ORIGINAL ARTICLE

Epidemiology of Vestibular Disorders in the Otoneurology Unit

Gloria Guerra-Jiménez,* Alejandra Arenas Rodríguez, Juan Carlos Falcón González, Daniel Pérez Plasencia, Ángel Ramos Macías

Departamento de Otorrinolaringología, Complejo Hospitalario Insular Materno Infantil, Las Palmas de Gran Canaria, Las Palmas, Spain

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KEYWORDS
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Abstract
Introduction and objectives: The set of symptoms relating to disorders of the balance system are common in the general population. However, there are few studies quantifying the frequency of onset of the various vestibular disorders that present in specialist otoneurology units in the Spanish population. The aim of this study is to establish the epidemiology of vestibular disorders, their form of presentation, and the expected care burden in a specialist otoneurology clinic.

Material and methods: A retrospective, descriptive, observational study of patients referred to the otoneurology unit of a third level hospital between 1/1/2015 and 31/12/2015.

Results: One hundred and seventy-four patients were assessed (121 women and 53 men) with a mean age of 53±17 years. Forty-three individuals per 100,000 inhabitants were assessed over the study period. The patients were referred in the majority from external ENT (36.8%) and primary care (28.7%) clinics. The most frequent reason for consultation was dizziness (40.2%) followed by vertigo (31%). The most frequent diagnoses were benign paroxysmal positional vertigo (28.2%) and vestibular migraine (28.2%) -defined (59%) or probable (41%)-, followed by Ménière’s disease (13.8%), vascular disorders (5.7%), chronic subjective dizziness (4.6%) and vestibular neuritis (4%).

Conclusions: The availability of precise information on the prevalence and impact of vestibular disorders is important to enable the health services to plan an appropriate response to the expected care demand in the community. Benign paroxysmal positional vertigo and vestibular migraine are the most commonly diagnosed disorders in otoneurology clinics. Systematic terminology is essential for the comparison of results.

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* Corresponding author.
E-mail address: glorriaguerraj@gmail.com (G. Guerra-Jiménez).

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Epidemiología de los trastornos vestibulares en la consulta de otoneurología

Resumen

Introducción y objetivos: El conjunto de síntomas relacionados con los trastornos del sistema de equilibrio son comunes en la población general. Sin embargo, hay pocos estudios que cuan-
tifiquen la frecuencia de inicio de los diversos trastornos vestibulares que se presentan en unidades especializadas de otoneurología. El objetivo de este estudio es establecer la epidemi-
ología de los trastornos vestibulares, la forma de presentación y la carga de atención esperada en una clínica especialista en otoneurología.

Material y métodos: Estudio descriptivo observacional retrospectivo sobre los pacientes remi-
tidos a la consulta de Otoneurología de un centro hospitalario de tercer nivel entre el 1/1/2015 y el 31/12/2015.

Resultados: Fueron valorados 174 pacientes (121 mujeres y 53 hombres) con una media de edad de 53 ± 17 años. Durante el periodo de estudio se valoraron 43 individuos por cada 100.000 habitantes. Los pacientes fueron remitidos en su mayoría desde consultas externas de Otorri-
nolarlingología (36.8%) y desde Atención Primaria (28.7%). El motivo de consulta más frecuente fue inestabilidad (40.2%), seguido de vértigo (31%). Los diagnósticos más frecuentes fueron vértigo posicional paroxístico benigno (28,2%) y migraña vestibular (28,2%) –definida (59%) o probable (41%)-, seguidos de enfermedad de Ménière (13.8%), trastornos de origen vascular (5.7%), mareo subjetivo crónico (4,6%) y neuritis vestibular (4%).

Conclusiones: Disponer de información precisa acerca de la prevalencia e impacto de los trastornos vestibulares es importante para la correcta planificación de los servicios sanitarios con el objetivo de responder satisfactoriamente a la demanda asistencial esperada en la comunidad. El trastorno más frecuentemente diagnosticado en una consulta de Otoneurología es el vértigo posicional paroxístico benigno y la migraña vestibular. Para la comparación de resultados es indispensable la utilización de terminología sistemática.

