

Effects the Epley Maneuver on the Symptoms and Quality of Life Levels in Posterior Canal Benign Paroxysmal Positional Vertigo: Two Antalya District Hospitals Experience

Murat Kar¹, Mustafa Altıntaş²

1. Kumluca State Hospital, Ear Nose and Throat Clinics, Antalya, Turkey

2. Serik State Hospital, Ear Nose and Throat Clinics, Antalya, Turkey

Murat Kar, ORCID: 0000-0003-3778-2133

Mustafa Altıntaş, ORCID: 0000-0001-7436-2862

Abstract

Objective: In this study, we aimed to investigate the effectiveness of the Epley maneuver performed without any additional medical treatment on symptoms and quality of life in patients diagnosed with canalithiasis type posterior canal BPPV with the Dix- Hallpike (DH) test in two District Hospitals of Antalya -Turkey.

Methods: A total of 55 patients who were admitted to the ENT Departments Kumluca and Serik State Hospitals, Antalya between November 2019 and June 2020 with complaining of positional vertigo who were diagnosed as posterior canal BPPV with the Dix Hallpike (DH) test was included in this study.

Results: Fifty-five cases with dizziness and vertigo com-

plaints enrolled in our study. Thirty-four of the patients were male (%43.6), and 21 cases were female (%56.4). The ages of the patients were between 32 and 81with an average of 52.4±13.3 years. Statistically significant improvement was obtained at Vertigo Symptom Scale, Vertigo Dizziness Imbalance Symptom Scale, and Vertigo, Dizziness Imbalance health-related quality of life scale after the application of Epley maneuver

Conclusion: In our study, Epley maneuver efficacy without any additional medical treatment was found to be very high in BPPV patients. As a result of this study, we wanted to emphasize that medical treatment to every patient presenting with dizziness and vertigo complaints is not a correct approach.

Keywords: Epley maneuver, BPPV, vertigo, dizziness.



Introduction

Dizziness and balance disorders are widespread complaints in all ENT and neurology field. They form three percent of all hospitals and about 30% of the emergency service applications. Dizziness is a persistent complaint that covers rotation and imbalance feeling. It may be due to the inner ear, central and peripheral nerve system, environmental influences, diseases related to internal organs, and sometimes psychiatric disorders. It may be due even to the exhaustion and tiredness experienced during respiratory tract infection (URTI).[1,2]

All complaints include imbalance, staggering, fainting, and rotational sensation, which can occur with disorders due to the inner ear, central and peripheral nervous system, environmental effects, diseases related to internal organs, and sometimes psychiatric disorders; the title of “vertigo”. So in the patient with a balance disorder, complaints such as hearing loss, tinnitus, diplopia, facial paralysis, other cranial nerve involvement, syncope, motor weakness, nausea, vomiting, tachycardia, and risk factors for systemic diseases such as diabetes mellitus, hypertension, and hypercholesterolemia should be investigated. Complaints such as hearing loss, tinnitus, and ear fullness that may accompany peripheral vestibular diseases should also be questioned. [3,4,5]

Vertigo is an illusion of movement, usually in the form of rotation of the periphery. An imbalance between sensory inputs causes both vestibular nuclei or transmission to the central nervous system. It is essential to determine the underlying physiopathology in the effective treatment of BPPV and then apply the treatments for it. In recent years, significant steps have been taken to treat BPPV with clarification of its pathophysiology. Nowadays, the first method preferred in BPPV treatment is repositioning maneuvers aimed at the underlying physiopathology. The most commonly used maneuver for this purpose is the Epley maneuver, also known as the canalith repositioning. In cases where the Epley maneuver is not sufficient, or the underlying physiopathology is different, other maneuvers such as the Semont maneuver, BBQ maneuver, or exercise

treatments are applied. Although many studies have been conducted, maneuvers continue to be important as the efficacy of vertigo drugs is a matter of debate.[6,7]

Patients suffering from vertigo apply to the first, second and third stage treatment institutions. Generally, primary and secondary care institutions refer such patients to university hospitals. In this study, we aimed to investigate the effectiveness of the Epley maneuver performed without any additional medical treatment on symptoms and quality of life in patients diagnosed with canalithiasis type posterior canal BPPV with the Dix- Hallpike (DH) test in two District Hospitals of Antalya -Turkey.

Materials and Methods

Permission to perform this research was provided by the Akdeniz University Non-Invasive Research Ethics Committee (No. 2019/10/06-1027).

A total of 55 patients between who were admitted to the ENT Departments Kumluca and Serik State Hospitals, Antalya between November 2019 and June 2020 with a complaining of positional vertigo who were diagnosed as posterior canal BPPV with the Dix Hallpike (DH) test was included in this study.

