Vertigo: is It Really a Neurological Emergency?

Vertigo: Gerçekten Bir Nörolojik Acil midir

Vertigo Etiologies / Vertigo Etiyolojileri

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Özet

Amaç: Acil serviste değerlendirilen vertigolu hastalarda nörolojik yönden acil olanların insidansını tespit etmek. Bulgular: Vertigo şikayeti nedeniyle başvuran 3558 hasta incelendi. Bunlardan 410 hasta nöroloji hekimince muayene edilmişti ve 86 hastaya beyin tomografisi çekildi. Yalnızca 11 hastada nörolojik yönden aciliyet gösteren bir lezyon bulundu. Gereç ve Yöntem: Acil servise vertigo nedeniyle başvuran ve nöroloji hekimince değerlendirilen hastalar çalışmaya alındı. Hastaların demografik, laboratuar ve beyin tomografileri ile hastanın son tanısı incelendi. Sonuç: Vertigo acil servislerde sık başvuru nedenlerinden biridir. Birçok nörolojik neden vertigonun etiyolojisinde rol almakla birlikte somatizasyon bozukluğu gibi çok basit nedenler de sebepler arasındadır. Acil servislerde gereksiz konsültasyonları, hasta yığılmalarını ve görüntüleme yöntemlerinin kullanımını önlemek için bu şikayetle başvuranlarda iyi bir nörolojik muayene, arter kan gazı, kan şekeri ve tam kan sayımı ile hastanın değerlendirilmesi yeterlidir.

Anahtar Kelimeler

Santral Vertigo; Periferik Vertigo; Acil Servis

Abstract

Aim: To asses the incidence of vertigo which occurs as a symptom of a neurological emergency. Material and Method: Emergency Room (ER) admissions with vertigo in a state hospital have been evaluated. Patients who have been consulted to a neurologist were included in the study. Demographical variables and the routine ER examination with cranial imagings of the necessary patients were investigated. Results: Three thousand five hundred and fifty-eight patients who were admitted with vertigo were analysed. Four hundred and nine of these patients were consulted to a neurologist. Eightysix of them underwent brain Computerized Tomography. Only 11 of the 86 imagings showed a lesion consistent with neurological emergency. Conclusion: Vertigo is a very common symptom in ER. Considering the vast etiology of vertigo, besides being a symptom of severe neurological disorders it may even represent a somatiform disorder. The easiest and the least costing steps of ER examination like monitoring of blood glucose level, complete blood count, arterial blood pressure with neurological examination would prevent overuse of hospital sources and avoid consultation burden of neurologists.

Keywords

Central Origin Vertigo; Peripheral vertigo; Emergency Service

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Introduction

Vertigo is a frequent symptom in the general population with a 12-month prevalence of 5% and an incidence of 1.4% in adults.[1] TThe classification of vertiginous diseases shows differences in practices of neurology and ear-nose- throat (ENT), but a common time classification (acute and chronic / recurrent) is used generally in both branches of medicine. A careful history is the most important part of a medical examination for vertigo, especially to establish whether it is acute, chronic or recurrent.[2] ER practice deals with the acute vertigo of which the main differential diagnoses are acute unilateral peripheral vestibulopathy ("vestibular neuritis"), cerebellar stroke or migraine.[3] This study has been planned to figure out the frequency of the emergent neurological diagnoses in patients who admitted to ER with vertigo in a state hospital in Türkiye.

Matarial and Metod

We performed a retrospective data search for adult patients who admitted to ER in Karaman State Hospital in the first six months of 2008. Patients were evaluated and treated accordingly. Patients who had neurological findings or who did not recover with the treatment in ER despite the lack of examination findings were consulted to neurology. This study includes only the 409 vertigo patients who underwent neurology consultation. All patients were consulted by the same neurologist. Complete blood counts (CBC), blood pressure (BP) measurements, blood glucose level monitorization were performed to all patients. The normal limits have been determined by the values with which patients are commonly expected to be symptomatic. Hemoglobin levels were considered normal between 10-15 mg/dl. Hemoglobin less than 10 mg/dl was considered as anemia while more than 15 was considered as polychthemia. Blood glucose levels between 60-200 mg/dl were assumed normal. Values less than 60 mg/dl were considered as hypoglycemia while values more than 200 mg/dl were considered as hyperglycemia. The patients with lower BP than 90/60 mmHg were considered as hypotensive and the ones with a greater (140/90mmHg) BP were accepted as hypertensive. Patients were 244 females and 165 males. The age varied between 17 to 90 years.

