

Psychological Manifestations of Vertigo: A Pilot Prospective Observational Study in a Portuguese Population

Fernando Vaz Garcia,¹ Maria Helena Coelho,² and Maria Luisa Figueira³

Departments of ¹Otolaryngology, ²Neurology, and ³Psychiatry, Santa Maria Hospital, Lisbon, Portugal

Abstract: We sought to ascertain the importance of psychological manifestations of vertigo and psychogenic vertigo among a Portuguese population. Sixty patients complaining of vertigo and imbalance were studied over a 2-year period. At each assessment, the patients underwent a general examination, a neurootological evaluation, psychiatric interviews, and psychopathological assessments conducted by a multidisciplinary team. Overall, 38 patients (63.4%) were given diagnoses of some form of psychopathological complaint. A more detailed analysis revealed panic disorder in 9, moderate depressive episode in 42, and mixed anxiety and depressive disorder in 7, whereas the remaining patients (2) suffered from subclinical symptoms of anxiety or depression. Patients with vertigo demonstrate a high incidence of psychopathological complaints, the most common being anxiety disorders. Somatization, obsessive-compulsive behaviors, and depression tend to lessen over time, whereas few changes are seen in anxiety.

Key Words: anxiety; depression; postural phobic vertigo; psychogenic vertigo; psychopathological self-assessment scales

Vertigo is a multidimensional complex syndrome. Patients with labyrinthine vertigo are frequently anxious [1], and anxiety is well recognized as a potential component, or even the primary problem, in vestibular abnormalities [2]. However, sometimes this anxiety appears exaggerated in relation to the intensity of the vertigo or even persists when the initial symptoms are receding. Moreover, vertigo and gait or stance disturbances are common symptoms of psychiatric illness, especially anxiety, depression, and personality disorders. Thus, a vicious cycle may arise, in which vestibular changes are a source of anxiety, which in turn causes dizziness, even after the vestibular episode has disappeared. The difficulty of distinguishing between these disorders has led to the frequent revision and up-

dating of definitions of clinical criteria (*Diagnostic and Statistical Manual of Mental Disorders IV* [DSM-IV]).

According to Eckhardt-Henn [3], 30–55% of vertigo and imbalance complaints are related to psychiatric and psychosomatic disorders. Often, however, difficulty arises in establishing whether the patient's complaints correspond to true vertigo or to somatization of a psychiatric condition or whether they are merely functional complaints wherein the symptom appears disproportionate to the organic objective findings [4].

Vestibular assessment does not always clarify whether the vertigo is organic or functional. Even a typical labyrinthine dysfunction, such as Ménière's disease, may not, in its initial phases, be accompanied by objective vestibular changes, whether they be spontaneous signs or even hyporesponsiveness to caloric irrigation, when assessed in a period between attacks. In other organic vestibular dysfunctions, such as neuritis, with severe vertigo of sudden onset associated with horizontal-rotational nystagmus, axial and segmentary harmonious deviations, and autonomic manifestations, the vertigo attacks gradually dissipate. However, the initial major

Reprint requests: F. Vaz Garcia, M.D., EQUI, Clínica da Vertigem e Desequilíbrio, Hospital Particular de Lisboa, Av. Luis Bivar No. 30, 10 Andar, 1050-144 Lisbon, Portugal. Phone: +351-21-3832836; Fax: +351-21-3832836; E-mail: vaz.garcia@mail.telepac.pt

vertigo may be followed by other episodes of brief, chronic vertigo that also may cause disability. The latter episodes are suggestive of poor vestibular compensation or the emergence of a new condition of a psychogenic nature, possibly triggered by the former condition. Thus, making the differential diagnosis between vestibular vertigo accompanied by important psycho-affective symptoms and what is known as *psychogenic vertigo* is difficult.

The psychogenic vertigo group is composed of three main conditions: panic attacks, agoraphobia, and postural phobic vertigo. The clinical criteria for identifying the first two conditions are well established [5]. However, despite the prevalence that has been attributed to it [6], postural phobic vertigo is not recognized in DSM-IV. Postural phobic vertigo is characterized by dizziness and subjective disturbance of balance and by perception of illusory body perturbations, usually triggered by a perceptual stimulus. It frequently is associated with anxiety symptoms in patients with an obsessive-compulsive type personality, in whom the onset of the condition follows emotional stress.

