

The etiological, demographic, and seasonal characteristics of patients with dizziness and vertigo

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Ethics Committee Approval

The study was approved by the Kastamonu University Clinical Research Ethical Committee (Decision no: 2020-KAEK-143-115, Date: October 6, 2021).

All procedures in this study involving human participants were performed in accordance with the 1964 Helsinki Declaration and its later amendments.

Conflict of Interest

No conflict of interest was declared by the authors.

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Abstract

Background/Aim: Vestibular disorders are common and can negatively affect quality of life and result in workforce losses; they can also be life-threatening diseases. As a result, studies of their etiology and treatment approaches are of particular importance. The aim of this study was to analyze the etiological, demographic, and seasonal characteristics of patients presenting to the Kastamonu Training and Research Hospital Ear, Nose, and Throat (ENT) clinic in Kastamonu, Turkey complaining of vertigo/dizziness.

Methods: In this retrospective cohort study, the files of 1033 patients who presented at the clinic with a report of vertigo/dizziness between September 2020 and September 2021 were examined. The patients' demographic characteristics, presentation dates, and diagnoses were recorded.

Results: Six hundred and fifty-one patients (63%) were female, and the mean age of the patient cohort was 50.3 years (standard deviation: 16.0 years). Six hundred and twenty-seven patients (60.7%) were identified with chronic subjective dizziness, 302 (29.2%) were identified with benign paroxysmal positional vertigo, 18 (1.7%) were identified with vestibular migraine, 7 (0.7%) were identified with bilateral vestibulopathy, 41 (4.0%) were identified with unilateral vestibulopathy, 16 (1.5%) were identified with vestibular neuritis, 6 (0.6%) were identified with Meniere's disease, 10 (1.0%) were identified with central vertigo/dizziness, 3 (0.3%) were identified with labyrinthitis and 3 (0.3%) were identified with another form of vertigo/dizziness. An increase in the number of cases was observed in the spring, and the number of patients presenting with vertigo/dizziness decreased thereafter and reached a minimum in the fall ($P < 0.001$).

Conclusion: The most common vestibular disorder was chronic subjective dizziness. Vestibular disorders are more common in women and in the spring season. Although ENT specialists generally focus on pathologies of the ear, vertigo/dizziness are symptoms that may involve several etiologies. Meticulous clinical examinations should be performed; the etiological cause and clinical diagnosis in these cases will dictate additional tests to be requested and therapeutic strategies. Due to the broad diagnostic spectrum of these cases, a multidisciplinary approach is also critical.

Keywords: subjective dizziness, benign paroxysmal positional vertigo, seasonal characteristics, quality of life

Introduction

Vestibular symptoms, including vertigo and dizziness, affect 20–30% of the population and are a common cause of presentations to health institutions [1,2]. Several central and peripheral factors, cardiovascular causes, or psychiatric, hematological, and endocrinological disorders may be involved in the etiology of vestibular symptoms, and multidisciplinary approaches may occasionally be required because of the complicated etiology [3].

Obtaining a detailed patient history and conducting a physical examination are critical aspects when evaluating patients complaining of vertigo/dizziness. Vestibular tests represent another important component of diagnostic evaluation. Laboratory tests and imaging methods may also be required for diagnosis [1]. The detection of central pathologies in particular is critically important in terms of morbidity and mortality. Computed tomography (CT) or magnetic resonance imaging (MRI) should be employed when a central cause is suspected or in persistent cases [4].

Because vestibular disorders are common, can be potentially life-threatening, and can result in workforce losses and adverse effects on quality of life, studies of their etiology and treatment approaches are of particular importance. The aim of this study was to analyze the etiological, demographic, and seasonal characteristics of patients presenting to the Kastamonu Training and Research Hospital Ear, Nose, and Throat (ENT) clinic in Kastamonu, Turkey with vertigo/dizziness and to discuss our results in the light of the current literature.

Materials and methods

Approval was granted by the Kastamonu University Clinical Research Ethics Committee before the study commenced (Decision no: 2020-KAEK-143-115, Date: October 6, 2021). In this retrospective cohort study, the files of 1033 patients with vertigo/dizziness who visited the clinic between September 2020 and September 2021 were examined. The patients' demographic characteristics, presentation dates, and diagnoses were recorded. Patients under the age of 18 and individuals who could not be diagnosed because their tests were not completed were excluded from the study.

The patients were divided into subgroups who suffered from chronic subjective dizziness, benign paroxysmal positional vertigo (BPPV), vestibular migraines, bilateral vestibulopathy, unilateral vestibulopathy, vestibular neuritis, Meniere's disease, central vertigo, labyrinthitis and other forms of vertigo/dizziness according to the diagnoses they received based on their examination and vestibular test results.

