PARALLEL SESSION 1 – THURSDAY JUNE 20TH 2019, 15h15 – 16h45
The importance of addressing psychosomatic complaints in vestibular patients

- J. Widdershoven, et al.: Psychosomatic comorbidity in children with vestibular complaints
- E. Martin, et al.: An app-based diary for Vestibular Disorders: The DizzyQuest
- J. Staab: Functional Vestibular Disorders: Findings from Neuro-Imaging Studies
- J. Wolf, et al.: How illness perceptions influence handicap in patients with vertigo and dizziness
- N. Lehnen, et al.: Patients with functional dizziness shut down vestibular input: Evidence for erroneous sensory processing in persistent physical symptoms

Theme
Dizziness and vestibular disorders are very close related to psychosomatism. Psychosomatic disorders can be the cause, but also present as comorbidity in many vestibular patients. Only recently, the criteria of "Persistent Postural and Perceptual Dizziness" were established by the Barany Society. Unfortunately, still many ENT-surgeons and neurologists still focus only at the somatic complaints. This symposium will address the importance of addressing psychosomatic complaints in vestibular patients, by showing deeper insights in PPPD, presenting the first European multicenter study on strict momentary assessments (app-based) in vestibular patients and showing the lack of correlation between somatic tests and complaints (illustrating the importance of also the psychosomatic approach). Also the pediatric population will be discussed.

Takeaways
1. Addressing psychosomatic complaints in vestibular patients is crucial. 2. Each vestibular patient (including children) should be checked for a discrepancy between objective findings and subjective complaints. If there is a discrepancy, think about psychosomatic (co)morbidity. 3. Momentary assessment using an app-based tool will increase insights in the complaints of vestibular patients. When patients are asked to fill in a vestibular diary, also take context and psychosomatic factors into account. 4. Psychosomatic doctors should always be part of the vestibular team in their hospital.

Chair: Raymond van de Berg, ENT-surgeon, Maastricht University Medical Center+, NL
**Psychosomatic comorbidity in children with vestibular complaints**

**Aim**

Previous research has shown that there is considerable psychosomatic comorbidity in adults with vestibular complaints. Whether the same holds true for children largely remains to be seen. The current study aims to gain more knowledge about the incidence and severity of psychosomatic complaints in children who visit our outpatient clinic for vestibular complaints.

**Methods**

A retrospective chart review was carried out on 55 children who visited the outpatient clinic for vestibular complaints at Maastricht University Medical Center. The outcome of their vestibular tests and a detailed patient history including questionnaires about psychosomatic complaints were recorded.

**Results**

This study demonstrates that a large part of the children with vestibular complaints showed psychosomatic comorbidity such as symptoms of anxiety and/or depression. Additionally, it showed a discrepancy between vestibular findings and objective complaints in a subset of patients, which had a significant effect on school attendance.

**Conclusion**

As in adults, psychosomatic complaints are commonly found in children who complain of dizziness and/or imbalance. Therefore, it is important to increase awareness both for the patients and their families, as well as for clinicians testing and evaluating children with vestibular complaints.

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An app-based diary for Vestibular Disorders: the DizzyQuest

Aim
Currently, the most widely used questionnaires for vestibular disorders are retrospective. This induces recall bias, and causality (e.g. triggers for events) and the influence of context cannot be reliably investigated. The Experience Sampling Method (ESM) might be a solution for these problems. In this pilot study we investigated the feasibility of a new ESM-based, mobile application diary (Psymate) which includes momentary assessment of symptoms, context, emotions, cognition and stressful events. We focussed on response rate and vertigo attack occurrence.

Methods
Five patients with a diagnosed vestibular disorder (Barany criteria) were included. During four weeks, patients filled out an end of day questionnaire (‘Evening’ questionnaire) and for one week multiple, random, repeated questionnaires 10 times a day (‘Beep’ questionnaire). Furthermore, patients could fill out a questionnaire in case of a vertigo attack (‘HIT’ questionnaire).

Results
Response rates were 84% on Beep test and 85% on the evening test. HIT-questionnaire was used 15-times. 28% of all evening questionnaires reported vertigo attacks, mostly lasting between 20 minutes and 3 hours, provoked by a variety of self-reported triggers. Vertigo attack occurrence and experienced limitedness in activity were diverse. We found a correlation (Spearman 0.782; p=0.001) between attack severity and duration of non-functionality. Patients’ feedback was positive.

Conclusion
First results show that this app-based diary seems a feasible tool in symptom assessment in vestibular patients. Response rates show a high compliance rate. We are optimizing our application for clinical use in further research.