The boundaries of psychogenic vertigo are not unanimously recognized [7–10]. According to Brandt [6], psychogenic vertigo should be suspected if (1) certain stimuli or social events are the main triggers; (2) an obvious dissociation is seen between objective and subjective imbalance; (3) complaints of rotational vertigo are not accompanied by spontaneous nystagmus; or (4) an affected patient shows disproportionately excessive anxiety or fear of imminent death. Therefore, in a certain group of patients, it is difficult, using the present clinical criteria, to pinpoint the type of psychological manifestations and whether they are a cause or consequence of vertigo.

To ascertain the importance of psychological manifestations of vertigo and psychogenic vertigo among a Portuguese population, we submitted a sample of patients complaining of vertigo and imbalance to periodic neurootological and psychopathological assessments conducted by a multidisciplinary team.

PATIENTS AND METHODS

Between April 1, 1998, and May 31, 1999, we performed a 2-year follow-up study in 60 patients (41 female and 19 male; age range, 18–82 years; mean age \pm SD, 53.3 ± 16.9 years). They had been referred by their general practitioners. Assessments were performed every 6 months; 17 patients dropped out (8 at the first assessment and 3 at each of the following assessments). The 43 patients who completed the study showed a similar gender and mean age distribution (28 female and 15 male; mean age, 52.7 ± 15.2 years).

Initially, all patients were examined by a neurologist and completed a general questionnaire for the characterization of vertigo (type; onset; duration; definition; time course; associated symptoms; precipitating factors; severity; disability scale from the American Academy of Otolaryngology–Head and Neck Surgery [AAO-HNS]; predisposing factors and family history; presence of such other clinical conditions as hypo- and hypertension, diabetes, or heart disease; and concomitant drug intake). A general and neurological clinical examination, routine analyses and, in some cases, a computed tomography scan or magnetic resonance imaging also were performed.

The patients were then referred to the ear, nose, and throat team, who performed otological and neurootological evaluations, and to the psychiatric team, who performed psychiatric and psychological evaluations. Neurootological assessment included pure-tone audiometry, acoustic immittance audiometry, Unterberger and Romberg tests, and an electronystagmography battery consisting of gaze and positional nystagmus, Hallpike maneuvers, caloric tests, ocular fixation index (Demanez), saccades, pursuit-tracking test, and a head-shaking test. Psychiatric evaluation comprised a semi-standardized psychiatric interview (SSPI) and the following psychopathological self-assessment scales: the Beck depression inventory [11,12], the fear questionnaire [13], the panic and mobility symptoms questionnaire (agoraphobia) [14], the Spielberger state-trait checklist for anxiety [15], and a general psychopathology scale (the SCL-90 Hopkins Symptoms checklist) [16].

RESULTS

General Questionnaire

Data from the general questionnaire revealed 16 patients with a single episode, 20 patients with recurring attacks, and 16 with chronic vertigo. The neurological examination permitted the diagnosis of one case of basilar migraine, one of epilepsy, and two of stroke. A further six patients presented isolated neurological signs that did not, however, allow a diagnosis.

Neurootological Assessment

In the first evaluation, completed by 52 patients, only 17 (33%) presented vestibular signs, whereas the remaining 35 had normal vestibular test results (68%). However, by correlating clinical history to vestibular and hearing assessments, we were able to identify the following: 11 certain or probable cases of benign paroxysmal positional vertigo (BPPV); 8 definite or probable cases of Ménière's disease; 8 cases of vestibular

neuritis; 4 cases of unilateral vestibular loss syndrome; and 1 case each of Lindsay-Hemenway syndrome and central-type vestibular dysfunction. Only 19 patients (37%) did not have a vestibular disorder diagnosis.