Blood glucose levels, BP measurements and hemoglobin values were evaluted. The ratio of patients with metabolic abnormalities and/or BP abnormalities were calculated.

All patients underwent neurological examination. Eighty six patients with neurological findings had brain computerized tomography (CT). CT results were assessed to detect the organic neurological pathologies.

Statistical analysis:

Statistical analysis was performed using SPSS 15.0 for Windows.

Results

Karaman State Hospital's ER served 42301 patients between January 1st, 2008 and June 30th, 2008. Vertigo was the admission complaint in 3558 (8%) patients. Four hundred and nine (11%) of these vertigo patients were consulted to the neurologist. Consultation patients were 60% females (n: 244) and %40 males (n:165). Median age of females was 51 while it was 52 in males. Patients with metabolic problems were detected (Table 1). Blood glucose levels varied between 52 to 592 mg/dl (median 107, average 114.3; SD 39.9). Hypoglycemia was detected in four patients (1%) while hyperglycemia was detected in 14 patients (3%). Systolic BP values changed from 80 to 220 mmHg (median 130, average 132.3; SD 25.6). Four patients (1%) were hypotensive while 80(%20) patients were hypertensive. Hemoglobin values were between 5.5 to 18.4 mg/dl (median 12.8, average 12.7; SD 1.4). Eight patients (2%) were anemic and 17 patients (4%) polycyhtemic. Seven patients (2%) were simultaneously hipertensive and hyperglycemic. Three patients (1%) were simultaneously anemic and hypertensive. Polycythemia with hypertenison, polycythemia with hypoglycemia, polycyhtemia with hypertension and hyperglycemia, hypertension with acute stroke were detected in one patient each (0.2%). As a result 105 patients (26%) had metabolic disturbances and recovered with the management of these disturbances. Eightysix (20%) of the consultations had objective neurological findings and underwent cranial CT. CT evaluations showed organic pathology in 18 (21%) patients (Table 2). The pathologies consisted of mass lesions (n:5), acute enfarctions (n:6), chronic subdural haematomas (n:2) and chronic ischaemic foci (n:5). In other words; 11 patients (%13) had emergent organic lesions which caused vertigo. Seven patients (2%) had chronic cranial lesions. Other 68 CTs showed no pathology. One patient (0.2 %) was diagnosed as central nervous system (CNS) infection(meningitis). Two hundred and eighteen patients (53%) had neither metabolic disturbances nor neurological findings. Their symptoms reliefed with intravenous piracetam and dymenhydrinate, and were recommended to be examined by an ENT specialist. The overall evaluations of neurology consultations for vertigo patients showed that; of the 409 consulted vertigo patients 3% (n:12) had neurological emergencies consisting of 11 acute cranial lesions and 1 CNS infection. One hundred and five patients

Table 1. Detectable disturbances of vertigo patients in ER

Detectable disturbances	Number of Patients (n)
Anemia	8
Policytemia	17
Hypotension	4
Hypertension	80
Hipoglycemia	4
Hyperglycemia	14
Emergent Cerebral Lesion	11
Anemia+ Hypertension	3 (3%)
Polycytemia+ Hypertension	1 (1%)
Hypertension+ Hyperglycemia	7 (6%)
Polycytemia+ Hypoglycemia	1(1%)
Polycytemia+Hypertension+Hyperglycemia	1(1%)
Hypertension+ Acute Cerebral Lesion	1(1%)
CNS infection	1(1%)
Total	*117*

