. 13 patients(42%) were male. Patients were studied for associated symptoms including tinnitus, nausea and vomiting. 1 patient(3%) had associated symptom of tinnitus and 7 patients(23%) had associated symptom of nausea and vomiting.(Table 2)

Table 2- Associated symptoms

Associated symptoms	**% of patients**
Tinnitus	1%
Nausea and vomiting	23%
No associated symptom	76%

The side of BPPV in the patients was studied. 20 patients(65%) had right- sided and 11 patients(35%) had left-sided BPPV. In our study, we studied the aetiologies of vertigo. 28 patients were diagnosed with BPPV(90%). 2 patients had unknown cause of vertigo(7%). 1 patient was diagnosed with Meniere’s disease(3%). (Table 3)

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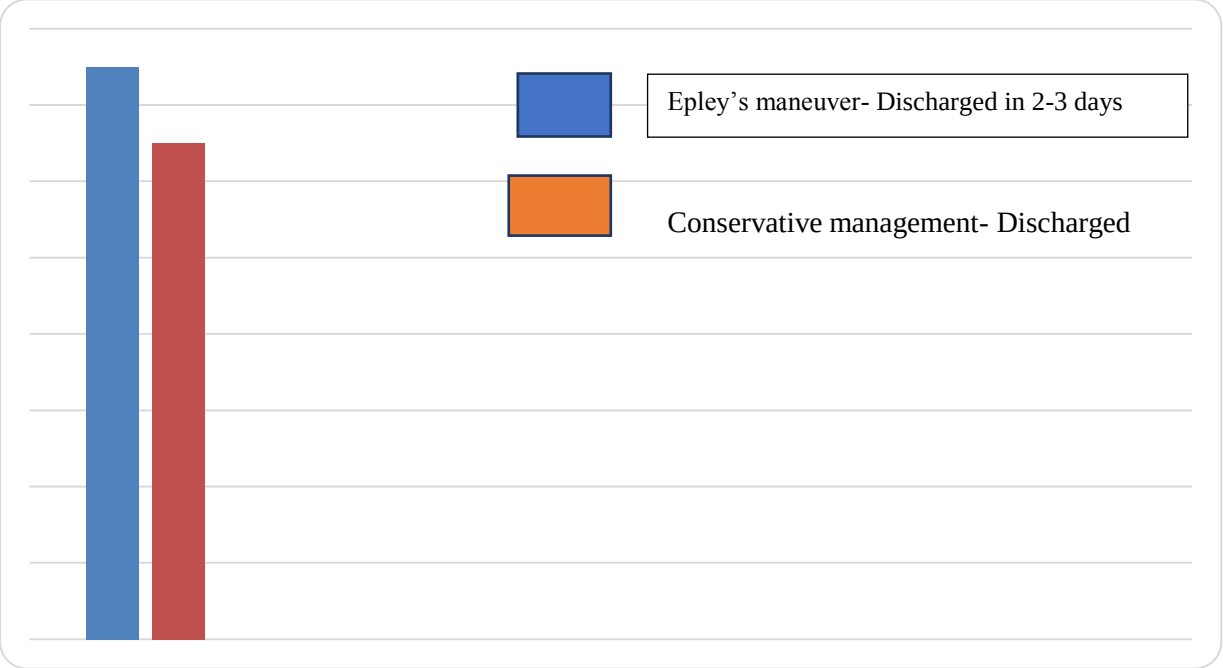
Table 3- Etiology of vertigo

Etiology	% of patients
BPPV	90%
Meniere's disease	3%
Unknown cause	7%

Average length of stay in the hospital and treatment given was studied. It was found that out of 28 BPPV patients, 13 patients received conservative management and were discharged after 5-6 days. 15 patients of 28 BPPV patients were treated by Epley's maneuvre and got recovered by 2-3 days.(Figure-1)

Figure 1- Discharge of Patients



DISCUSSION

Vertigo is a prevalent and distressing medical condition that affects millions of people worldwide, including India. This disorder can significantly impact an individual's quality of life, making even the simplest of tasks challenging.

It's not a disease itself but a symptom of an underlying condition. This condition can be incredibly disruptive, as it may lead to nausea, vomiting, and a general sense of unsteadiness. Vertigo is not uncommon in India, affecting a substantial portion of the population. The prevalence of vertigo in India can be attributed to multiple factors, including lifestyle, diet, and genetics. A sedentary lifestyle, excessive stress, and dietary habits can contribute to this condition.

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The prevalence of vertigo is higher in older adults, but it can affect people of all age groups. Common conditions associated with vertigo in India include BPPV, Meniere's disease, labyrinthitis, and vestibular neuritis. BPPV remains the most common cause of vertigo.

One of the primary challenges in India is that a significant number of individuals suffering from vertigo go undiagnosed or receive improper treatment. This can lead to prolonged suffering and decreased quality of life.