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Introduction

The set of symptoms relating to disorders of the balance system are common in the general population\(^1\)\(^\text{-}^2\) and lead to a large number of medical consultations in both the family and community area as well as in specialised practice.\(^3\)\(^\text{-}^\text{7}\) It has been estimated that balance disorders are the third most common reason for outpatient consultation,\(^8\) and comprise up to 45% of general medical consultations, depending on the series.\(^9\) Data from the National Centres for Health Statistics of the United States report that during the year 2006 disorders of the balance system accounted for 7.5 million outpatient visits to primary care surgeries, external hospital specialist physicians and emergencies departments. These disorders are therefore one of the most common medical problems.\(^9\)

Up until 2014 no systematic review of published studies had been carried out to estimate the prevalence and incidence of symptoms secondary to balance disorders in the general population. In one study, Murdin et al. estimated an dizziness prevalence of between 17% and 30% and a prevalence of vertigo of between 3% and 10% depending on the series.\(^6\) In one study by Neuhauser et al. in 2005, it was reported that only 29% of patients with vestibular symptoms had consulted a doctor regarding their symptoms of dizziness.\(^10\) The study therefore shows that vestibular vertigo is a common occurrence, the incidence and prevalence of which has usually been underestimated. Its frequency may in fact be so high that the authors propose its symptoms should firstly be managed by primary care.

Balance disorders and their associated symptoms have a major impact on quality of life: they may lead to a serious sensation of functional incapacity and decline, with repercussions on the patient’s working, social and family life. The chronic, fluctuating and invalidating nature of certain entities has a high psychological impact and is usually associ-
ated with anxiety and depression by those suffering from it. It is therefore essential that appropriate evaluation, treatment and specific physiotherapy be applied. It is a common cause of dependence and occupational disability,\(^11\) and may require long-term or permanent disability provision.\(^7\)\(^\text{-}^\text{12}\)

Balance disorders are also recognised risk factors for the presence of falls,\(^7\)\(^\text{13}\)\(^\text{-}^\text{15}\) particularly in the elderly, where these disorders are associated with a decline of the vestibular, visual, auditory and somatosensory system due to age.\(^16\)\(^\text{-}^\text{19}\) This results in a high level of morbidity and mort-
tality and a considerable increase in disability, dependence and socio-economic costs.\(^14\)\(^\text{-}^\text{19}\)

Advance in medical practice based on evidence in this area requires strategically guided investigation to result in patients and medical professionals identifying and prioritising the most urgent problems requiring a solution.\(^6\) Balance disorders may include Ménière’s disease (MD), vestibular migraine (VM) or vestibular neuritis, and for these further
scientific research projects are needed for the study of their origins, epidemiology, diagnosis and treatment.

Few recent studies quantify the percentage frequency of diseases relating to the balance system in the specific context of consultation by the Spanish population with a specialist in otoneurology. It is important that accurate information be available on the prevalence and impact of vestibular disorders so that correct planning of healthcare services aimed at a satisfactory response to the expected community healthcare demands may be achieved.

The aim of this study was to carry out a review of the available literature and of the cases from the centre itself regarding the epidemiology of vestibular disorders, their form of presentation and the expected healthcare burden in a specialist otoneurology clinic.

Material and Methods

A retrospective, descriptive, observational study of patients referred to the otoneurology unit between 1/1/2015 and 31/12/2015. Details from each patient were collected regarding age, sex, reason for primary consultation, primary diagnosis and secondary diagnosis. The SPSS Statistics 20.0 programme was used for data collection and for the descriptive study. Characterisation of the main symptom was followed by the name defined by the International Classification of Vestibular disorders (ICVD). A non-systematic review was also made of the literature available about the epidemiology of the most frequent vestibular disorders.

Results

During the period studied 174 subjects, 53 men (30.5%) and 121 women (69.5%) with a mean age of 53±17 years were assessed at the first visit. The study centre general hospital was responsible for the healthcare of 459872 people in 2015. In keeping with these data, a total of 38 people for each 100000 inhabitants of our population of reference were referred during the one-year period.

Patients were mainly referred from external ENT clinics (36.8%) and from primary healthcare (28.7%). 19.5% of patients were referred from other hospital specialties, the most noteworthy of which were physiotherapy (67.6%), neurology (17.6%) and paediatrics (8.8%). In 14.4% of cases the origin was unknown and 0.6% of patients were referred from the emergency hospital department.

The most common reason for consultation was dizziness (40%), followed by vertigo (31%). 26% of patients reported both symptoms at difference moments of the disease. 2.8% of cases were evaluated within the context of other ENT disorders, without any vestibular symptoms.