Table 2. Cranial CT results

CT result	Number of Patients (n)
Acute enfarction	6 (7%)
Mass lesion	5 (6%)
Chronic subdural haematoma	2 (2%)
Chronic ischaemic foci	5 (6%)
Normal	68 (80%)
Total	86

Table 3. Etiologies of vertigo patients

Etiology	Number of Patients (n)
Metabolic and/or hemodynamic	105 (25%)
Neurologic emergency	12(3%)
Chronic cranial lesion	7 (2%)
Other	285(70%)
Total	409

(%25) had metabolic disturbances and their complaints were resolved with intervention. The remaining 285 (70%) patients were grouped as other. These patients were diagnosed as peripheral or somatoform vertigo rather than central vertigo. All etiologies are summarized in Table 3.

Discussion

Vertigo is among the most common reasons which refers the patients to the emergency department.[4] Its prevalence rises with age and is about two to three times higher in women than in men.[1] In our study the median age was 51, with a female predominance of 60%, consistent with the literature. However, the incidence in our study was 8%, almost six times higher than the literature.[1] This inconsistency may be due to the excessive and irrelevant usage of ER in Türkiye.

The cause is usually a benign disorder but management decisions can be challenging because some life threatening causes—such as stroke—can mimic benign peripheral vestibular disorders.[4] Our study focused on emergency patients with vertigo. We aimed to figure out the frequency of neurological emergencies in vertigo patients who admitted to ER. We found out that 3% of the consultations and only 0.3% of all vertigo patients were neurologically emergent.

Unsteadiness, dizziness and vertigo occur more frequently in hypertensive subjects, compared to the normal ones.[5] Monitoring BP should be one of the first approaches to the vertigo patients like all others who admit to ER. Our study showed that 20% (n:80) of our neurology-consulted vertigo patients suffered from hypertension and improved with reducing the BP. Hypotension may also cause vertigo. It's already known that patients with vertebrobasillary insufficiency tend to develop transient, repeated vertigo.[6] Four (2%) of our patients had vertigo and relieved with BP stabilization. Disturbances of glucose metabolism as diabetes mellitus and hyperinsulinemia are thought to be responsible for inner ear diseases.[7] Hypoglycemia, hyperglycemia and even mild alterations in insulin levels are already enough to cause changes which impact the labyrinth.[8] In our study we detected fourteen patients (3%) with hyperglycemia which presented with vertigo. Vertigo may be one of the symptoms of neuroglycopenia caused by insufficent glucose supply to the brain.[9] Four of our patients (1%) had hypoglycemia and the symptoms disapperaed with glucose replacement. Totally 105 of our patients (25%) had metabolic and/or hemodinamic disturbance which recovered with simple medical attention and which obivously did not require neurology consultation.

In neurology practice, vertigo is one of the unfavorable symptoms because of its potential relationship with posterior vascular system like brainstem or cerebellum which may cause life-threatening situations. But is this so common? Cerebrovascular disorders are estimated to account for 3% to 7% of vertigo patients.[10] It's even less in our patients. Only six (1.5%) of our patients had an acute cerebrovascular disease.

The most effective way to "rule-out" a central disorder has been thought to "rule-in" a specific peripheral vestibular disorder.[4] This opinion gives role to ENT specialists in vertigo management.

In specialized vertigo clinics approximately 50% of the patients have either a primary or secondary somatoform vertigo, which develops after a peripheral vestibular disorder.[11] Also, nearly half of the patients presenting at specialized dizziness units show a high comorbidity with psychiatric disorders, above all with anxiety and depressive disorders.[12] This is a very important point when considering a disease which is more frequent than expected. It's possible that vertigo has been widely "used" as a somatoform symptom by our patients. After eliminating acute and chronic neurological etiologies with metabolica and/or hemodynamic disturbances, we see that the group which we named as "other" consists of 285 patients (70%). It's very likely that at least half of these patients had psychiatric comorbidity or disorder.

Our study simply showed that a true examination might avoid time and energy loss with consultation burden in ER. As ever in neurology, a careful history and focussed examination is necessary in the evaluation and management of acute vertigo.

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