

Dizziness in the elderly: Diagnosing its causes in a multidisciplinary dizziness unit

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Abstract

We conducted a study to determine the causes of dizziness in patients aged 70 years and older who had been referred to our multidisciplinary dizziness clinic between Nov. 1, 2000, and Dec. 31, 2008. This population was made up of 731 patients—254 men (34.7%) and 477 women (65.3%). During their consultations, all of these patients were evaluated simultaneously by an ENT surgeon and a neurologist. We were able to identify the cause of dizziness in 620 of these patients (84.8%). The two most common causes were benign paroxysmal positional vertigo (BPPV), which was found in 202 patients (27.6%), and hyperventilation/anxiety, which was diagnosed in 112 patients (15.3%). Based on our findings, we conclude that the cause of dizziness can be established in the vast majority of elderly patients. We also compare our findings in these older patients with those of a group of 2,556 younger patients who were seen at our hospital and with the findings reported in other studies.

Introduction

The reported prevalence of disabling dizziness in persons aged 70 years and older ranges from 10 to 20%.¹⁻³ Dizziness is the most common reason that patients older than 75 years consult a general practitioner.⁴ Dizziness in older persons can have a significant impact on quality of life.^{5,6}

The cause of dizziness is frequently difficult to determine; Maarsingh et al reported that general practitioners were unable to make a diagnosis in 40% of cases in older patients.⁷ As a result, treatment is often unsatisfactory.

When patients are referred to a hospital for further evaluation of dizziness, they may be directed to any of several specialists. Elderly patients are often referred to a geriatrician, ENT surgeon, or neurologist. Only a few

studies have been conducted on hospital diagnoses of elderly patients with dizziness, and they have shown that there is a correlation between the specific diagnosis and the specialty of the physician who makes the diagnosis.⁸⁻¹⁰

At Gelre Hospital in Apeldoorn, The Netherlands, a multidisciplinary dizziness unit was established in 2000. In this clinic, each patient is seen by an ENT surgeon and a neurologist simultaneously during each consultation. Together the two specialists make a diagnosis and prescribe treatment. In this article, we describe our experience with this protocol in diagnosing the cause of dizziness in the elderly. To the best of our knowledge, this is the first study to evaluate the results of simultaneous consultations by an ENT surgeon and a neurologist in the diagnosis of the cause of dizziness in the elderly.

Patients and methods

The primary goal of our study was to identify the cause of all types of dizziness, excluding pure balance disorders, in patients aged 70 years and older who were seen in our multidisciplinary dizziness unit between Nov. 1, 2000, and Dec. 31, 2008. Our secondary goal was to compare our findings with those of patients younger than 70 years and with those reported in other studies.⁸⁻¹⁰

Evaluation protocol. All of the older patients had been referred to us by either a general practitioner or a specialist in our hospital. All completed an extensive written self-evaluation at home; this assessment included the Nijmegen Questionnaire for hyperventilation. The Nijmegen Questionnaire has been validated for use in evaluating hyperventilation syndrome.^{11,12}

After the written assessment was submitted, patients visited our hospital for a half-day of testing. Assessments included vestibular tests (oculomotor, caloric, rotational, and positional), audiometry, orthostatic hypotension testing, and a hyperventilation provocation test in the pulmonary function laboratory.

Next, patients were seen in our multidisciplinary dizziness unit by an ENT surgeon and a neurologist at the

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Table 1. Comparison of the causes of dizziness between the older group (n = 731) and the younger group (n = 2,556)

Diagnosis	n (%)	
	Older group	Younger group
BPPV	202 (27.6)	577 (22.6)
Hyperventilation/anxiety	112 (15.3)	844 (33.0)
No diagnosis	111 (15.2)	292 (11.4)
Orthostatic hypotension	52 (7.1)	32 (1.3)
Recurrent vestibulopathy	40 (5.5)	200 (7.8)
Ménière disease	38 (5.2)	144 (5.6)
Central vascular disorder	38 (5.2)	5 (0.20)
Unknown peripheral vestibular disorder	35 (4.8)	161 (6.3)
Vestibular neuritis	30 (4.1)	119 (4.7)
Medication	14 (1.9)	5 (0.20)
Migraine	8 (1.1)	99 (3.9)
Labyrinthitis	7 (0.96)	13 (0.51)
Multisensory disequilibrium	6 (0.82)	0 (0)
Vestibular areflexia	4 (0.55)	1 (0.04)
Polyneuropathy	3 (0.41)	1 (0.04)
Cerebellopontine tumor	2 (0.27)	2 (0.08)
Tumor (other)	1 (0.14)	2 (0.08)
Cerebellar degeneration	1 (0.14)	3 (0.12)
Labyrinthine fistula	1 (0.14)	6 (0.23)
Other	26 (3.6)	50 (2.0)

