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## Sudden vertigo – fateful or just fearful?

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### OPINIONS

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### Identifying the cause of acute dizziness can be challenging. This article presents a simple and effective approach based on long clinical experience.

The patient with acute vertigo poses a major challenge – not least for young doctors on duty. Is the vertigo a symptom of a hidden stroke, or is it simply the result of a 'harmless' otolaryngological condition? Patients with infarction or haemorrhage in the pons or cerebellum have clinical features that resemble the vertigo seen with acute peripheral vestibular dysfunction, such as in cases of vestibular neuritis. However, an overlooked haemorrhage can be fatal. Here I propose a diagnostic algorithm that can be used without technical aids and without experience of nystagmus. It is important to stress that the algorithm has been designed for use only in acute cases.

I have used this algorithm in clinical practice for approximately 25 years, and it has helped me to assess a couple of thousand patients with acute dizziness. The majority of these were assessed at one of Sweden's largest hospitals, the Central Hospital in Skovde. My own and others' clinical experience is that these tests allow one to distinguish readily between central and peripheral pathology. The algorithm has three components: the Romberg test, the horizontal smooth pursuit eye movement (SPEM) test and tragal pressure. Assessment of nystagmus is difficult without technical aids and prior training, and is unnecessary in an acute setting.

The Romberg test can be carried out sitting on the edge of the bed or standing. The side to which the patient falls is said to be the 'impaired' side. Several attempts are allowed. If it is difficult to determine the direction of the fall, the

patient can almost always tell you which side she/he feels pulled towards.

The SPEM test is performed with the patient sitting or lying down. The patient is asked to follow a pen or the examiner's finger, which is moved relatively slowly from side to side approximately 50 cm in front of the patient's eyes. The examiner looks for ataxia, i.e., jerky eye movements. The test has four possible outcomes: ataxia ipsilateral to the direction of fall in the Romberg test, ataxia contralateral to the direction of fall, bilateral ataxia, or no ataxia. In the case of a central lesion, the SPEM test will always reveal ataxia ipsilateral to the side to which the patient falls in the Romberg test (1).

Acute loss of peripheral vestibular function will produce an oppositely directed nystagmus, which may have horizontal and rotatory features. The nystagmus, which can be safely ignored in the acute phase, will cause smooth pursuit eye movements to become ataxic in the same direction as the nystagmus. Since there is no nystagmus to the impaired side, there will also be no ataxia to the impaired side. It is much easier to observe ataxia in the SPEM test than it is to detect variation in nystagmus without technical aids. If there are normal smooth pursuit eye movements to the side to which the patient falls, the condition must be peripheral (2).

***«The algorithm has three components: the Romberg test, the horizontal smooth pursuit eye movement test and tragal pressure»***

In principle, a lesion of the brainstem vestibular nuclei complex will give rise to the same type of nystagmus as seen with peripheral vestibular dysfunction, i.e., ataxia away from the direction of fall. But there will also be ataxia ipsilateral to the direction of fall. The presence of bilateral ataxia thus reveals a central disorder (1).

In cases without ataxia, the speed of movement in the SPEM test should be increased until ataxia is triggered. A patient with acute dizziness will always show ataxia in the SPEM test if the focus of the pathology lies within the vestibular labyrinth or the infratentorial structures. If the focus is supratentorial, there will always be other neurological signs.

Tragal pressure is manual pressure applied to the tragus so that the ear canal closes. Pressure is applied 3–4 times. In the case of a labyrinthine fistula, tragal pressure will give rise to a marked increase in pressure in the middle ear which will be transferred to the labyrinth. The patient will then experience a severe exacerbation of his/her dizziness for a few seconds. Positive findings with tragal pressure will also be seen with acute purulent labyrinthitis as well as in the insidious condition, labyrinthitis secondary to cholesteatoma. Acute purulent labyrinthitis has similar clinical features to meningitis.

One weakness of the algorithm is that not all healthy individuals have a normal SPEM test. Certain peripheral conditions, such as Meniere's disease in the final stages of an episode, may also deviate from the pattern. However, no central lesion can give rise to the peripheral pattern – normal smooth pursuit eye

movements towards the side to which the patient falls. One of the algorithm's strengths is that the SPEM test captures, to a large extent, involvement of the posterior fossa as a cause of acute dizziness.

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## LITERATURE

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