

An assessment of vertigo patients presenting to the otorhinolaryngology and neurology outpatient clinics

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ABSTRACT

Objective: Vertigo is a general term used for disorientation and is a frequent cause of admission to emergency services, otorhinolaryngology and neurology outpatient clinics. This study aims to evaluate the clinical findings, diagnostic laboratory tests, brain magnetic resonance imaging, and Doppler ultrasonography results of patients with complaints of vertigo.

Methods: Patients aged >18 years who admitted to the Otorhinolaryngology and Neurology Outpatient clinics of Kahramanmaraş Sütçü İmam University Training and Research Hospital with the main complaint of vertigo between January 2017 and August 2017 were retrospectively reviewed. The patients were evaluated in respect of anamnesis, examination findings, and diagnostic tests (pure tone audiometry, video nystagmography, brain magnetic resonance imaging, and carotid and vertebral artery Doppler ultrasonography).

Results: The study included a total of 101 patients with a mean age of 46.36 ± 16.1 years who presented with the complaint of vertigo. Of the patients, 16 had an ischemic gliotic region, 4 had a lacunar infarct, 2 had an arachnoid cyst, 2 had a cerebellar infarct, 1 had a meningioma, and 1 had a pineal gland cyst on the brain magnetic resonance imaging. Of the patients evaluated in the Otorhinolaryngology outpatient clinic, 87 (86.13%) were diagnosed with peripheral vertigo and 14 (13.6%) with central vertigo. A diagnosis of central vertigo was made in 23 (22.77%) patients evaluated in the Neurology outpatient clinic.

Conclusions: For patients presenting with the complaint of vertigo to the otorhinolaryngology and neurology outpatient clinics, a detailed anamnesis and a physical examination precede specific vestibular tests in the diagnosis. A coordinated communication of both clinics is important for a rapid diagnosis and prevention of unnecessary examinations.

Keywords: Vertigo, clinical evaluation, magnetic resonance imaging, Doppler ultrasonography, pure tone audiometry, video nystagmography

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Vertigo, which is the general term used for disorientation, is a frequent cause of admission to otorhinolaryngology and neurology outpatient clinics. Patients reporting vertigo have complaints such as the feeling of dizziness, sudden darkening of vision and

imbalance [1-3]. The etiology of these symptoms is multifactorial and may include anemia, psychiatric disorders, hypoglycemia, drug effects, cardiovascular diseases and peripheral and central vestibular system disorders [4, 5]. Vertigo (real dizziness) is defined as



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the illusion of movement which is not real, where the patient feels that they or the surroundings are turning [6]. Vertigo occurs with an asymmetrical involvement of any of the peripheral or central vestibular pathways of the vestibular system [7]. It should be focused on the vestibular system in every patient with a rotation anamnesis [6].

Vertigo is a symptom that should be attached importance because it affects a wide section of the population up to 20%-30%, causes loss of workforce, and can be a symptom of illnesses that may be life-threatening [3, 8, 9]. In studies conducted on emergency departments, it is reported that the rate of patients presented to emergency departments vary between 3% and 6.7% [2, 8, 10, 11]. In the evaluation of patients presenting with the complaint of vertigo, there is a need for various radiological and vestibular tests in addition to the anamnesis and physical examination. The main aim is to determine the etiology by differentiating whether the disease is of peripheral or central origin, to establish a diagnosis, and to apply a treatment [12, 13]. The physician should reach the correct diagnosis by correctly interpreting the anamnesis, and physical examination and test results and combining these with the symptoms of the patient. Despite all efforts of the clinician, difficulties may be experienced in the diagnosis and the determination of whether the disease is peripheral or central in some patients presenting with vertigo. In this period, patients tend to consult more than one physician for their diseases. This study aims to compare the clinical findings, diagnostic laboratory tests and imaging results of patients presenting to the Otorhinolaryngology and Neurology outpatient clinics with the complaint of vertigo.

METHODS

Patients aged >18 years who admitted to the Otorhinolaryngology and Neurology Outpatient clinics of Kahramanmaraş Sütçü İmam University Training and Research Hospital with the main complaint of vertigo between January 2017 and August 2017 were retrospectively reviewed. The approval for the study was granted by the Ethics Committee of Kahramanmaraş Sütçü İmam University School of Medicine in the meeting dated

06.12.2017 (session no:2017/04, decision no: 20). Patients with a neuropsychiatric disorder, systemic disease, history of chronic drug use or a diagnosis of malignancy were excluded from the study.