Fortunately, there are various treatment options available, and one of the most effective methods for benign paroxysmal positional vertigo (BPPV) is the Epley's manoeuver. Epley's manoeuver, also known as the canalith repositioning procedure, is a simple yet highly effective treatment for BPPV. This technique involves a series of head and body movements to reposition the displaced crystals in the inner ear canals to their original position.The manoeuver typically takes about 15 minutes to perform and can be administered by a healthcare professional or even at home with proper guidance. It is a non-invasive, cost-effective, and quick solution that offers immediate relief for many patients. As a result, it has gained popularity among healthcare providers and patients alike.

Many specialized healthcare centers and ENT clinics in India now offer Epley's maneuver as a standard treatment for BPPV. Furthermore, numerous resources, including online videos and tutorials, are available for patients who wish to perform the manoeuver at home with proper guidance.

Despite the effectiveness of Epley's manoeuver, challenges remain in raising awareness and ensuring that patients with vertigo, especially BPPV, receive the right diagnosis and treatment in India. Several factors contribute to these challenges:

1. Lack of Awareness: Many people in India are not aware of the various causes of vertigo and its treatments, including the Epley's manoeuver. There is a need for increased public awareness about these conditions and available solutions.
2. Misdiagnosis: Vertigo is sometimes misdiagnosed as a different condition, leading to ineffective treatments and prolonged suffering for patients. Proper training for healthcare providers and the use of diagnostic tools can help address this issue.
3. Access to Healthcare: In rural areas of India, access to specialized healthcare facilities may be limited, making it difficult for patients to receive timely and accurate diagnoses and treatments.
4. Cultural Beliefs: Some cultural beliefs and practices may lead individuals to ignore or downplay vertigo symptoms, which can delay proper treatment.

BPPV affects all age groups, but is more prevalent in elderly. In our study most of the patients were above 45 years of age (61%). This finding was consistent with the previous studies by Baloh R.W et al and Marciano E.et al.[11,12] It has predilection for older population because the elderly are more likely to have otoconia dislodgement because, as people age, the amount and volume of otoliths decrease and the linking fibres between the otoliths may become weaker due to age-related loss of calcium carbonate crystals during the

ISSN: 0975-3583,0976-2833 VOL15, ISSUE 01, 2024

demineralization process. As a consequence, the otoconia may migrate freely throughout the endolymph and separate from the otolithic membrane.[13] 11 Patients(36%) were in the age group of 20-45 years and 1 patient (3%) was in the age group of 12-19 years.

It seems that there is a preference for women based on the sex distribution. Of the total cases, 18 patients(58%) were female. This result was similar with the study done by Sertac Yetiser et al.[14] The reasons for this gender difference were not entirely understood but may be related to hormonal factors, as changes in hormone levels, such as during pregnancy or menopause, can influence the condition. Osteoporosis which is more frequent in middle aged women may also play a role in development of BPPV.[15]

In our study,1 patient (3%) had associated symptom of tinnitus and 7 patients(23%) had associated symptom of nausea and vomiting. Predilection to side was found to be Right side, affecting 65% patients in our study. In a study by Von Brevern et al., right labyrinth was involved 1.41 times more than the left one, which supports our findings.[16] Since many people prefer to sleep on their right side, one may hypothesise that BPPV mostly affects the right ear. This preference may stem from an uncomfortable awareness of the heartbeat while laying on the left side.[17] On the other hand some researchers have found that BPPV affects mainly left labyrinth.[11]

In our study, most of the patients with vertigo were diagnosed with BPPV(90% cases), which were consistent with the studies by Ghosh A et al.[18] The specific mechanism makes BPPV a distinct and identifiable condition. It is triggered by various events, making it more likely to occur and be encountered in clinical practice. BPPV is relatively easy to diagnose through physical examination and positional testing. This clear and identifiable diagnostic process enhances the recognition of BPPV. 2 patients had unknown cause of vertigo (7%). 1 patient was diagnosed with Meniere's disease(3%), in our study.

The average length of stay (ALOS) and the kind of treatment received were investigated in our study. Out of the 28 BPPV patients, 13 were determined to have undergone conservative treatment and were discharged after five to six days. After receiving treatment with Epley's manoeuvre, 15 out of the 28 BPPV patients recovered in two to three days. So we found that Epley's manoeuvre alone expedited the recovery process in vertigo patients, which was consistent with the studies by Herdman S.J et al. and Josna JV et al.[19-20]

The Epley's manoeuver has emerged as a highly effective solution to alleviate the symptoms associated with BPPV, providing much needed relief and improving quality of life of patients by reducing the hospital stay, bothering symptoms and financial burden.

CONCLUSION

BPPV is one of the most common causes of vertigo. In our study, Epley's manoeuver was more effective than medical treatment in treating vertigo. All patients of vertigo admitted in medicine department should get an ENT reference done. The procedure would lower the long-term costs, recovery time, average length of stay and side effects associated with BPPV

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medical treatment and/or enhance the patient's quality of life. It is a simple, bedside procedure which is quite safe and effective. With the right knowledge and resources, Epley's manoeuver can play a pivotal role in improving the lives of those affected by vertigo in India.

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