Statistical analysis

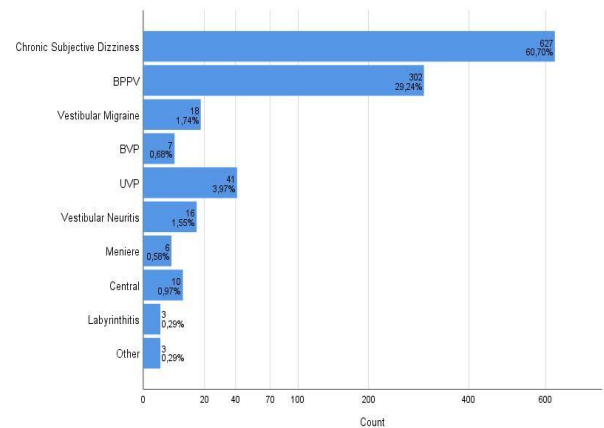
The data are described as frequencies (percentages) for categorical data and means (standard deviations) for numerical variables. The equality of the seasonal distribution of vertigo/dizziness and BPPV types were assessed using a chi-squared goodness of fit test. Categories with case numbers less than 1.5% were collapsed into a single category and were labeled as "other" when comparing the sex and age distributions; a comparison of the distributions between the groups for these two variables were made using a chi-squared test and the Kruskal-

Wallis test, respectively. A Bonferroni correction was implemented to control the type I error rate for the pairwise comparisons. Two-sided p-values less than 0.05 were considered to be statistically significant. All of the statistical analyses were performed using the Statistical Package for Social Sciences (SPSS, Version 21.0, Armonk, NY: IBM Corp.).

Results

A total of 1033 patients with vertigo/dizziness were included in the study; 651 (63%) were female. The mean age of the patients was 50.3 years (standard deviation: 16.0 years). Six hundred and twenty-seven patients (60.7%) were identified with chronic subjective dizziness, 302 (29.2%) were identified with BPPV, 18 (1.7%) were identified with vestibular migraine, 7 (0.7%) were identified with bilateral vestibulopathy (BVP), 41 (4.0%) were identified with unilateral vestibulopathy (UVP), 16 (1.5%) were identified with vestibular neuritis, 6 (0.6%) were identified with Meniere's disease, 10 (1.0%) were identified with central vertigo/dizziness, 3 (0.3%) were identified with labyrinthitis, and 3 (0.3%) were identified with other forms of vertigo/dizziness (Figure 1).

Figure 1: Distribution of diagnoses

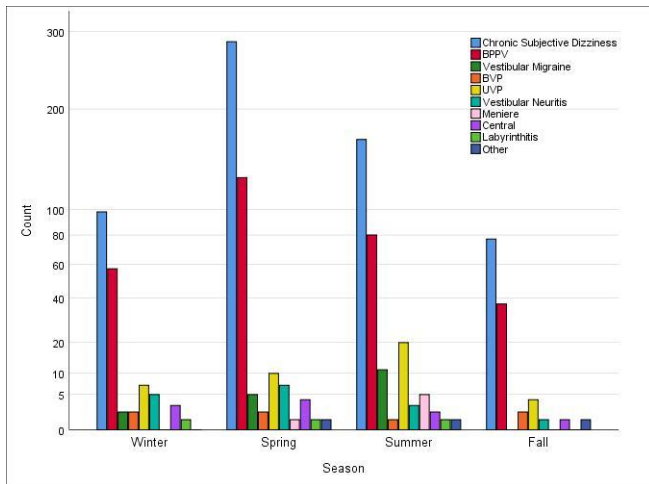


The age distribution of the patients revealed a statistically significant difference between the groups; the median age for the BPPV group was 56 years (range: 18–86 years) was significantly higher than that of patients with chronic subjective dizziness (48 years; range: 18–88 years) and patients with vestibular migraines (42 years; range: 24–64 years) ($P<0.001$). The percentage of females also differed between the groups ($P<0.001$); the vestibular migraine was composed of a higher percentage of females (17; 94.4%) than the BPPV group (175; 57.9%), the vestibular neuritis group (6; 37.5%), and the other vertigo/dizziness group (12; 41.4%).

An increase in the number of cases was observed in the spring; the caseload gradually declined over the following two seasons and attained a minimum in the fall ($P<0.001$). Cases of chronic subjective dizziness also exhibited an increase in the spring and dropped in the fall ($P<0.001$). The number of BPPV cases peaked in the spring and was followed by a decline in summer and a minimum in the fall ($P<0.001$). Vestibular migraine cases displayed a linear increase from the winter to the summer, and no cases were observed in the fall ($P=0.030$). The number of UVP cases displayed a gradual increase from the winter to the summer and then a sudden drop in the fall ($P=0.003$). There were no statistically significant differences in the distribution of case numbers over time among the remaining groups, most likely due

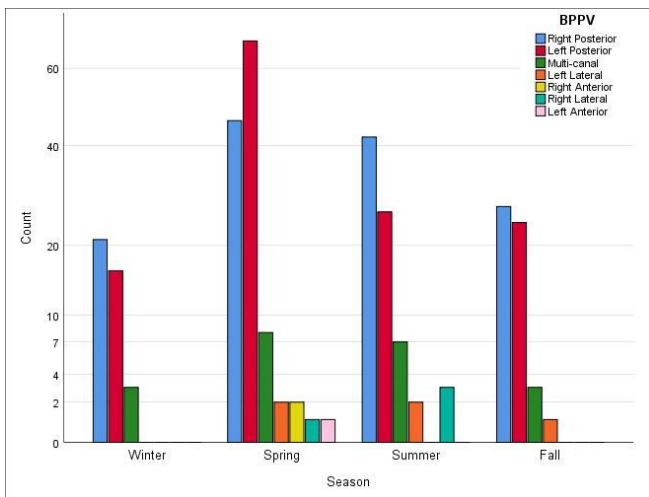
to their small sample sizes. The number of patients diagnosed as a function of season is shown in Figure 2.

