

## What proportion of patients referred to an otolaryngology vertigo clinic have an otological cause for their symptoms?

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### Abstract

**Background:** Dizziness is a common and often complex complaint. Between nine and 13 per cent of patients seen in general practice are referred to a variety of specialist clinics. The diagnoses and outcomes of these referrals are seldom reported.

**Aims:** To determine the proportion of patients referred to an otology led vertigo clinic in whom an otological cause for vertigo could be identified.

**Design of study:** Prospective cohort study of consecutive new clinic attendees over one year.

**Setting and methods:** Otolaryngology led vertigo clinic in an urban teaching hospital in England. Patients' details including age, sex, referring clinician, investigations, diagnoses, treatment and final outcome were recorded in an anonymised database.

**Results:** 91 new patients, 31 men and 60 women with a mean age of 52.6 years (range 16–81) were seen. General practitioners referred 87 per cent of the patients. Twenty-seven patients underwent further investigations including imaging, electronystagmography and other audiological tests. A labyrinthine disorder accounted for 50 per cent of the diagnoses. Ménière's disease or a variant was diagnosed in 20 patients (21 per cent). Fifty-six patients (61 per cent) reported resolution of or improvement in their symptoms. Thirty-one patients (34 per cent) were asymptomatic and free of abnormal findings on initial attendance and were discharged from hospital care.

**Conclusions:** Forty-six patients (50.6 per cent, 95 per cent confidence interval, 40.4–60.6 per cent) had vertigo due to an otological disorder. The selection of an otolaryngology based vertigo clinic by the general practitioner for initial referral seems appropriate.

**Key words:** Dizziness; Vertigo; Diagnosis; Outpatients

### Introduction

Dizziness affects up to 23 per cent of the UK population at any time.<sup>1</sup> Between 0.8 and 1 per cent of the population seek the medical advice of their general practitioner (GP) for symptoms of dizziness.<sup>2–3</sup> The majority of these patients are managed within primary care but 9–13 per cent of these patients are referred to hospital specialists including neurologists, cardiologists and otolaryngologists.<sup>2,4</sup> The choice of specialty is not always clear to the GP, especially as multiple pathology is estimated to occur in 35–85 per cent of patients.<sup>5,6</sup> Multidisciplinary balance clinics are advocated to deal with this diagnostic challenge.

However, it is common practice in the UK for the majority of patients with dizziness to be referred to otolaryngology departments, in part because the most common diagnosis made in primary care is 'labyrinthitis'.<sup>2,7</sup> Data on new attendees at a hospital

based otology led vertigo clinic over one year were analysed to determine if the proportion of patients with an otological cause for their symptoms supported this practice.

### Methods

The study was undertaken at the North Bristol National Health Service Trust in south-west England serving an urban metropolitan population and the suburban/rural population of south Gloucestershire. Data on new out-patient attendees at an otolaryngology led clinic for patients with a primary symptom of dizziness or vertigo were collected over a one-year period.

The study was a prospective cohort design with no exclusion criteria. Patients attending between the start of May 2002 and end of April 2003 were identified by a computerised search of correspondence from hospital to GP. Age, sex, referral source,

investigations, diagnoses, treatment and onward referrals were recorded.

The diagnoses were categorised into seven groups: labyrinthine, central neurological, cardiac, musculoskeletal, multifactorial, idiopathic and other. The findings from investigations and onward referrals were obtained from paper and electronic records.

To simplify the analysis of the results and allow comparisons with previous literature, patients with multiple labyrinthine diagnoses but no other cause for their symptoms were classified as having a labyrinthine diagnosis. A patient with both a labyrinthine diagnosis and a coexisting central neurological or cardiovascular cause for vertigo was categorised as multifactorial as were patients with aetiologies in more than one body system. An idiopathic diagnosis was only made after other causes had been excluded and the patient's symptoms had resolved.