Detailed neurological and otorhinolaryngology examination findings were recorded and compared. Detailed diagnostic tests applied in respect of the etiology (pure tone audiometry, video nystagmography, brain magnetic resonance imaging (MRI), and carotid and vertebral artery Doppler ultrasonography) were reviewed. The patients were divided into groups according to the diagnosis as peripheral, central, and undefined on the basis of the clinical evaluations in the Otorhinolaryngology and Neurology outpatient clinics. Patients were treated according to the etiology.

The Dix-Hallpike maneuver was performed on patients applied to the Otorhinolaryngology outpatient clinic. The acetylsalicylic acid treatment was initiated in patients with stroke etiology in the Neurology outpatient clinic.

Statistical Analysis

The statistical analyses of the study data were made using the IBM SPSS for Windows Version 21.0 program. Numerical variables were reported as the mean \pm standard deviation (SD) and the minimum and maximum values. Categorical variables were stated as number (n) and percentage (%). Before the comparison of the groups in terms of numerical variables, the parametric test assumptions were checked (conformity to normal distribution and homogeneity of variance). The diagnostic and symptom groups were compared in respect of age using the One-Way Variance Analysis. Paired comparisons were made with the Tukey's HSD test. Whether there is a difference between the groups in respect of categorical variables or not was examined using the Chi-square test. A value of $p < 0.05$ was accepted as statistically significant.

RESULTS

A total of 101 patients admitted to the Otorhinolaryngology and Neurology Outpatient clinics with the complaint of vertigo. The patients comprised of 35 (31.65%) males and 66 (65.35%)

Table 1. Peripheral and central distribution of patients evaluated in otolaryngology and neurology outpatient clinics

	Peripheral vertigo n (%)	Central vertigo n (%)
ENT	87 (86.13%)	14 (13.6%)
Neurology	78 (78.23%)	23 (22.77%)

ENT = Otorhinolaryngology, n = the number of the patient

females with a mean age of 46.36 ± 16.1 years (range, 18-80 years). Of the patients evaluated in the Otorhinolaryngology outpatient clinic, 87 (86.13%) were diagnosed with peripheral vertigo and 14 (13.6%) with central vertigo. The Dix-Hallpike maneuver was applied to all the patients and a positive response was obtained in 72 (71.28%). Of the patients, 5 were diagnosed with Meniere's syndrome, 4 with vestibular neuritis, 5 with otosclerosis, and 1 with labyrinthitis. Grading in saccade that supports pathology, saccadic pursuit, optokinetic asymmetry, and vertical nystagmus that change direction with position were observed in 14 patients. Vertigo had begun suddenly in 89% and insidiously in 11% of the patients. A diagnosis of peripheral vertigo was made in 92% of the patients with sudden onset and in 50% of those with insidious onset. Chronic otitis was determined in 12 patients, and diplopia and dysarthria in 6 patients. Complaints of diplopia and paresthesia were present in 4 patients. In the hearing evaluation of the right ear, 73 patients were within the normal range at < 25 dB and a hearing loss was determined at a very mild level (26-40 dB) in 11 patients, mild (41-55 dB) in 1 patient, and at an advanced level (56-70 dB) in 2 patients (Table 1). In the evaluation of the left ear, 68 patients were normal and a hearing loss was determined at a very mild level in 14 patients, mild in 4 patients, and moderate in 4 patients. Of the 12

Table 2. Lesions detected in MRI

Detected lesion	n (%)
Ischemic gliotic region	16 (15.8)
Lacunar infarct	4 (3.9)
Arachnoid cyst	2 (1.9)
Cerebellar infarct	2 (1.9)
Meningioma	1 (0.9)
Pineal gland cyst	1 (0.9)

n = the number of the patient

patients with chronic otitis, 1 was diagnosed with labyrinthitis and 11 were diagnosed with benign paroxysmal positional vertigo (BPPV).

Physical and neurological examinations were applied to all the patients evaluated in the neurology outpatient clinic. Central vertigo was diagnosed in 23 (22.77%) patients and peripheral vertigo in 78 (78.23%) (Table 1). MRI was performed at an external center or in the Emergency Dept. Of the patients, 16 had an ischemic gliotic region, 4 had a lacunar infarct, 2 had an arachnoid cyst, 2 had a cerebellar infarct, 1 had a meningioma, and 1 had a pineal gland cyst on the brain magnetic resonance imaging (Table 2). The carotid vertebral Doppler USG tests were normal in these patients. Psychiatric causes, orthostatic hypotension and anemia were observed in 40%-45% of the patients presenting at both outpatient clinics.

