

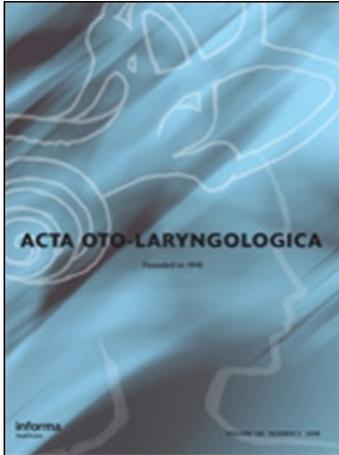
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ORIGINAL ARTICLE

Chronic subjective dizziness

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Abstract

Conclusion. Chronic subjective dizziness (CSD) is frequent and affects twice as many women as men. Anxiety is a strong predisposing factor. The pathophysiologic concept of this disorder assumes that balance function and emotion share common neurologic pathways, which might explain that the balance disorder can provoke fear and vice versa, giving rise to a problem in perception of space and motion. In anxious patients this can turn into a space and motion phobia, with avoidance behaviour. **Objective.** CSD is a diagnosis based on the hypothesis of an interaction between the vestibular system and the psychiatric sphere. Patients complain of chronic imbalance, worsened by visual motion stimulation, and frequently suffer from anxiety. Vestibular examination reveals no anomalies. We evaluated the incidence and characteristics of CSD in patients referred to our neuro-otology centre (tertiary hospital outpatient clinic). **Subjects and methods.** This was a retrospective study of 1552 consecutive patients presenting with vertigo. CSD was diagnosed in 164 patients (female:male = 111:53). **Results.** CSD represents 10.6% of the dizzy patients in our clinic. Psychiatric disorder, mainly anxiety, was found in 79.3% of the cases. Other frequently associated factors were fear of heights and former vestibular lesion (healed). In all, 79.0% of the patients with CSD had poor balance performance on dynamic posturography testing.

Keywords: *Somatiform vertigo, psychogenic dizziness, psychiatric dizziness, anxiety*

Introduction

For many years, chronic dizziness without any organic cause has been labelled with different diagnoses such as psychiatric dizziness, psychogenic, psychosomatic or somatiform vertigo, with diagnostic criteria differing depending on the authors [1]. Patients complain of non-rotatory vertigo, like drunkenness, with a feeling of postural instability. The discomfort is worsened by movements and the symptoms are augmented by intense visual motion stimulations (e.g. escalator, shopping mall, car driving), which is commonly called visual vertigo. Anxiety disorder is frequent in these patients [2]. In all cases, the neuro-otological examination is normal. Today, the diagnosis of chronic subjective dizziness (CSD) is widely accepted, and is defined as follows: persistent (≥ 3 months) sensations of dizziness with subjective imbalance; chronic (≥ 3 months) hypersensitivity to movement; exacerbation of symptoms in settings with complex visual stimuli,

without any physical neurotologic illness, medical condition or medication causing dizziness, and normal brain radiology and non-diagnostic findings on balance function tests [3]. CSD is based on the hypothesis that the vestibular system and the psychiatric sphere share common pathways leading to somatopsychic and psychosomatic interactions [1,4,5]. The goal of this study was to evaluate the incidence and characteristics of CSD in patients referred to our neuro-otology centre (tertiary hospital outpatient clinic) for assessment of vertigo and/or disequilibrium.

Subjects and methods

We undertook a retrospective study of 1552 consecutive patients presenting with vertigo and/or disequilibrium, examined in our clinic between 2003 and 2005. CSD was diagnosed in 164 cases, 111 females and 53 males, with a mean age of 46.7 years (range 14–84) approximately similar in both

genders. On history, these patients complained of chronic non-rotatory, pitching-like vertigo associated with a feeling of postural instability while standing or walking. Their symptoms were increased by rich moving visual surroundings, which naturally provoke a visual-vestibular conflict, e.g. a crowd, open-air market, shopping mall, escalator, car driving, optokinetic stimulation in a train. All patients underwent a standard neurovestibular evaluation, including oculomotor tests (saccades, smooth pursuit, optokinetic), search for spontaneous or positional nystagmus, and an alternate binaural bithermal caloric test (normal asymmetry limit set at 20% or less [6]), which was normal in all cases. Videonystagmography recording, auditory brainstem responses and/or cerebral agnetic resonance imaging (MRI) were also performed in most patients and demonstrated no abnormality. In addition, the balance function was tested in 105 patients using the Mumedia's Statitest[®] dynamic posturography. This device utilizes magnetic position captors placed on the belt and on the head of the patient and allows the physician to evaluate the position and the displacement of the body around the centre of gravity (measures of equilibrium surfaces), as well as the amplitude of the body sway. Testing takes place in four different sensory conditions: 1, eyes open, fixed ground; 2, eyes closed, fixed ground; 3, eyes open, unstable support surface (Bessou's board); 4, eyes closed, unstable support surface; which allows the sensory organization analysis of balance (somatosensory, visual and vestibular ratios). Three consecutive trials are carried out for each sensory condition and scores are obtained using head displacement measures. The sensory analysis is adapted from the sensory organization testing protocol designed by the Equitest[®] system using the four above conditions [7]. The somatosensory ratio compares the scores of conditions 1 and 2, the visual ratio the scores of conditions 1 and 3, and the vestibular ratio the scores of conditions 1 and 4, expressed as percentages. Fifty-nine patients did not undergo