The diagnoses carried out in the doctors’ surgeries are contained in Table 1. In 15% of cases a secondary diagnosis was made during patient follow-up. Of these the most frequent was that of VM (n=13, 7.5%) followed by vascular vertigo (n=7, 4%), benign paroxysmal positional vertigo (BPPV; n=2, 1.1%) and MD (n=2, 1.1%). Secondary diagnosis cases of VM coincided with a primary BPPV in 8 cases (61.5%), with MD (n=3, 23%) and otosclerosis (n=2, 15%). Secondary diagnosis cases of vascular vertigo (n=7) were made in patients with a primary diagnosis of BPPV (n=6) or VM (n=1). Two cases of MD occurred in patients with BPPV.

Out of VM cases, 59% were included in the diagnostic category of defined VM and 41% in that of probable VM.

Regarding patients with MD (n=24), there were 2 cases of bilateral MD.

Among the cases of BPPV (n=54) the most commonly affected canal was the posterior (n=23; 42.5%), followed by the horizontal (n=12; 22.2%; 8 cases of canalolithiasis and 5 cases of cupulolithiasis) and the anterior (n=7; 13%). In 16.7% of cases the canal affected was unknown and 3 patients (5.6%) presented with multi-canal BPPV.

Table 1: Diagnoses Made in the Doctors’ Surgeries, in Order of Frequency.

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benign paroxysmal positional vertigo</td>
<td>49</td>
<td>28.2</td>
</tr>
<tr>
<td>Vestibular migraine</td>
<td>49</td>
<td>28.2</td>
</tr>
<tr>
<td>Ménière’s disease</td>
<td>24</td>
<td>13.8</td>
</tr>
<tr>
<td>Vascular disorders (</td>
<td>10</td>
<td>5.7</td>
</tr>
<tr>
<td>Chronic subjective dizziness</td>
<td>8</td>
<td>4.6</td>
</tr>
<tr>
<td>Vestibular neuritis</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Benign recurrent vertigo</td>
<td>4</td>
<td>2.3</td>
</tr>
<tr>
<td>Ototoxicity</td>
<td>3</td>
<td>1.7</td>
</tr>
<tr>
<td>Childhood benign paroxysmal vertigo</td>
<td>3</td>
<td>1.7</td>
</tr>
<tr>
<td>Migraine equivalent syndrome</td>
<td>2</td>
<td>1.1</td>
</tr>
<tr>
<td>Neuromas of the VIII nerve</td>
<td>2</td>
<td>1.1</td>
</tr>
<tr>
<td>Cochlear implant</td>
<td>2</td>
<td>1.1</td>
</tr>
<tr>
<td>Cerebellitis-meningitis</td>
<td>2</td>
<td>1.1</td>
</tr>
<tr>
<td>Otoesclerosis</td>
<td>2</td>
<td>1.1</td>
</tr>
<tr>
<td>Vestibular paroxysm</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>Bilateral vestibular disorder</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>Headache-torticollis</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>TMD syndrome</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>Labyrinthitis</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>Autoimmune inner ear disease</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>Toxic agents</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>Unknown</td>
<td>1</td>
<td>0.6</td>
</tr>
</tbody>
</table>

Discussion

Diagnosis of disorders relating to the system of balance is complex. One of the reasons for this is the wide range of terms used by the patient when they refer to different degrees and types of the loss of balance, and this entails the use of particular care in characterising the disorder both by the patient and between the specialists themselves. This problem rises when we look at the international environment where there are different lexical barriers that can lead to errors in terminology. In the light of this problem and to avoid possible conflicts from the use of inappropriate terminology, in 1972 Drachman and Hart proposed a classification of changes in balance into four possible categories where it was possible to match all patients who presented with these changes: pre-syncope, vertigo, unsteadiness and dizziness.

Although the previous categories are accurate in their definition and despite the appreciable frequency of these
Although MD These developed and after origin both consensus non-vestibular disorders, patients often use these terms indistinctly and some doctors may have difficulty in differentiating between them.10

One of the reasons this controversy exists is the large number of entities that may generate these symptoms, which are not only large in number but also in variety, and which cover different entities of bodies as disparate as the central nervous system, the proprioceptive system, the vestibular system, the sense of vision and the cardiovascular and endocrine systems. In one transversal study on the National Hospital Ambulatory Medical Care Survey carried out in 2008 on patients attended by the emergency services for 13 years, a total of 9472 cases of vertigo and dizziness were reported. Their main origins were otorhinolaryngological/vestibular in 32.9% of cases, followed by cardiovascular in 21.1% of cases, respiratory (11.5%), neurological (11.2%), metabolic (11%), toxic (10.6%), psychiatric (7.2%), digestive (7%), genital and urinary (5.1%) and infectious (2.9%) and 22.1% with no specific aetiological diagnosis.27 Although the origin of these symptoms is varied, it seems certain that, compared with vertigo from other origins, vestibular vertigo is more relevant to patients’ health, and involves more consultations (70% vs 54%), sick leave (41% vs 15%), disruption in everyday activities (40% vs 12%) and a reduction in going outside the homer (19% vs 10%).