Psychiatric Evaluation

Of the 52 patients who concluded the first follow-up evaluation, correlation of data from the SSPI with the SCL-90 scores revealed two subgroups: one normal (of 19 patients, or 36.6% of the sample) and the other with psychopathological manifestations (33 patients, or 63.4%). The latter group was divided into two subgroups according to the International Classification of Diseases (ICD-10) and the DSM-IV: one in which a nosologic diagnosis was possible (18 patients, or 34.6% of the sample) and another in which psychiatric symptoms were observed but were considered subclinical (15 patients, or 28.8% of those who concluded the first follow-up). A more detailed analysis of the patients with a nosologic diagnosis revealed panic disorder ($n = 8$; 15.4%), moderate depressive episode ($n = 4$; 7.7%), and mixed anxiety-depression ($n = 6$; 11.5%). The remaining patients (15 patients with psychopathological manifestations) suffered from subclinical symptoms of anxiety or depression, including worry, vegetative symptoms, sadness, and loss of energy.

Global data obtained with the SCL-90 in the 43 patients who completed the study showed that the psychological dimensions presenting the highest initial scores were obsessive-compulsive behaviors, somatization, depression, and anxiety (Table 1). However, although the scores decreased over time in most patients, the anxiety scores showed few changes over the four assessments. For example, for those in the group that presented with a single episode of vertigo, the phobic

Table 1. SCL-90 Scores in All Patients Completing the Study ($n = 43$)

Psychological Dimension	Percentage of Patients Affected			
	Evaluation 1	Evaluation 2	Evaluation 3	Evaluation 4
Somatization	41.9	27.9	20.9	14
Hostility	20.9	9.3	9.3	4.7
Interpersonal sensitivity	18.6	14	11.6	4.7
Anxiety	23.3	16.3	11.6	16.3
Phobic anxiety	20.9	16.3	14	11.6
Obsession-compulsion	53.5	30.2	27.9	18.6
Depression	30.2	23.3	20.9	11.6
Paranoid traits	11.6	18.6	7	7
Psychotic traits	2.3	2.3	2.3	2.3

Table 2. SCL-90 Scores in Patients with Chronic Vertigo ($n = 14$)

Psychological Dimension	Percentage of Patients Affected			
	Evaluation 1	Evaluation 2	Evaluation 3	Evaluation 4
Somatization	40	26.7	20	20
Hostility	20	20	6.7	6.7
Interpersonal sensitivity	26.7	20	13.3	6.7
Anxiety	20	26.7	20	26.7
Phobic anxiety	20	13.3	13.3	20
Obsession-compulsion	73.3	33.3	33.3	26.7
Depression	26.7	26.7	20	6.7
Paranoid traits	13.3	20	6.7	6.7
Psychotic traits	0	0	0	0

anxiety score remained unchanged (23.1%) at the final evaluation almost 2 years later. The SCL-90 scores in patients with chronic vertigo, single-episode vertigo, and recurring attacks are shown in Tables 2, 3, and 4, respectively.

Psychiatric and Neurootological Correlation

Correlation of the psychiatric and neurootological assessments revealed four distinct groups: group 1, consisting of 19 patients (corresponding to 37% of the 52 subjects who concluded the first follow-up) with vestibular complaints associated with clinical ($n = 13$) or subclinical ($n = 6$) psychiatric disorders; group 2, consisting of 16 patients (31%) with clinical ($n = 6$) or subclinical ($n = 10$) psychiatric disorders without vestibular complaints; group 3, consisting of 8 patients (15%) with vestibular complaints but without psychiat-

Table 3. SCL-90 Scores in Patients with Single-Episode Vertigo ($n = 12$)

Psychological Dimension	Percentage of Patients Affected			
	Evaluation 1	Evaluation 2	Evaluation 3	Evaluation 4
Somatization	46.2	23.1	23.1	7.7
Hostility	38.4	7.7	15.4	0
Interpersonal sensitivity	30.8	15.4	15.4	7.7
Anxiety	38.4	23.1	15.4	15.4
Phobic anxiety	23.1	15.4	23.1	23.1
Obsession-compulsion	69.2	38.5	38.5	23.1
Depression	38.4	30.8	30.8	23.1
Paranoid traits	23.1	15.4	7.7	7.7
Psychotic traits	7.7	7.7	7.7	7.7

Table 4. SCL-90 Scores in Patients with Recurring Vertigo Attacks (n = 17)

