



## Review

# Defining Clinical-Posturographic and Intra-Posturographic Discordances: What Do These Two Concepts Mean?

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The European Society for Clinical Evaluation of Balance Disorders - ESCEBD - Executive Committee meets yearly to identify and address clinical equilibrium problems that are not yet well understood. This particular discussion addressed "discordances" (defined as "lack of agreement") in clinical assessment. Sometimes there is disagreement between a clinical assessment and measured abnormality (ies); sometimes the results within the assessment do not agree. This is sometimes thought of as "malingering" or an attempt to exaggerate what is wrong, but this is not always the case. The Committee discussed the clinical significance of unexpected findings in a patient's assessment. For example intraposturographic discordances sometimes exhibit findings (eg performance on more difficult trials may sometimes be better than on simpler trials). This can be suggestive of malingering, but in some situations can be a legitimate finding. The extreme malingerer and the genuine patient are at opposite ends of a spectrum but there are many variations along this spectrum and clinicians need to be cautious, as a posturography assessment may or may not be diagnostically helpful. Sometimes there is poor correlation between symptom severity and test results. Interpretation of posturography performance can at times be difficult and a patient's results must be correlated with clinical findings without stereotyping the patient. It is only in this situation that assessment in a diagnostic setting can be carried out in an accurate and unbiased manner.

**KEYWORDS:** Balance, posturography, discordance

## INTRODUCTION

In the yearly European Society for Clinical Evaluation of Balance Disorders – ESCEBD meetings in Nancy, France, a Committee was organized to discuss equilibrium-related themes that are not clearly defined or standardized, and previous articles have addressed several themes related to clinical relevance<sup>[1, 2]</sup>. The subject of clinical balance assessment using posturography was discussed. A major focus of the discussion was that of "discordance" between clinic (history-taking and clinical examination) and posturography results or intraposturographic results. In English, discordance is defined as "a lack of agreement or harmony," and the Committee strongly felt that this topic needed to be addressed. This review article is a brief synopsis of the discussion held by the Committee.

To be useful in a clinical setting, all balance tests must be scientifically sound with respect to reliability, reproducibility, responsiveness, sensitivity, and predictive validity. Habituation, fatigue, instruction by the examiner, motivation and patient naivety affect the reproducibility of balance tests. A deficit in one of these aspects can create a discordant assessment (i.e., iatrogenic discordance).

This paper came from a discussion carried out at the 12<sup>th</sup> meeting of the European Society for Clinical Evaluation of Balance Disorders (ESCEBD), 7-10 December 2016, Nancy, France.

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## DIAGNOSTICS

Computerized dynamic posturography (CDP; Equitest; Clackamas, OR) is an accepted tool of clinical assessment and patient management. It is used by clinicians to help diagnose pathology, to define therapies, and to evaluate their effectiveness. However, CDP at times does not correlate with the findings on clinical examination, and this sometimes complicates the total assessment of the patient. This can be the situation in the patients with persistent symptoms, who may display normal or near-normal assessment during clinical Romberg testing or posturography (i.e., a discordance between clinical evaluation and posturography assessment).

Posturography evaluation can also include intraposturographic discordances, where the scores on more difficult Sensory Organization tests (SOT) (conditions 5 and 6) are better than those on the simpler, less challenging conditions (conditions 1 and 2). These more challenging SOT assessments are helpful in that they enable us to measure balance ability in the absence of other sensory information (condition 5) or in the presence of orientationally inaccurate visual information (condition 6). In addition, the validity of an assessment is improved by intertrial evaluation; there should be a subtle learning effect in genuine patients, but there may be a degradation in malingerers.

Assessment of posturographic discordances can be complicated, as they can occur in patients with genuine complaints, in those with non-organic complaints, or in those who are genuine, but have incorporated an inorganic component into their otherwise legitimate problems. An excellent example of this situation is the patient with a cervical flexion-extension ("whiplash") injury. These patients often have legitimate vestibular injury, but could have the potential for secondary gain. They may also have suffered post-traumatic benign paroxysmal positional vertigo. An otoneurological examination and full vestibular assessment must be carried out in all these patients because the clinician needs to assess all potential contributors to a patient's symptoms (e.g., central lesion, secondary effect of drugs, and others). In addition, the patient may also be suffering from depressive or psychological symptoms, cervical trauma, and/or perhaps the fear of being accepted as having a legitimate complaint. Many of these patients with atypical complaints are often dismissed as depressed or psychiatric, despite having genuine vestibular pathology [3].

Patients may show intraposturographic discordance for a variety of reasons. This may often suggest symptom magnification, but this can also be seen in patients with either consciously or subconsciously developed maladaptive behavior.

## DISCUSSION

A genuine patient with real complaints, and an extreme malingerer are at opposite extremes of a diagnostic spectrum. These extreme examples are relatively easy to assess and diagnose in an accurate fashion, but the presence of intraposturographic discordance in some patients complicates an otherwise straightforward assessment and can make it more difficult to provide an accurate and meaningful diagnosis [3]. Another aspect of CDP that we can use is the Motor Control Test. Measuring latencies of responses to sudden platform translations is helpful because

they can sometimes be prolonged (which can suggest organic disease) or can sometimes be shortened (which suggests a psychological overlay) [3]. In addition, dual task assessment (i.e., divided attention tasks) necessitates the sharing of the attentional resources that can be allocated to carrying out a task. These assessments can often be helpful in determining the amount (if any) of psychological overlay, as they are more challenging and should degrade balance in genuine patients, but this is not usually the case in the malingerer.

If the examination results are discordant, a challenge is to interpret the results in a reliable and meaningful set of assessments. Strategies for doing so must include taking a detailed and careful history, repeating tests if necessary, and being alert for any inconsistent behavior or physiologic traits shown. The Committee felt that it was important to emphasize that there are no "hard and fast rules" in assessment, as at times, an entirely genuine patient can exhibit some slightly discordant features during clinical examination or assessment.

Setting goals and assessing outcomes are also a challenge in patients with complex pathologies. While treatment goals should be to minimize complaints, some other goals may be set to maximize test performance. Again, a psychological effect may magnify a patient's symptoms, but on the contrary, a placebo effect can play a role in suggesting or accentuating recovery.

Another related discordance is seen in patients with prolonged complaints, persisting for months or even years (i.e., much longer than our clinical understanding suggests should be the case). This can be referred to as a "discordant recovery course," and again a number of factors may come into effect. These patients may be exhibiting learned behavior, which is superimposed on genuine persistent pathology. An alternative to this explanation is that the peripheral end organ or central pathways involved in compensation and recovery have been compromised or functionally disrupted.

When presented with a discordance in a clinical assessment, the clinician must also take into account the possibility that a subtle central deficit or lesion exists, which does not "symptomatically present" as an entity, but the only indication of its presence is the discordance that has been created.

## CONCLUSION

The Committee feels that it is important to stress that an atypical assessment or a set of discordant features in a clinical vestibular assessment are sometimes seen in a genuine patient. Some patients develop a compensation strategy, which may not be the most effective or most logical. However, this feature does not suggest that a patient's complaints are psychiatric in origin or exaggerated; it suggests to the clinician that although the concept of recovery from a vestibular deficit usually takes place, this process is poorly understood and at times is not a smooth process of recovery to an acceptable level of function. Patients are often left with a lingering set of symptoms, which may not have an impact on daily life (and sometimes may not be detectable or evident to the clinician), but can at times be markedly incapacitating.

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