



Effects of a program of cognitive-behavioural group therapy, vestibular rehabilitation, and psychoeducational explanations on patients with dizziness and no quantified balance deficit, compared to patients with dizziness and a quantified balance deficit

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ABSTRACT

Background: We examined whether a program combining cognitive-behavioural therapy (CBT), vestibular rehabilitation (VR) and psychoeducation is equally effective in improving psychometric measures in patients with dizziness independent of a balance deficit. Measures of patients with dizziness only (DO) were compared to those of patients also having a quantified balance deficit (QBD).

Methods: 32 patients (23 female, 9 male) with persistent dizziness were analysed as 2 groups based on stance and gait balance control: those with QBD (pathological balance) or DO (normal balance). Dizziness Handicap Inventory (DHI) and Brief Symptom Inventory (BSI) questionnaires were used pre- and post-therapy to assess psychometric measures. Patients then received the same combination therapy in a group setting.

Results: The QBD group mean age was 60.6, SD 8.3, and DO group mean age 44.8, SD 12.1, years. Pre-therapy, questionnaire scores were pathological but not different between groups. Balance improved significantly for the QBD group ($p = 0.003$) but not for the DO group. DHI and BSI scores improved significantly in the DO group ($0.001 < p < 0.045$), some BSI sub-scores reaching normal levels. These scores were unchanged for the QBD group. Phobic anxiety scores changed most for both groups, being significantly correlated with DHI scores, higher ($R = 0.71$ vs. 0.57) for the DO group.

Conclusions: A combination of CBT, VR, and psychoeducation improves psychological measures in DO patients but not significantly in QBD patients, despite their balance control improving to near normal. Possibly, greater focus on phobic anxiety during the group therapy program would have improved psychological measures of QBD patient.

1. Introduction

Dizziness is a widespread medical problem. After headaches, dizziness and vertigo are the most commonly occurring symptoms of neurology patients [1]. These symptoms are associated with psychiatric comorbidities in almost half of the patients with vertigo and/or dizziness [2]. Lahmann et al. [2] determined that such patients show a more severe psychosocial impairment compared to patients with vertigo and/or dizziness but without psychiatric disorders. To quote Lahmann et al.: “the worst combination, in terms of a vertigo-related handicap, is having vertigo/dizziness and psychiatric comorbidity” [2].

One in ten people of working age and one in five people older than 60 years have dizziness that interferes with daily activities, requires medical consultation, and use of medication [3]. For 80% of the affected individuals, vertigo and dizziness results in a medical consultation, interruption of daily activities, and/or sickness leave [4]. Vertigo and dizziness have been defined as a false or distorted sense of motion and a non-motion sensation of disordered spatial orientation, respectively, by Bisdorff et al. [5,6]. These definitions have been used as stated above in a recent review of functional dizziness [7]. Here we use the collective term “dizziness” to mean dizziness and vertigo.

The aforementioned studies indicate the severity of personal

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impairment and economic loss caused by dizziness and its consequences. Furthermore, for dizziness without an accompanying identifiable structural medical disorder, such as unilateral peripheral vestibular loss (UVL), therapeutic options remain unsatisfactory [8]. Thus there is a need for exploring and quantifying appropriate treatments of dizziness for those with and without a UVL.

For those with a UVL, Kammerlind et al. [9] postulated that long lasting, self-rated, dizziness remaining > 6 months after acute UVL due to presumed neuritis may be predicted from the severity of pathology in clinical balance tests and subjective ratings in the acute stage of UVL. This result is, perhaps, not surprising because the failure to recover peripheral vestibular function after acute UVL can be predicted from balance and vestibular ocular reflex (VOR) tests at acute onset of vestibular loss [10]. In contrast, Cousins et al. [11] indicated that the presence of a dizziness handicap at recovery of an acute UVL (after 10 weeks) was rather dependent on fear of body sensations, anxiety and depression rather than on the structural vestibular status. Taken together these studies indicate the lack of a link between peripheral vestibular structural recovery and remaining dizziness for patients who can be expected [10,12] to have a quantified balance deficit (QBD) 3 months after acute UVL. For patients who had an acute UVL and have persistent dizziness one year later, the work of Tschan et al. [13] provides a rationale for the use of psychotherapeutic treatment. The authors suggested that “patients should be screened for risk and preventive factors, and offered psychotherapeutic treatment in case of insufficient coping capacity” Likewise, Heinrichs et al. [14] suggested that those with persistent dizziness should be offered psychotherapeutic treatment, especially those with a fear of body sensations at the onset of a vestibular neuritis. It should also be considered for psychotherapeutic treatments that central compensation improving the effects of peripheral vestibular loss can be retarded by psychological aspects of dizziness. These aspects can underlie the avoidance of symptom provoking activities, which when not avoided, help patients to compensate centrally for the peripheral loss. In other words, anxiety and depression, may aggravate symptoms of dizziness and imbalance [15]. Thus, studies such as that by Kammerlind et al. [9] have to be considered in planning psychotherapeutic treatment along with other studies showing that long-term vertigo is associated with anxiety [12,14].