Psychological Dimension	Percentage of Patients Affected			
	Evaluation 1	Evaluation 2	Evaluation 3	Evaluation 4
Somatization	40	33.3	20	13.3
Hostility	13.3	0	6.7	6.7
Interpersonal sensitivity	0	6.7	6.7	0
Anxiety	20	0	6.7	0
Phobic anxiety	20	13.3	6.7	0
Obsession-compulsion	26.7	20	13.3	13.3
Depression	13.3	13.3	13.3	6.7
Paranoid traits	0	20	6.7	6.7
Psychotic traits	0	0	0	0

ric disorders; and group 4, consisting of 9 patients (17% of the sample) with no psychiatric disorders or vestibular complaints (Fig. 1). The results of the psychopathological self-assessment scales in the group of patients with a neurootological diagnosis (n = 33) are shown in Table 5.

Vertigo also was classified according to the time of onset of symptoms as either primary (initial symptoms of vertigo followed by psychopathological disorders) or secondary (initial psychopathological disorders followed by dizziness). Psychopathological disorders, as stated earlier, were classified according to ICD-10/DSM-IV criteria. In most patients with anxiety alone, vertigo was the first complaint, whereas in those with mixed anxiety-depression, the vertigo was secondary

Table 5. Correlation Between Neurootological Diagnosis and Psychopathological Assessment (n = 33)

Neurootological Diagnosis	Psychopathological Assessment (no. of patients)		
	Clinical	Subclinical	Normal
Benign paroxysmal positional vertigo	6	1	4
Ménière's disease	1	5	1
Neuritis	4	0	4
Peripheral vestibular syndrome	3	1	0
Central type vestibular dysfunction	1	2	0

(Table 6). Identical percentages of primary and secondary vertigo were seen in patients with depression (see Table 6).

Potential relationships between the various vertigo features (chronic, single-episode, and recurring) and the severity of the psychopathological disorders were assessed at the final evaluation. Recurring attacks were predominantly associated with subclinical-level complaints, whereas chronic vertigo was associated with clinical levels of anxiety and depression (Fig. 2). What must be emphasized, however, is that the number of patients with a normal psychopathological assessment was virtually the same for all three variations of vertigo.

Psychopharmacological Treatments

Overall, 10 of 14 patients (71.4%) with chronic vertigo, 7 of 16 (43.8%) of those with recurring attacks, and 6

- Clinical psychiatric disorders + vestibular dysfunction
- ▨ Subclinical psychiatric disorders + vestibular dysfunction
- ▤ Clinical psychiatric disorders without vestibular dysfunction
- ▥ Subclinical psychiatric disorders without vestibular dysfunction
- ◆ Vestibular dysfunction without psychiatric disorders
- Without vestibular dysfunction and psychiatric disorders

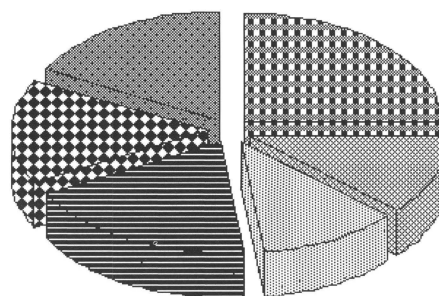
**Figure 1.** Correlation between psychiatric and neurootological assessments.

Table 6. Incidence of Primary or Secondary Vertigo According to Psychiatric Diagnosis (n = 43)

Psychiatric Diagnosis	Patients (%)	
	Primary Vertigo	Secondary Vertigo
Anxiety	83.3	16.7
Depression	50.0	50.0
Mixed anxiety-depression	0	100.0

of 13 (46.2%) with single episodes received some type of psychopharmacological treatment at some time during the 2-year follow-up period. From the moment patients were followed up with our protocol and after psychopathological evaluation, those who presented with clinical features of anxiety, mixed anxiety-depression, and depression were placed on medication according to standard clinical care — namely anxiolytics (benzodiazepines [e.g., alprazolam]) or selective serotonin reuptake inhibitors (fluvoxamine, fluoxetine, paroxetine, sertraline) for those with mixed anxiety and depression or depression alone.

As mentioned previously, this is an observational study. In the discussion that follows, we consider as a methodological limitation of the study the lack of information regarding drug therapies.