this test, because of refusal, logistic problems (need to come back for the test, non-matching schedules) or obvious absence of disequilibrium on simple practice tests.

Results

CSD represents 10.6% of the vertiginous patients in our clinic and affects women twice as often as men. In addition to balance symptoms, the patients frequently had other factors associated with their disorder. In 11.6% of the cases, they suffered from fear of heights or motion sickness before the current vertigo. In 20.7% of the cases, they had a past history of an organic vestibular disease, such as benign paroxysmal positional vertigo or acute unilateral peripheral vestibular loss, without objective lesion demonstrated at the present neurovestibular examination, but with persisting vertiginous feelings. Most important is that 79.3% of patients presented with a psychiatric disorder, mainly anxiety and/or depression. Among the 105 patients undergoing the posturographic examination, 83 (79.0%) had poor balance performances. In 88% of the cases, patients exhibited a disturbed balance field, mainly as a reduction of the stability limits around their centre of gravity and/or as a displacement of the latter (Figure 1). In 58% of the cases, the sensory organization of balance was altered, supporting the proposal that the patients made poor use of one, two or the three sensory inputs in the balance strategy, even though these sensory pathways were normal (Figure 2).

Discussion

CSD is a frequent affection (10.6% of the patients with vertigo in our clinic), which affects women twice as often as men. Symptomatology is characterized by chronic dizziness, unsteadiness and fear of falling, and the balance discomfort is frequently triggered by motions and/or large optic flow stimuli

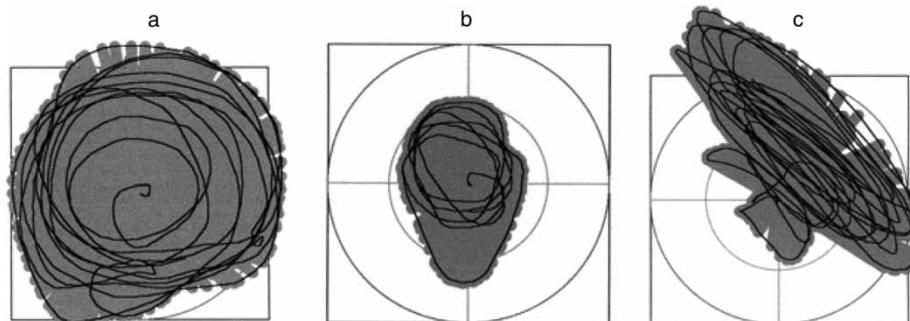


Figure 1. Posturography: stability limits around the postural centre of gravity. (a) Normal test. (b) Shrinkage of balance field. (c) Displacement of the postural centre of gravity.

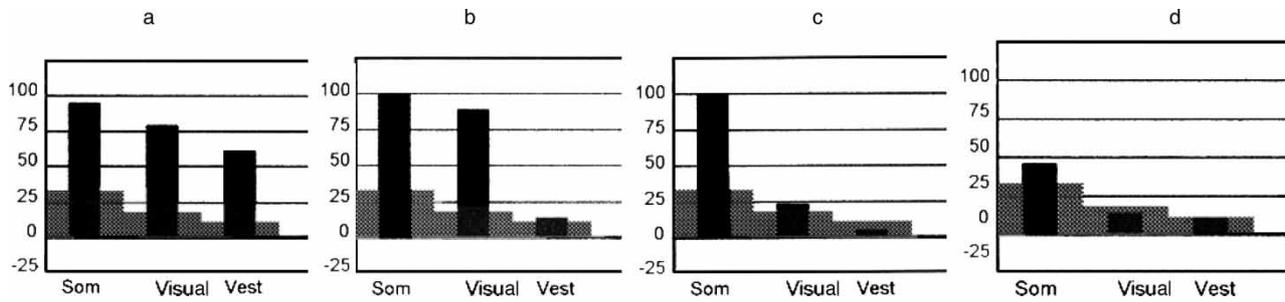


Figure 2. Posturography: sensory organization analysis (sensory ratios in%). Som, somatosensory; Vest, vestibular; grey shading, abnormal result. (a) Normal test; (b) poor use of vestibular references; (c) poor use of visual and vestibular references; (d) poor use of the three sensory references.