Figure 2: The number of patients diagnosed as a function of season



One hundred and thirty-six BPPV cases (44.9%) were identified as right posterior, 134 (44.2%) were identified as left posterior, 21 (6.9%) were identified as multi-canal, 5 (1.7%) were identified as left lateral, 2 (0.7%), were identified as right anterior, 4 (1.3%) were identified as right lateral, and 1 (0.3%) was identified as left anterior. The number of cases with right posterior canal BPPV was the lowest in winter and the highest in spring; there was a gradual drop in both the summer and fall ($P=0.006$). The seasonal distribution of left posterior canal BPPV cases was similar ($P<0.001$). There were no statistically significant trends observed for the remaining BPPV cases, most likely because of the low case numbers. The numbers of patients with each type of BPPV as a function of season are shown in Figure 3.

Figure 3: Number of BPPV cases as a function of season



Discussion

Specialists of ENT conditions generally focus on inner ear pathologies in cases of vertigo/dizziness. However, neurological, cardiological, and psychiatric pathologies must also be kept in mind during the diagnostic process [5]. Vertigo/dizziness is observed across all age groups. However, it is most common between the ages of 40 and 50, and women constitute 60–70% of patients [6]. The mean age of the patients in our study was 50.3 years and, in agreement with the literature, 63% were women.

Chronic subjective dizziness is a common vestibular disorder. It is defined as a persistent feeling of dizziness with

subjective instability and chronic hypersensitivity to movement in the absence of any physical neurological disease, medical condition, or medication use capable of causing dizziness [7]. Anxiety is a potent predisposing factor. One study reported a chronic subjective dizziness rate of 10.6% in a population of Lausanne, Switzerland [8]. However, the incidence of chronic subjective dizziness has increased in line with increases in the stress of daily life, particularly in recent years [9]. Furthermore, it is twice as common in women compared with men [8]. In the present study, 60.7% of patients presenting to our clinic with vertigo/dizziness were evaluated as having subjective dizziness; this group encompassed the largest number of cases.

The most frequent cause of peripheral vertigo is BPPV, followed by unilateral/bilateral vestibulopathy, vestibular neuronitis, and Meniere’s disease. Labyrinthitis and acoustic neuroma are other, less common, etiological factors [1]. Benign paroxysmal positional vertigo was detected in 29.2% of cases in our study; consistent with the literature, we found that BPPV was the most frequent cause of peripheral vertigo. History and physical examinations occupy important roles in the diagnosis of BPPV. Detecting BPPV is therefore important in terms of preventing unnecessary tests, minimizing costs to patients, and determining appropriate treatments [10].

Vestibular neuronitis was detected in 16 cases (1.5%) in our study. Due to the acute and severe symptoms of vestibular neuritis, patients generally present to the emergency service rather than to an ENT clinic. This situation can lead to diagnostic difficulties and the incidence of vestibular neuronitis being underestimated. Similarly, although vestibular migraines are frequently observed in the general population, patients cannot always be identified due to diagnostic difficulties [1]. Vestibular migraines were detected at a rate of 1.7% in our study and, in agreement with the literature, they were more common in women.

Other studies have investigated the seasonal distributions of vestibular disorders. Whitman et al. [11] reported a higher incidence of BPPV in Boston, Massachusetts in the early months of spring (March, April, and May). Similarly, Pereira et al. [12] reported that vertigo in Brazil was more common at the end of winter and in the spring. Cao et al. [13] reported that more cases of BPPV were observed in months characterized by low temperatures, low levels of rainfall, and high atmospheric pressure. Consistent with our findings, those authors also noted that the number of cases of BPPV was highest in the spring. A decrease then occurred in the summer, and the smallest numbers of cases were observed in the fall. Lower exposure to sunlight and low vitamin D levels in cold weather and more sedentary lifestyles during that time of the year might all contribute to the seasonality of BPPV cases [14,15]. Increased upper airway infections and allergies in winter and spring are also believed to be associated with the observed frequency of BPPV [16].

The retrospective nature of our study is its primary limitation because the treatment responses and follow-up results of the patients were not considered. Future prospective studies will be important for complementing our results.

Conclusion

We found that the most common vestibular disorder was chronic subjective dizziness. Vestibular disorders were more common in women and in the spring. Although ENT specialists

generally focus on pathologies of the ear, vertigo/dizziness are symptoms that may involve several etiologies. Meticulous clinical examinations should be performed given that etiological cause and clinical diagnoses dictate future tests and therapeutic strategies. Due to the broad diagnostic spectrum of these cases, a multidisciplinary approach is also critical.

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