DISCUSSION

Vertigo is most often caused by a dysfunction in the vestibular system from a peripheral or central lesion. Patients apply to many outpatient clinics such as emergency department, and otorhinolaryngology, neurology, and internal medicine outpatient clinics with the complaint of vertigo. As one of the most frequently seen complaints in the general population, vertigo has an extremely negative effect on the quality of life [3, 6, 14]. The frequencies of vertigo were 15% and 12%, respectively, in patients presenting to the otorhinolaryngology and neurology outpatient clinics. About 40%-45% of the patients had complaints such as psychiatric disorders, orthostatic hypotension, and anemia. The present study has similar data. In the literature, vertigo has been reported to be more frequent in females [13, 14]. In the present study group, vertigo was more commonly (66.35%) observed in the female gender. Central vertigo was more frequent (56.52%) in males, which can be explained by males having more risk factors for central etiologies [15]. In population-based studies on the etiology of vertigo, peripheral vestibular dysfunction has been reported in 40%, central causes in 10%, psychiatric causes in 15%, other reasons in 25%, and undetermined diagnosis in 10% of patients presenting at the emergency department and first stage outpatient clinics [16, 17]. In the present study, which

was more specific as it only included patients presenting to the Otorhinolaryngology and neurology outpatient clinics with the complaint of vertigo, peripheral causes were seen to be the primary cause, which was consistent with the literature. Patients with psychiatric causes were referred to the relevant departments in the neurology or otorhinolaryngology department at the first visit. Therefore, this study had no cases of vertigo due to psychiatric reasons. The central vertigo ratios in both departments were found to be 13.6% and 23%, respectively. The ratios in the neurology department were slightly higher than rates reported in the literature. The difference in the rate of peripheral and central vertigo in the same patient group presenting to the Otorhinolaryngology and neurology outpatient clinics was found to be a central rate of 13.6% in the otorhinolaryngology and 23% in neurology outpatient clinics and this could be attributed to a false negative on the diffusion-weighted MRI in patients with a cerebellar lesion or a brain stem lesion of small dimensions in the first few hours of ischemic stroke. In addition new clinic findings, this can be explained by the inclusion of the ischemic gliotic areas, developing in some regions of the brain conjunction with age and other risk factors, to the etiology group by the neurology outpatient clinic after making other differential diagnoses [18, 19]. In patients with a migraine, there are complaints of vertigo and imbalance at the rate of 70% either between or during the attacks. Vertigo alternately occurs with concomitant nausea. Just as it can follow the onset of a headache, it can also start during the recovery period [20]. The patients who presented with migrainous vertigo and peripheral vertigo were first evaluated in the present study. A diagnosis of migrainous vertigo was made in 4 patients with a history of a migraine in both the otorhinolaryngology and neurology outpatient clinics. Previous studies have reported migrainous vertigo between the rates of 0.1% to 9% [21, 22]. Peripheral vertigo can be seen independently of a migraine in migraine patients. The peripheral vertigo was determined in 5 of the 9 patients in the present study with a history of a migraine. While the diagnosis of vestibular neuritis is easy with its typical clinical presentation, it is possible to confuse the pathologies at the level of eighth cranial nerve, vestibular nucleus or brain stem with the vestibular neuritis particularly during the Meniere's

disease with recurrent vertigo episodes [23, 24]. In the diagnosis of Meniere's disease, detailed anamnesis (clinical findings such as dizziness, hearing loss, and fullness at the ear) and examination are important. Some of the patients in this study had findings that required imaging and other examinations. Diplopia and dysarthria were determined in 6 patients and 4 patients complained of diplopia and paresthesia. In both clinics, the treatments for patients presenting with vertigo were in three main categories as symptomatic, specific and rehabilitation treatments. For this purpose, vestibular suppressants such as meclizine, dimenhydrinate, promethazine and diazepam and anti-emetic drugs such as metoclopramide are used. For this purpose, anti-emetic drugs are used such as metoclopramide and vestibular suppressants such as meclizine, dimenhydrinate, promethazine and diazepam. Long-term use of drugs is not recommended and the formation of a normal compensation mechanism is preferred. Patients diagnosed with central vertigo in the otorhinolaryngology outpatient clinic are referred to the neurology department for the specific treatment. Although medical treatment for peripheral vertigo is given in the neurology outpatient clinic, patients are referred to the otorhinolaryngology outpatient clinic for rehabilitation. The Epley, Semont and Barbecue maneuvers are applied in patients with a specific diagnosis in the otorhinolaryngology outpatient clinic.

CONCLUSION

For patients presenting with the complaint of vertigo to the otorhinolaryngology and neurology outpatient clinics, a detailed anamnesis and a physical examination precede specific vestibular tests in the diagnosis. It was seen that the vast majority of patients that applied to both outpatient clinics had peripheral vertigo, especially BPPV. The use of maneuvers is promising in the BPPV treatment. A coordinated communication of both clinics is important for a rapid diagnosis and prevention of unnecessary examinations.

Conflict of interest

The authors disclosed no conflict of interest during the preparation or publication of this manuscript.

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