same time. Additional evaluations—such as laboratory tests, magnetic resonance imaging (MRI), and duplex ultrasonography of the carotid and vertebral arteries—were requested when they were deemed necessary by the consultants. The final diagnosis was made by the ENT surgeon and the neurologist by mutual consensus.

Diagnostic criteria. We used accepted criteria at the time to arrive at diagnoses of Ménière disease,¹³ benign paroxysmal positional vertigo (BPPV),¹⁴ vestibular neuritis,¹⁵ and vestibular migraine.^{16,17} A diagnosis of recurrent vestibulopathy was made if the patient had experienced repeated attacks of rotational vertigo ranging from a few minutes to 24 hours in duration, provided that these attacks had not been provoked by changes of position and that no ear symptoms were present.^{18,19}

A diagnosis of “unknown peripheral vestibular disorder” was made if the patient’s history or electronystagmographic findings indicated a peripheral cause but did not meet the criteria for one of the known peripheral diseases. Orthostatic hypotension was defined as a fall of 20 mm Hg in systolic blood pressure during the first 2 minutes of standing, provided that this finding could be reproduced. A diagnosis of hyperventilation/anxiety was made if the score on the Nijmegen Questionnaire was 24 or higher. The results of lung function testing were also used in support of this diagnosis. Finally, a diagnosis of a central vascular disorder was made on the basis of the

history and abnormal findings on neurologic and MRI examinations.

Study population. Our study population was made up of 731 patients—254 men (34.7%) and 477 women (65.3%). For purposes of comparison, we contrasted our findings in this older group with diagnoses in a group of 2,556 younger patients (≤ 69 years) who had been seen at our hospital during the same period. This group was made up of 932 men (36.5%) and 1,624 women (63.5%). We also compared our findings with those reported in previous studies by Katsarkas,⁸ Davis,⁹ and Colledge et al.¹⁰

Results

We were able to identify the cause of dizziness in 620 of the 731 older patients (84.8%). The two most common causes were BPPV, which was found in 202 patients (27.6%), and hyperventilation/anxiety, which was diagnosed in 112 patients (15.3%) (table 1).

In the group of 2,556 younger patients, the two most common diagnoses were reversed (table 1); hyperventilation/anxiety was present in 844 patients (33.0%) and BPPV was found in 577 (22.6%).

A finding of two coexisting diagnoses was seen in 183 of the older patients (25.0%) and in 565 of the younger patients (22.1%).

The comparison of our findings with those of the other studies of dizziness in older patients is shown in table 2.

Table 2. Comparison of selected studies on the causes of dizziness in older patients

Variable	Katsarkas, ⁸ 1994	Davis, ⁹ 1994	Colledge et al, ¹⁰ 1996	van Leeuwen and Bruintjes,* 2014
No. patients	1,194	117 (men only)	149	731
Age (yr)	≥70	>50	>65	≥70
Examiner specialty	ENT	Neurology	Geriatrics	ENT/neurology
Diagnosis [†]				
BPPV	47%	26%	4%	27.6%
Hyperventilation/anxiety	0%	3%	32%	15.3%
No diagnosis	23%	14%	0%	15.2%
Orthostatic hypotension	2%	3%	1%	7.1%
Central vascular disorder	8%	7%	70%	5.2%
Cervical disorder	0%	0%	66%	0%

* Present study.

† Not all diagnoses are listed for each study. Also, some patients were diagnosed with more than one cause.

Discussion

Since dizziness can significantly impact the quality of life of older people, finding the cause is important. In our area of The Netherlands, most patients who experience dizziness as their main complaint are referred to our hospital's dizziness unit. Our unit is special in that patients are evaluated simultaneously by two specialists—an ENT surgeon and a neurologist—instead of by a single specialist. As a result, we reduce the chance of “specialty bias” in arriving at a diagnosis.