Although diagnostic criteria were not formally standardised prior to the study period, the senior author reviewed all the diagnoses and reclassified these as necessary using the following criteria. A diagnosis of benign paroxysmal positional vertigo (BPPV) was made if there was a typical history of episodic true vertigo lasting for seconds up to one minute induced by position change. The condition was classified active if rotatory nystagmus was elicited by the Dix–Hallpike test. Patients with a typical history of BPPV, but a negative Dix–Hallpike test and whose symptoms had settled were diagnosed resolved BPPV.

Ménière's disease was diagnosed in patients with clinical features that met or exceeded the minimum criteria set by the American Academy of Otolaryngology – Head and Neck Surgery for possible Ménière's disease.<sup>8</sup>

A diagnosis of vestibular neuritis was adopted for patients with single or repeat episodes of spontaneous rotatory vertigo lasting for periods from minutes up to a week in the absence of cochlear features, otoscopic ear disease or any other neurological abnormality. Patients had to meet the first three criteria for this diagnosis proposed by El-Kashlan and Telian<sup>9</sup> namely (1) sudden severe vertigo with nausea and vomiting lasting days, (2) absence of auditory features and (3) absence of other neurological features. Labyrinthitis was diagnosed when a patient had a single vertiginous episode lasting for several days up to a week with nausea, vomiting and a documented hearing loss.<sup>10</sup> Migraine associated vertigo was diagnosed in patients with headaches which met the diagnostic criteria for migraine set by the International Headache Society<sup>11</sup> and who had vertigo as part of their migraine complex. Migraine sufferers who experienced episodes of vertigo with associated migraine features such as photophobia, phonophobia, nausea or aura separate to their headache attacks were similarly classified.

Patients with neck pain or suboccipital headaches<sup>12</sup> but no features of otological or neurological disease in whom vertigo was provoked by changes in neck position were diagnosed musculoskeletal vertigo.

Patients who demonstrated a fall in diastolic or systolic blood pressure of over 10 mmHg after standing from a supine posture were diagnosed as postural hypotension.<sup>13</sup> The results of investigations and onward referrals were obtained from paper and electronic records. The data were recorded in a Microsoft Excel spreadsheet and anonymised once the investigation and referral data linkages were complete. The proportion of patients with an otological cause for dizziness and its 95 per cent confidence interval (using the normal approximation to the binomial distribution) was calculated.

## Results

Ninety-one new patients were seen in the first year of the clinic. There was a female to male ratio of approximately 2:1 (F = 60, M = 31). The mean age was 52.6 years (age range 16–81). Most patients (87 per cent) were referred via their GP. Twelve patients were referred from hospital departments, six by otolaryngologists and two each by cardiologists, geriatricians and audiologists.

A consultant neuro-otologist saw the majority of new referrals (61 per cent). The rest were seen by junior medical staff. Clinical assessment included cranial nerve examination (with particular attention paid to eye movements, saccades and smooth pursuit), Unterberger's and Romberg's testing, gait examination and pure tone audiometry. Further audio-vestibular and radiological investigations were requested when clinically indicated. Diagnoses were classified as follows: labyrinthine 44 per cent; idiopathic 17 per cent; multifactorial 12 per cent; central neurological 2 per cent; and other 24 per cent.

Thirty-one patients (34 per cent) were discharged after the initial consultation as their symptoms had resolved completely. Twenty patients with unilateral otological symptoms (as defined by unilateral tinnitus and/or sensorineural hearing loss of greater than 15 decibels between each ear) underwent magnetic resonance imaging (MRI). No cerebellopontine angle lesions were identified in this group. Investigation with Electronystagmography (ENG) and/or caloric tests was carried out in 14 cases. A further seven patients were investigated for hearing loss, cerebellar disease or cardiac disorders (speech audiograms, MRI scanning and echocardiography).