(visuo-vestibular sensory mismatch). Anxiety and, to a lesser degree, past organic vestibular insult, are important predisposing factors. The vestibular function is normal in patients with CSD, as evaluated by standard neurovestibular testing, but subclinical disorders may not be excluded. However, most patients present with strong limitation of their postural stability and/or sensory disorganization of their balance system, as shown by dynamic posturography examination.

The question arises as to how to interpret these results. Indeed, dynamic posturography does not test patients in daily life conditions and it is not clear whether low sensory ratios actually represent the patient's inability to use their sensory references, or simply illustrate the incapacity of an anxious patient to correctly achieve the tests. Nevertheless, the poor balance performances observed in these patients suggest that there is a true disorder of the equilibrium function in CSD, likely of multifactorial origin, altering the mental representation of body in space. The hypothesis for explaining the pathophysiologic mechanisms of this problem in the balance function has been described by Balaban and Thayer [4], Furman and Jacob [5] and other authors [8–10] (Figure 3). The links connecting the vestibular system and the psychiatric sphere are as much somatopsychic as psychosomatic: anxiety can cause psychosomatic dizziness and vestibular dysfunction can cause somatopsychic anxiety [10,11]. This interaction is mediated through neurologic pathways that are common to the control of vestibular and autonomous systems, emotional response and anxiety [12]. These neurologic pathways [4] are centralized in a network of the parabrachial nucleus, where vestibular and visceral information converges, provoking anxiety, fear and avoidance behaviour of the triggering circumstances. The parabrachial nucleus also contributes to somatic, neuroendocrine and visceral components of emotional responses, leading to change of heart rhythm or arterial pressure, pupillary dilation and perspiration. Other cerebral areas may be implicated, in particular the

infralimbic cortex, which generates autonomous, endocrine and emotional responses to various stimuli. Moreover, the stimulation of the monoaminergic receptors could explain the influence of anxiety on balance control and the anxious reaction in case of balance disorder. These interactions between emotions and the balance system can lead to a disorder of perception of movement and space, often associated with a sensory disorganization of the balance system, perceived by the patient as vertigo and feelings of instability. The syndrome is called space and motion discomfort, meaning a visceral discomfort linked to a sensory mismatch [13]. In case of an anxious personality, this discomfort can turn into space and motion phobia, i.e. a specific phobia of any circumstance perturbing the patient's balance, with avoidance behaviour, so as to prevent exposure to potentially dangerous situations [14,15]. Brandt described a similar syndrome that he called phobic postural vertigo, defining it as a subtype of panic disorder in which subjective postural imbalance is a major complaint [8].

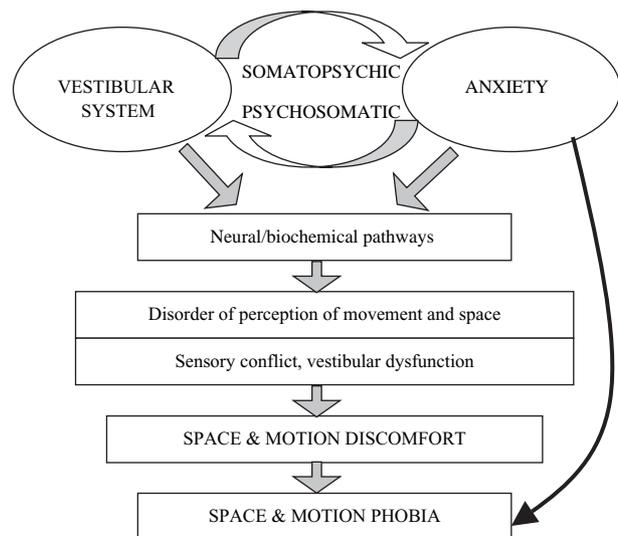


Figure 3. Pathophysiologic concept of chronic subjective dizziness.

In conclusion, CSD is frequent in the vertiginous population and should be considered as a possible diagnosis in any patient presenting with chronic balance symptoms and normal neurovestibular examination.

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