Our study showed that the causes of dizziness in older patients are essentially no different from those in younger patients, although there were a few exceptions. There was some difference in the percentage of patients for whom no cause could be identified—15.2% of the older group and 11.4% of the younger group. This suggests that it is slightly more difficult to make a diagnosis in older patients than in younger patients.

BPPV was the most common cause of dizziness in the older patients referred to our multidisciplinary dizziness unit (27.6%). BPPV becomes more prevalent with increasing age, and its clinical presentation may be more atypical than it is in younger patients. Fortunately, BPPV can be successfully treated with canalith repositioning maneuvers.²⁰

Hyperventilation/anxiety was a fairly common cause of dizziness in our study, but it was much less common in the older group (15.3%) than in the younger group (33.0%). This finding is consistent with two of the earlier studies,^{8,9} but not the third.¹⁰ We do not have an explanation for the difference between our two groups. It is possible that elderly patients with anxiety disorders are less often referred to the hospital, while younger patients might more often insist on a referral.

We are aware that hyperventilation syndrome is a controversial idea.²¹ Nevertheless, we believe it is a useful concept in trying to explain the causes of chronic dizziness; after somatic causes have been ruled out, the main underlying cause is often an anxiety disorder.²² In many studies of dizziness, researchers do not recognize hyperventilation syndrome as a legitimate diagnosis.⁹ Likewise, a cervical cause of dizziness is another controversial diagnosis; these patients might actually have BPPV.

The finding that orthostatic hypotension (7.1%) and central vascular disorders (5.2%) were fairly common in our older patients was not surprising. On the other hand, the fact that Ménière disease was about as common in our older patients as in our younger patients (5.2 and 5.6%, respectively) was surprising.

When we compared our results with those of other studies, we also found some substantial differences. In the three studies we looked at, it appears that there was some correlation between the diagnosis and the type of specialist who made the diagnosis.⁸⁻¹⁰ One obvious and reasonable explanation for this is that these specialists are more likely to see patients who have diseases that are germane to that specialty. However, the fact that a geriatrician¹⁰ would identify a central vascular disorder as the cause of dizziness 10 times more often than a neurologist⁹ would make one wonder about the criteria both specialists use to arrive at their diagnoses. When we compared our findings to those made in an ENT⁸ or neurologic⁹ setting, we found essentially the same diagnoses; only the incidence varied.

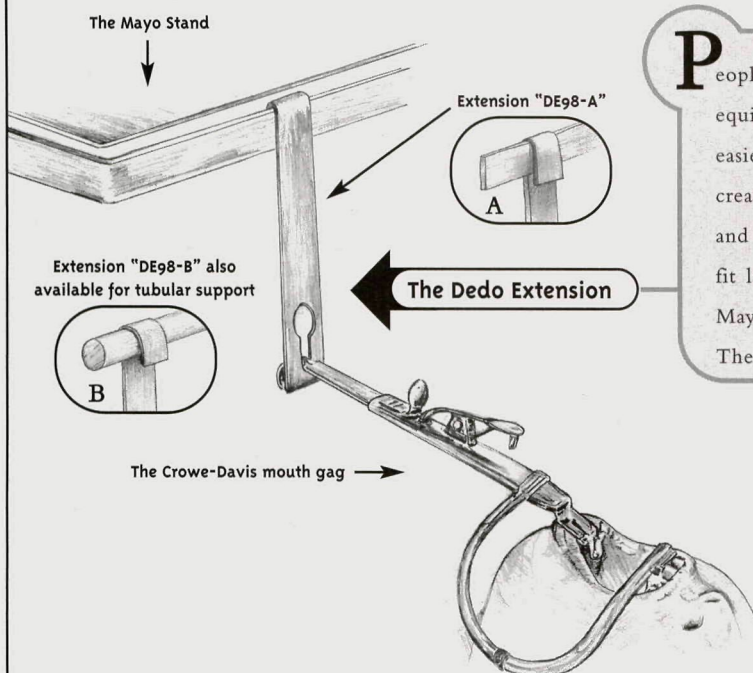
In conclusion, we were able to diagnose a cause of dizziness in 84.8% of older patients who were referred to our multidisciplinary unit. The causes in our older

patients were generally the same as those in our younger patients. However, the distribution of the various causes was somewhat different between the two groups. We conclude that in a multidisciplinary setting, a diagnosis can be reached in a large majority of older patients who are referred with a complaint of dizziness.

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