The diagnoses in the 41 patients with a single labyrinthine disorder were Ménière's disease 20; BPPV nine; labyrinthitis one; peripheral vestibular dysfunction of unknown aetiology five and vestibular neuritis 6. Surgery was scheduled in only two patients with Ménière's disease (one gentamicin infusion and one vestibular neurectomy) the other cases were managed medically. Medical treatment varied with a combination of Serc, bendroflurazide and salt restriction. Six of the nine cases of BPPV had a positive Dix–Hallpike response, and were treated initially with Epley's manoeuvre. Additionally, vestibular rehabilitation exercises, either Brandt–Daroff or Cawthorne–Cooksey, were prescribed. Three cases of BPPV had complete symptom resolution by the time of their first clinic attendance. In these cases

TABLE I  
DIAGNOSTIC CLASSIFICATION OF PATIENTS WITH MORE THAN ONE CAUSE FOR DIZZINESS

Agreed diagnostic groups	Labyrinthine diagnoses one or more	Other diagnoses	Central or cardiovascular diagnoses	Number of patients
Labyrinthine	5			5
Other		1	1	1
Multiple	5	4	1	5

the diagnosis was made from the history alone. Six cases of Vestibular neuritis were diagnosed on history, and as the symptoms had resolved all were discharged after the initial consultation.

Cases of musculoskeletal and idiopathic vertigo were not routinely followed up. Eight of 12 cases with a musculoskeletal diagnosis were deemed severe enough to warrant a referral for physiotherapy.

Multiple causes were found in 11 patients of whom four had been referred by other hospital departments (audiology, cardiology or geriatric medicine). Ten of these patients had labyrinthine disorders (Table I). Five had two labyrinthine disorders. In four a musculoskeletal condition coexisted with a labyrinthine disorder. One patient had a central neurological and a labyrinthine disorder. In only one case was no labyrinthine disorder diagnosed: a patient with anxiety related vertigo (from history) and postural hypotension. In total, 46 patients (50.6 per cent, 95 per cent confidence interval, 40.4–60.6 per cent) had a labyrinthine disorder diagnosed as the primary cause of dizziness.

Five patients (5.5 per cent) were referred to another specialty. A general physician’s opinion was sought in one of three patients with a cardiac diagnosis. In the other two cases a diagnosis of postural hypotension was made, as suggested by the history and lying and standing blood pressure testing. Four cases were referred to a neurologist; one of two cases in whom a diagnosis of cerebellar disease was made and three other patients in whom a multifactorial aetiology was being considered. The neurologists subsequently made a diagnosis of anxiety and migraine aura respectively in two cases. No neurological disease was identified in the other two patients.

**Discussion**

Diagnosis in the dizzy patient can be very difficult. The GP must decide which cases are likely to benefit from referral as well as determining which specialist would be most appropriate.

Our data demonstrate that half the patients referred to an otolaryngology led vertigo clinic have a clear otological diagnosis. An ear disorder is thus the most common cause of vertigo in this patient group. On average, 69 per cent of patients seen in UK primary care receive otological diagnoses from their GP, but only 13 per cent of dizzy patients are referred to hospital specialists, primarily otolaryngologists.<sup>2</sup>

The proportion of patients in otology led vertigo clinics who have an otological cause for their dizzy symptoms has been reported to be 30 per cent<sup>14,15</sup> (Table II). These are likely to be underestimates because Wells and Yande’s 1987 study predates the widespread recognition of BPPV and while 50 per cent of their patients were described as having postural vertigo, none were diagnosed with BPPV.<sup>14</sup> Guilemany *et al.* likewise describe diagnostic uncertainty with the term BPPV and found only eight cases in 591 patients.<sup>15</sup> If the BPPV diagnostic group in the current study were reclassified as postural hypotension or cervicogenic vertigo there would still be 42 patients (46 per cent) with an otological diagnosis.