A detailed medical history was taken to rule out any accompanying disease. So the patients in the study group did not have any accompanying systemic diseases or predisposing conditions like hypertension, hyperlipidemia, diabetes mellitus, or depression.

Inclusion criteria:

Diagnostic criteria Consensus document of the Committee for the Classification of Vestibular Disorders of the Bárány Society was used[8]:

- “A. Recurrent attacks of positional vertigo or positional dizziness provoked by lying down or turning over in the supine position;
- B. Duration of attacks <1min;
- C. Positional nystagmus elicited after a latency of one or few seconds by the Dix-Hallpike maneuver or side-lying maneuver (Semont diagnostic maneu-

ver). The nystagmus is a combination of torsional nystagmus with the upper pole of the eyes beating toward the lower ear combined with vertical nystagmus beating upward (toward the forehead) typically lasting <1min; and

D. Symptoms are not attributable to another disorder.

Exclusion criteria:

- A. Non-BPPV patients with negative vestibular induction tests;
- B. Patients with horizontal semicircular canal BPPV;
- C. Central vertigo caused by posterior fossa lesions or vestibular neuromas;
- D. Patients with other forms of peripheral vertigo (such as vestibular neuritis or labyrinthitis), Meniere’s disease and other inner ear-related vertigo; and
- E. Patients with severe heart, liver, lung, or kidney disease or severe mental illness.”

Vertigo Symptom Scale (VSS), Vertigo Dizziness Imbalance Symptom Scale (VDI-SS), and Vertigo Dizziness Imbalance health-related quality of life scale (VDI-HQoL) was applied to all patients. Standard Epley maneuver was applied to all patients by two authors as described before.

- 1) The patient was seated on the examination table with his head and the body bent 45° towards the affected side. The patient’s body was then rapidly rotated to the ground. The patient was in a supine head suspension (the head was 30° below the horizontal) so that the otolith entered the posterior semicircular canal center. (Position 1)
- 2) Then, the patient’s body rotated towards the unaffected side so that the patient’s head was inclined 45° towards the unaffected side, and the otoliths moved closer to the common crus. (Position 2)
- 3) Afterwards, the body rotates towards the unaffected side before 135° relative deflects the head to the supine position and the otoliths reach the typical crus. (Position 3);
- 4) 4) The patient is then moved to the sitting position to guide the otoliths to the utriculum^[9]. The course

and length of the nystagmus were followed in all positions.

One hour resting after the first maneuver, the treatment’s efficacy was evaluated by the Dix-Hallpike test while using goggles. If the nystagmus disappeared, it was considered a successful treatment.

For patients who did not reposition successfully, the Epley maneuver was performed again. The Dix-Hallpike test evaluated the treatment’s efficacy on the next day and one week later. The patients did not get any continuous or on-demand medical treatment in this period. All the patients were asked to return after a week for control DH tests. The study was completed upon observing that all the complaints and DH test findings of the patients were negative.

Statistical analysis

The statistical analysis was carried out using SPSS22.0. In comparing the qualitative variables represented as n/percent, the Δ2 test was performed, and in the comparison of the paired qualitative variables, the Δ2 test of the paired qualitative variables was performed. The exact Fisher test was used when the cells contained displayed values<5. Quantitative variables have been expressed as the mean ± standard deviation (SD). In the univariate analysis, comparisons of numerical parameters between the two classes were made using the Student’s t-test.

Results

Fifty-five cases with dizziness and vertigo complaints enrolled in our study. Thirty-four of the patients were male (%43.6), and 21 cases were female (%56.4). The ages of the patients were between 32 and 81with an average of 52.4±13.3 years. (Table 1)

Table 1. Demographics of treatment groups with dizziness or vertigo.	
Sex, n (F/M)	55 (31/24)
Age, mean±SD, years	52.4 ±13.31

The duration of the symptoms was between 1 and 14 months episodically. (Table 2) The directions of nystagmus at the first assessments were given in Table 3.

The comparison of (VSS), (VDI-SS), and (VDI-HQoL) scores of the patients were given in Table 4.

Table 2. Duration of BPPV till the first assessments.

Duration of BPPV	Patients (n)	Patients (%)
Shorter than 1 month	28	50,91%
Between 1-12 months	9	16,36%
Longer than 12 months	18	32,73%
Total	55	100%

Table 3. Direction of nystagmus at the first assessments.

Direction of BPPV	Patients (n)	Patients (%)
Right	33	60%
Left	21	38,18%
Bilateral	1	1,82%
Total	55	100%

Table 4. VSS, VDI-SS and VDI-HQoL scores at the first and second assessments.