DISCUSSION

The high incidence of psychopathological manifestations, whether primary or secondary to vertigo, is clear in this sample. The majority were anxiety disorders — panic attacks that affected 15.4% of all patients — whereas other patients had depression or mixed anxiety-depression. According to psychopathological assessments, these patients complaining of dizziness were experiencing personal and professional stress situations toward which they developed an emotional adaptive disorder.

There was no significant difference between the three variations of vertigo (chronic, single-episode, and recurring) in terms of the severity of the psychiatric conditions. Interestingly, some patients still presented with several psychopathological manifestations up to 2 years after a single episode of vertigo.

In a study completed by 101 patients suffering from vestibular disorders, Yardley et al. [17] identified three clusters of worries: concern about loss of control, fear of serious illness, and anticipation of a severe attack. Fear of losing control and reported autonomic symptoms were significantly related to raw and residual handicap scores after controlling for somatization, vertigo severity, anxiety, and depression. Magnusson et al. [18] proposed that a patient with psychogenic vertigo displaces moods or experiences of anxiety to dizziness, the dizziness serving as an anxiety equivalent.

In our study, psychometric rating scales were not used prior to the vertigo onset, so the previous psychological state was established only by the SSPI. This, therefore, confined us to assessing psychological manifestations of “vestibular” vertigo and to disregarding possible cases of psychogenic vertigo. However, the high scores in the obsessive-compulsive, anxiety, and depression dimensions of the SCL-90 scale during the 2-year follow-up support the existence of psychogenic vertigo in this patient population.

Considering these circumstances, the relationship between vertigo and anxiety manifestations would not appear to be irrelevant. Is there an individual susceptibility regarding labyrinthine stimulation? How important are personality traits (e.g., anxious, obsessive, or hysterical)? Are some vertigo syndromes a risk factor for postural phobic vertigo? Is postural phobic vertigo a well-defined nosologic entity or only a part of other, more complex, psychiatric conditions (e.g., as suggested by Eckhardt-Henn et al. [5], who considered *phobic postural vertigo* to be a generalizing term that encompasses different forms of psychogenic vertigo)?

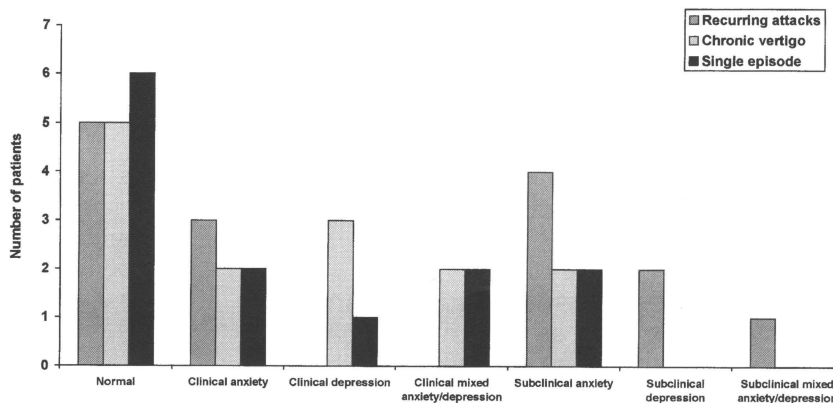


Figure 2. Relationship between vertigo features (chronic, single-episode, and recurring) and severity of psychopathological disorder.

With regard to the findings in patients with recurring attacks, many of them associated with Ménière's disease, it is not surprising that the level of psychopathological alterations did not, in most cases, achieve severity consistent with a clinical syndrome. Also not surprising is that the isolated episodes suggestive of neuritis, or the situations responsible for chronic vertigo, showed "clinical" levels in all psychopathological states. In a comparative study of three groups (BPPV, psychogenic vertigo, and control), Nagarkar et al. [19] ruled out the possibility that psychological factors play an important role in patients with BPPV. This group proposed that the provoking movements result in precipitation of an acute attack and that the patients experience heightened emotionality owing to the incapacitating feeling of severe vertigo.

The current study had a number of limitations. Patient distribution between the three vertigo types was not consistent at all time points; some cases diagnosed as single episodes at the start of the study were not confirmed as such during the 2-year follow-up period, owing to further vertigo episodes or the onset of chronic vertigo. The effects of any drug therapies used, either for psychopathological or vestibular conditions, also may have influenced the scores on the psychometric rating scales. These facts, combined with the small sample size, ruled out any statistical analysis of the data.