It is not surprising to find that otological disorders are the predominant cause for dizzy symptoms in patients referred to hospital vertigo clinics<sup>4,6,15–18</sup> as this reflects the predominance of this aetiological group in primary care. The proportion of patients with an otological cause in hospital clinics can be as high as 65 per cent, which is not statistically different to the rate in primary

TABLE II  
PERCENTAGES OF DIAGNOSTIC GROUPS FROM LITERATURE AND CURRENT STUDY

Diagnostic Groups	Arya & Nunez (n = 91)	Katsarkaj <sup>16</sup> (n = 1194)	Guilemany <sup>15</sup> (n = 591)	Sloane <sup>4</sup> (n = 144)	Lawson <sup>19</sup> (n = 50)	Bath <sup>6</sup> (n = 812)	Wells <sup>14</sup> (n = 86)
Labyrinthine	51	39	30	33	18	65	30
Musculoskeletal	12	–	18	–	–	–	51
Other	8	9	11	26	–	9	1
Central	2	9	12	21	14	5	7
Idiopathic	16	27	19	–	22	13	11
Cardiac	5	6	5	18	28	3	–
Multifactorial	6	12	4	5	18	5	–

care.<sup>2,6</sup> The few studies of hospital out-patients that do not demonstrate this otological bias are either based on small samples<sup>19</sup> or on data from clinics not specifically designated for dizzy patients.<sup>14</sup>

Only five patients (5.5 per cent) were referred from the vertigo clinic for other specialist opinions. In addition, over the year, other hospital specialists referred only four patients to the otology led vertigo clinic. However, this could also be attributed to the fact that the clinic was new and other specialists may not have known about it. This suggests that patients were selectively referred by the GPs to the otology led vertigo clinic. However, without information on the diagnoses made in dizzy patients referred to other hospital speciality clinics this remains uncertain.

- **This study demonstrates that a large proportion of new patients referred to an otolaryngology led vertigo clinic have an otological cause for their dizziness**
- **The proportion of patients with a labyrinthine or other cause for their dizziness was similar to that reported in multidisciplinary balance clinics**
- **This study suggests that otological disease is the most common diagnosis in patients referred by primary care physicians with balance disorders for specialist ENT opinions**

Currently the National Health Service in the UK is considering changes to the referral patterns of dizzy patients Action on steering board. Action On ENT Good Practice Guide, London: NHS Modernisation Agency, 2002; 32–42. Instead of being referred directly to an ENT specialist, GPs may opt to refer patients to a balance specialist (physiotherapist or audiologist) or to a healthcare practitioner with an extended role. There will be provisions to refer directly to ENT specialists if certain red flag criteria are found, (e.g. asymmetric hearing loss, severe tinnitus, neurological signs), thus ensuring more serious pathology is not overlooked. The results of the current study would support such a system. Twelve per cent of our patients had a musculoskeletal diagnosis, and if diagnosed initially, a direct referral to a physiotherapist would have been appropriate. The large number (31) that had resolved prior to consultation we believe still merited assessment, even if only for reassurance. This could have been done by a practitioner with an extended role, provided a red flag facility was in place. The six patients with BPPV that benefited from Epley's manoeuvre could have had this performed by an audiologist, provided the diagnosis had been made first. The vast majority of MRI scans performed were negative, and it could be argued that our patient selection for scanning was too wide. However, encouraging non-specialists to request MRI scans prior to referral would probably lead to an even larger number of unnecessary scans.

It is interesting to note, but not surprising, that so few of our patients underwent surgery (2/91) and the vast majority were managed medically. We believe that it is still important that these patients are seen by an ENT surgeon who can offer the full range of advanced diagnostic and medical management as well as surgical options in suitable cases.

## Conclusions

Our study demonstrates that otological disease is the most common diagnosis in dizzy patients referred by GPs for specialist ENT opinions. It also demonstrates that ENT physicians experienced in the management of dizziness can diagnose cardiological, neurological, psychological and other causes of dizziness and make appropriate onward referrals. This study would be much stronger, of course, if each case was reviewed independently by a panel of other specialists. We also acknowledge that there is a risk that otologists will overdiagnose otological disease relative to other conditions that they are less familiar with. We therefore support the current widespread practice of GPs in the UK to refer dizzy patients primarily to hospital otolaryngology departments except in cases where there is good evidence of a non-otological cause.

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Mr D Nunez takes responsibility for the integrity of the content of the paper.  
Competing interests: None declared

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