Empirical evidence of psychotherapeutic treatment methods aiming at reducing dizziness has included cognitive-behavioural approaches for those with dizziness without accompanying balance deficits. For example, Edelman et al. [16] established that cognitive behaviour therapy improved dizziness and related physical symptoms as well as avoidance behaviours. Furthermore, Holmberg et al. [17,18] showed that the positive effects of cognitive behavioural therapy (CBT) for their patients with dizziness, but normal clinical balance control, lasted less than a year. Mahoney et al. also showed that the effect of CBT lasted at least 6 months [19]. Given the common approaches of psychotherapeutic interventions for those with and without balance disorders accompanying dizziness it would seem of interest to investigate, with the same psychotherapeutic treatment, whether the presence of a balance disorder affects the treatment outcome.

There is some evidence of behavioural treatment methods improving dizziness in combination with relaxation techniques or vestibular rehabilitation training exercises [20]. However, the review by Schmid et al. [20] indicated that vestibular rehabilitation (VR) studies to date are of only moderate quality and that the sample sizes are too small to yield significant results. Andersson et al. [21] performed a randomized controlled trial testing VR combined with CBT on patients with dizziness only (DO), that is, without a diagnosed structural vestibular correlate. Patients were randomly assigned to a treatment or to a wait-list control group that received no treatment. Significant post treatment improvements were found in self-reported handicap, behavioural measures of exposure to dizziness-provoking movements, and daily notations of dizziness and distress associated with unsteadiness. Another study with a randomized controlled design by Yardley et al. [3]

tested the effectiveness of a booklet instruction-based VR with expert telephone support for chronic dizziness with a diagnosed vestibular correlate, compared with routine medical care without a booklet. The booklet based therapy included daily exercises at home using CBT techniques to promote positive beliefs and treatment adherence. Results showed some improvement in psychometric sub-scores in the active treatment group relative to the routine care group. Thus these VR studies corroborate the suggestions of Brandt et al. [22] and others [7] that CBT therapy in combination with VR exercises is a suitable therapy for patients with dizziness.

The findings of the studies cited above provide support for CBT combined with VR in the treatment of dizziness with or without an associated vestibular disorder but made no comparison between the efficacy of CBT with VR between those with dizziness and a quantified balance deficit (QBD), and those with dizziness only (DO) under identical treatments. Based on prior studies [9,10] we assumed that the presence of a chronic balance deficit and dizziness might have an important influence on the effects of CBT.

The metric we used to decide whether a group member had a balance deficit was based on stance and gait posturography. Posturography has been used for several years and is widely accepted as a means to establish a functional balance deficit [23]. Furthermore, the posturography equipment we used has been shown to reveal different patterns of balance deficit measures compared to healthy subjects depending on the disease state [24]. In addition we decided to use a posturography metric because posturography measures have been related to persistent postural-perceptual dizziness (PPPD) patients' complaints of unsteadiness [25] whereas VOR responses in functionally compensated UVL patients are not [26]. Another reason for this choice is the recently raised hope that posturography might be able to help in pushing “the boundaries” of “knowledge on the pathophysiological mechanisms underlying functional and psychiatric causes of vestibular symptoms” [7].

In this study, our primary outcome, the change of subjective impairment caused by dizziness, was measured with the Dizziness Handicap Inventory (DHI) questionnaire. Secondary measures were, among others, psychometric measures of the Brief Symptom Inventory [27] and the posturography metric we used to define the balance deficit. We hypothesized that both patient groups with dizziness, those with and those without QBD, would improve in primary and secondary outcomes between pre- and post-treatment but the effect might be weaker for those with QBD.

2. Methods

This study was carried out at the Department of Psychosomatic Medicine, University of Basel Hospital. Data from patients with persistent dizziness who were treated with a combination of cognitive behaviour therapy, balance training, and psychoeducation (as described below) was used in this study. Patients provided informed consent for the use of their data for scientific purposes. Patients were divided into 2 groups for a retrospective analysis based on whether there was a presence or absence of pathological balance control in stance and gait tests performed pre-therapy. The study (2014–026 Amendment 4) was approved by the local ethical committee responsible for the University of Basel Hospital (EKNW).

2.1. Study population

Subjects included in the study were offered the opportunity to participate in our group therapy if they suffered from persistent dizziness for at least 12 months, and their otoneurology tests results and an interview with a psychologist indicated that they would not be excluded from group participation based on the exclusion criteria described below. Most patients were transferred to our tertiary clinics from ear, nose and throat, neurology, and psychiatric practices in Basel

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