The clinically relevant conclusion from this observational study is that, 2 years after a single vertigo episode, some patients still present several psychopathological manifestations. These findings support the requirement for psychiatric care in some patients. Indeed, Eckhardt et al. [20] suggested that assessment of psychiatric and psychosomatic symptoms should always accompany, not follow, neurootological evaluation of vertigo. Interdisciplinary therapy should, therefore, be started early to prevent chronic symptomatology.

ACKNOWLEDGMENTS

This study was supported by a grant from Solvay Pharmaceuticals. We thank the following individuals for their contributions: Dr. Margarida Vargas, for her assistance with the study and preparation of the manuscript, and Dr. Raquel Martins e Silva, for her collaboration in obtaining psychometric scales ratings.

REFERENCES

1. Collard M. L'angoisse vestibulaire. *Vertiges* 95:29–31, 1996.
2. Furman JM, Cass SP. A practical work-up for vertigo. *Contemp Intern Med* 7:24–38, 1995.
3. Eckhardt-Henn A. Psychogenic vertigo incapacitates patients longer. What psychiatric illnesses might manifest as vertigo? *MMW Fortschr Med* 20:30–32, 2000.
4. Nilsson A, Henriksson NG, Magnusson PA, Afzelius LE. Vertigo and dizziness reflecting functional disorders. *Adv Otorhinolaryngol* 25:93–99, 1979.
5. Eckhardt-Henn A, Hoffmann SO, Tettenborn B, et al. Phobic postural vertigo. A further differentiation of psychogenic vertigo conditions seems necessary. *Nervenarzt* 68:806–812, 1997.
6. Brandt T. *Vertigo: Its Multisensory Syndromes*, 2nd ed. Berlin: Springer-Verlag, 1999.
7. Dieterich M. Detecting phobic vertigo. *MMW Fortschr Med* 142:26–29, 2000.
8. Schaaf H. Psychogenic vertigo in ENT practice. *HNO* 49:307–315, 2001.
9. Brandt T, Kapfhammer HP, Dieterich M. Phobic postural vertigo. A further differentiation of psychogenic vertigo conditions seems necessary. *Nervenarzt* 68:848–849, 1997.
10. Tiwari S, Bakris GL. Psychogenic vertigo: A review. *Postgrad Med* 70:69–77, 1981.
11. Beck AT, Ward CH, Mendelson M, et al. An inventory for measuring depression. *Arch Gen Psychiatry* 4:564–571, 1961.
12. Beck AT, Beamesdorfer A. Assessment of Depression: The Depression Inventory. In P Pichot (ed), *Psychological Measurements in Psychopharmacology*. Basel: Karger, 1974:151–169.
13. Marks IM, Mathews AM. Brief standard self-rating for phobic patients. *Behav Res Ther* 17:263–267, 1979.
14. Chambless DL, Caputo GC, Jasin SE, et al. The mobility inventory for agoraphobia. *Behav Res Ther* 23:35–44, 1985.
15. Spielberger CD, Edwards CD, Lushene RE, et al. *STAIC Preliminary Manual for the State-Trait Anxiety Inventory*. Palo Alto: Consulting Psychologists Press, Inc., 1973.
16. Derogatis LR. *SCL-90: Administration, Scoring and Procedures Manual for the Revised Version*. Baltimore: Clinical Psychometric Research, 1983.
17. Yardley L, Luxon LM, Haacke NP. A longitudinal study of symptoms, anxiety and subjective well-being in patients with vertigo. *Clin Otolaryngol* 19:109–116, 1994.
18. Magnusson PA, Nilsson A, Henriksson NG. Psychogenic vertigo within an anxiety frame of reference: An experimental study. *Br J Med Psychol* 50:187–201, 1977.
19. Nagarkar AN, Gupta AK, Mann SB. Psychological findings in benign paroxysmal positional vertigo and psychogenic vertigo. *J Otolaryngol* 29:154–158, 2000.
20. Eckhardt A, Tettenborn B, Krauthauser H, et al. Vertigo and anxiety disorders — results of interdisciplinary evaluation. *Laryngorhinootology* 75:517–522, 1996.