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**Functional Vestibular Disorders: Findings from Neuro-Imaging Studies**

**Aim**
The goals of this presentation are to: (1) review studies published in the last five years that have explored functional vestibular syndromes using advanced neuro-imaging techniques and (2) relate those findings to pathophysiological models of two specific disorders, postural-perceptual dizziness (PPPD) and mal de debarquement syndrome (MdDS).

**Methods**
Papers using advanced structural and functional brain imaging methods to investigate PPPD and related syndromes (e.g., phobic postural vertigo, visual vertigo), as well as MdDS were identified. Neuro-imaging methods included structural imaging (anatomical MRI), resting state and task-related functional magnetic resonance imaging (fMRI) and single-photo emission computed tomography (SPECT).

**Results**
Despite differences in patient populations, imaging techniques, and data analysis methods, results from recently completed neuro-imaging studies provided evidence to support and refine pathophysiological models describing alterations in brain function and structure underlying PPPD and MdDS. Decreased activity and connectivity involving cortical vestibular regions and the hippocampus as well as anxiety-related increased activity and connectivity in frontal regulatory regions and the visual cortex were seen in studies of PPPD. In contrast, changes centered on the entorhinal cortex in studies of MdDS.

**Conclusion**
Results of recent neuro-imaging studies provided important evidence to improve pathophysiological models of two functional vestibular disorders, PPPD and MdDS, offering a greater understanding of changes in brain function and structure and the roles of psychological factors in the development of these conditions.

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How illness perceptions influence handicap in patients with vertigo and dizziness

Aim
Vertigo and dizziness (VD) are very common symptoms. VD symptoms are often associated with a strong physical and psychological burden. In many patients, this burden manifests in severe handicap. Preliminary studies have suggested that illness perceptions have an impact on the degree of handicap. The term “illness perceptions” refers to the cognitions that patients develop and contain with respect to their symptoms, including perceptions of consequences of their disease. For dizziness patients, however, there are no studies investigating the influence of illness perceptions on handicap with current scientific means. We aimed to describe the influence of illness perceptions on handicap in patients with VD.

Methods
In a retrospective study design, n=419 patients with VD were examined (53.7% female, age 53.5±15.5 years). Participants underwent neurological and psychiatric examinations as well as a comprehensive assessment using questionnaires. Statistical analyses, including moderation analyses, were used to assess our hypotheses.

Results
Results showed that patients were severely affected by vertigo-related handicap. Illness perceptions, specifically perceived consequences, showed a relevant correlation with vertigo-related handicap, r(419)=.62, p=.000. Controlling for symptom severity and psychiatric comorbidity, our regression model including illness perceptions perceived consequences and emotional representations predicted R²=.53 of the variance in vertigo-related handicap. In moderation analysis, the influence of illness perceptions on handicap appeared similarly strong in all VD patients, regardless of functional versus structural aetiology of the disease.

Conclusion
Findings of the present study provide evidence for the relevance of illness perceptions to handicap in patients with structural as well as functional VD syndromes.

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Patients with functional dizziness shut down vestibular input: evidence for erroneous sensory processing in persistent physical symptoms

Aim
Explaining the suffering of patients with persistent physical symptoms is still a struggle. Recently, it has been proposed that such symptoms are based on erroneous sensory processing in the central nervous system (CNS) with internal expectations dominating sensory inputs. In a pilot study, we tested this hypothesis on the example of patients with functional dizziness.

Methods
Eight patients with functional dizziness and eleven age-matched healthy controls performed a motor control task (large gaze shifts towards visual targets) in the natural situation and with the head moment of inertia 3.3-fold increased. Head oscillations as a marker for the incongruency between expected and actual sensory consequences of head movements were assessed in patients and in healthy subjects and compared to prior results from patients with organic disease (vestibular loss and cerebellar ataxia).

Results
Patients with functional dizziness displayed overall increased head oscillations compared to healthy participants (F(1,17)=27.26, p<0.001, partial $\eta^2=0.62$), similar to patients with organic disease (F(2,19)=0.56, p=0.58). Remarkably, head oscillations in functional dizziness patients were already increased in the natural condition (p=0.001). With increased head inertia, oscillations were more pronounced in the beginning, but could be reduced over several trials (p=0.001).

Conclusion
Our results provide first empirical evidence for erroneous sensory processing in the CNS in persistent physical symptoms and hint at context-dependent processing mechanisms. In the natural condition, patients with functional dizziness seem to shut down sensory input, whilst in the weighted condition, they can factor in sensory information to decrease head oscillations to some extent.

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