	Treatment group		
	First assessment	Second assessment	p
VSS Score, mean±SD	23.87±9.38	6.58±10.52	<0.001
VDI-SS score, mean±SD	27.20±10.93	63.51±8.08	<0.001
VDI Life Quality Scale, mean±SD	66.18±22.13	93.80±11.72	<0.001

VSS: Vertigo Symptom Scale;

VDI-SS: Vertigo Dizziness Imbalance Symptom Scale

VDI-HQoL: Vertigo Dizziness Imbalance health-related quality of life scale

Discussion

Differential diagnoses of dizziness include a wide variety of body functions, such as neurological, cardiovascular, or hematological. Some reports have shown that up to 15 percent of cases of dizziness in ED are life-threatening.^[1,3] Therefore, it is necessary to undertake a detailed history, and physical examination as the ultimate diagnosis may be benign or life-threatening.^[1,3] There are very few contraindications to the Dix-Hallpike maneuver; however, providers need to understand the physical anatomy and mobility of the patient's neck regarding their ability to withstand the rapid action and movements needed to execute the maneuver. Patients with cervical spinal stenosis or reduced cervical mobility can not tolerate well due to the rapid rotation and hyperextension of the cervical spine required for success.^[9]

Benign paroxysmal positional vertigo (BPPV) is the most common peripheral vestibular disease. BPPV is a disease with sudden onset, triggered by the specific head, lasting seconds, and characterized by recurrent attacks of vertigo and nystagmus. Depending on the affected semicircular canal, rotatory nystagmus usually occurs after a short latent period and gradually decreases in severity with repetitive movements. It leads to a clinical picture characterized by vertigo in peripheral rotation, postural instability, nausea, and sometimes vomiting. The direction and projection of nystagmus, the objective parameter of diagnosis

in BPPV, are determined by the affected semicircular canal and the underlying physiopathological mechanism.^[1,3]

It is stated that there is no place for drug therapy in BPPV and appropriate maneuvers or exercises are the most effective treatments after the underlying physiopathology is determined^[6,7,8] However, some studies are conducted with betahistine given and maneuver or exercise therapy to reduce BPPV symptoms.

Cavaliere et al. were investigated 103 canalithiasis type posterior canal BPPV cases. They grouped them according to applied maneuvers, and medications given as Semont maneuver, Brandt-Daroff exercises, betahistine in addition to Semont maneuver, and betahistine in addition to Brandt-Daroff exercises. The patients were called for controls on the 14.- 30.- 60. and 90. days to evaluate the effectiveness of the treatment. Finally, they were reported that there was no significant difference between patients under 60 years of age and over 60 years of age in terms of the effectiveness of the treatment and recovery time, and between the treatment groups in which dizziness persisted for less than two weeks and more than two weeks. It was stated that in the Semont maneuver and Brandt-Daroff exercise groups where Betahistine was added to the treatment, faster recovery was achieved compared to only the Semont maneuver and only the Brandt-Daroff exercise groups, and the treatment was statistically significantly effective. As a result, it has been argued that maneuver and exercise treatments are the most effective methods in elderly patients with BPPV, and betahistine added to these treatments in the early period is may be useful in rapid recovery.^[9]

Patients diagnosed as BPPV were treated with Epley's during our study's initial visit. The same maneuvers were replicated after one week of consecutive sessions if the patient showed no gain or partial benefit from the first session before the patient became asymptomatic and the Dix-Hallpike maneuver was cynical.^[10]

The results of the present study indicated that most cases with posterior canal BPPV were asymptomatic.

The present study results indicated that most BPPV posterior canal cases were asymptomatic after the first Epley Maneuver session. The short-term and long-term reg-

ulation of symptoms of unilateral posterior SCC can be achieved through this quick and straightforward method. This cost-effective approach needs well-trained and dedicated professionals. Repeated sessions may be needed as a full recovery may not be immediate.

Varying doses of betahistine are given to such patients as a medical treatment to eliminate complaints. As a result of our study, it was observed that when the correct diagnosis was made and the Epley maneuver was applied correctly, most of the patients recovered without medical treatment.

Conclusions

In our study, Epley maneuver efficacy without any additional medical treatment was found to be very high in BPPV patients. As a result of this study, we wanted to emphasize that prescribing betahistine to every patient presenting with dizziness and vertigo complaints is not a correct approach. The next step of our research will be to compare the three approaches to BPPV as Epley maneuver, contra-Epley in which the maneuver will be performed in just the opposite directions described, and a control group in which nothing will be performed.

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Ethics Committee Approval: The study protocol was approved by Akdeniz University Non-Invasive Research Ethics Committee (No. 2019/10/06-1027)

Informed Consent: Written informed consent was obtained from the patients who had participated in this study.

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