In order to develop a comprehensible and systematic terminology and classification of vestibular disorders, several documents of consensus appeared, such as the classification of peripheral vertigos,18 developed between 2003 and 2006 and published in 2008 by the Spanish Commission of Oto-neurotology, from the Spanish Society of otorhinolaryngology. In 2015 the Classification Committee of the Bárány Society published the long-awaited ICTV39 after an internal process of consensus lasting 9 years between different international scientific societies which included the Société Internationale d’Oto-neurologie, the Spanish Commission of Oto-neurotology, the American Academy of Otolaryngology-Head and Neck Surgery (AAO-HNS), the Japanese Equilibrium Society and the Korean Balance Society.

The ICTV included a proposal for the diagnosis of vestibular disorders into four strata or layers, where symptoms and signs (stratum I) were not only defined, but were also grouped into clinical syndromes (stratum II), diseases and disorders (stratum III-A) and physio-pathological mechanisms (stratum III-B). Four categories of vestibular symptoms were described: (a) vertigo, understood to be a false sensation of one’s own movement or that of one’s surroundings, either spinning around or not; (b) imbalance or unsteadiness, which covers an extensive range of variable terms of specificity39 and now described as a sensation of altered spatial awareness without a sensation of movement; (c) visual vestibular symptoms and (d) postural symptoms with their sub-types.30 It is of note that in this document, although symptoms are clearly differentiable, vertigo and dizziness should not be considered pathognomonic of vestibular or non-vestibular disease, since they are frequently found in both types of disorders both in chronic and acute form.31,32

A distinction is also made between spontaneous and triggered vertigo, which occurs after a clear trigger. Secondary positional vertigo is described after a change in position of the head with respect to the centre of gravity.

In 2003 López-Gentili et al.23 published the study with the highest sample size to date, 1300 patients and the only known one in the specific context of an oto-neurotology clinic to explain the variety of change aetiology in the balance system. In this study, 69% of patients presented with vertigo; 12%, dizziness; 2% presyncpe and 17%, were classed as the miscellaneous group. The clinical symptoms of each entity responded to highly numerous and disperse nosological entities, among which BPPV stood out for its frequency (25.8%). Our results match the BPPV in frequency, 25.8% (28.2); but differ significantly in diagnosis of Menière’s disease: 5.5% (13.8), vascular disorders: 10.1% (5.7) and vestibular neuritis: 1.8% (4%). However, major entities in our sample, such as VM or chronic subjective dizziness are not reflected as an independent entity. With regards to the reason for medical consultation, our results are not comparable due to the different terms used by these authors.

In a study carried out by Mostafa et al. to determine the frequency of appearance of central nervous system disorders in the context of a vestibular unit, it was determined that 23% (n=23) of patients referred to the unit were diagnosed with some type of central vestibular lesion, including general ischaemia or vertebrobasilar ischaemia (n=10), multiple sclerosis (n=4), migraine vestibulopathy (n=4), postural phobic dizziness (n=4) and nystagmus induced by hyperventilation (n=1).40 These data reveal a greater incidence of vascular vertigo compared with our series (10 vs 5.7%) and multiple sclerosis but in our sample we detected a higher percentage of VM entities (4 vs 28.2%). Similar frequencies were diagnosed for chronic subjective dizziness (4 vs 4.6%) and vestibular paroxysmal (1 vs 0.6%).

With regards to comorbidities, it is interesting to note the coexistence in the sample of BPPV in patients with VM (n=8), MD (n=3) and vascular vertigo (n=6) which coincides with previous evidence regarding the higher appearance of BPPV in patients with migraines,35 MD36 and its association with BPPV with several cardiovascular risk factors.37-41

The availability of precise information on the prevalence and impact of vestibular disorders is important to enable the health services to plan an appropriate response to the expected care demand in the community.

Conclusions

The most commonly diagnosed vestibular disorders in an oto-neurotology clinic are BPPV and VM, followed by MD, although comorbidities may present in approximately 15% of cases. The number of primary visits recorded in the period of one year is that of 38 people per each 100 000 inhabitants of the centre’s reference population. It is essential to use systematic terminology to compare results.

Conflict of Interests

The authors have no conflict of interests to declare in this study.
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