Medical and Nonstroke Neurologic Causes of Acute, Continuous Vestibular Symptoms

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KEYWORDS

• Acute vestibular syndrome • Neurologic disease • Dizziness • Stroke
• Multiple sclerosis

KEY POINTS

- Although isolated dizziness is an unusual presentation of multiple sclerosis (MS), in patients with the acute vestibular syndrome (AVS) who do not have a stroke or vestibular neuritis, MS is the most common cause.
- Occasional patients with cerebellar mass present with an AVS if there is bleeding into the tumor, an acute increase in perilesional edema, or simply the mass growing to a threshold beyond which the pressure in the posterior fossa increases rapidly.
- Cerebellitis, from either an infectious or an inflammatory cause, can present with an AVS.
- Mal de debarquement is obvious in most patients in the context of recent travel on boat (or sometimes air).
- Patients with prior posterior circulation stroke may have recrudescence (unmasking) of symptoms due to a new toxic, metabolic, or infectious condition.

INTRODUCTION

Dizziness has a broad differential diagnosis. In a report of nearly 10,000 patients from the National Hospital Ambulatory Medical Care Survey database who had dizziness as a reason for visit to a US emergency department, half had a medical (ie, nonvestibular and noncerebrovascular) cause for their dizziness.[1] These conditions included cardiovascular, respiratory, toxicologic, metabolic, psychiatric, and other causes. About 15% of these medical causes were a dangerous diagnosis, as defined by a prespecified list

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of conditions that had potentially bad outcomes and were treatable (eg, myocardial infarction or carbon monoxide poisoning).[1]

Distinguishing various timing and trigger categories of patients with dizziness helps to narrow down the differential diagnosis and focus on serious treatable causes. Many medical causes commonly present with episodic dizziness or vertigo (eg, cardiac arrhythmia, orthostatic hypotension, transient hypoglycemia), and these are presented in another article by Meurer and colleagues elsewhere in this issue and are not discussed further here. Other medical and nonstroke neurologic disorders instead present with acute, continuous symptoms that mimic the more common presentations of postconcussive dizziness, vestibular neuritis, and stroke. AVS is usually defined as the rapid onset of dizziness or vertigo, nausea or vomiting, head motion intolerance, gait instability, and often nystagmus lasting for at least 24 hours. Internists, general practitioners, and especially emergency physicians frequently encounter a broader array of disorders causing AVS, such as toxic or metabolic disorders, infections, and inflammatory diseases. These disorders are the subject of this article.

Although most cases of definite AVS are likely to be either vestibular neuritis or stroke,[2] the differential diagnosis of the syndrome is broad (**Box 1**). Cases of AVS that are not posttraumatic, unilateral peripheral vestibulopathies (vestibular neuritis/labyrinthitis) or are with a cerebrovascular cause can be categorized into 3 general groups. The first group includes patients with general medical problems that are principally toxicologic, metabolic, or infectious (eg, a patient with phenytoin toxicity or hyponatremia). The second group includes neurologic conditions other than stroke (eg, MS, brainstem encephalitis). The third group includes patients with hybrid medical and neurologic causes in which subclinical neurologic or vestibular conditions (either in recovery or early in the disease state) are unmasked by intercurrent medical illness, causing acute symptoms.

Before discussion of these 3 groups of conditions, one additional caveat must be discussed. Some patients with a spontaneous episodic vestibular syndrome present before the episode resolves (eg, 4 hours after symptoms begin). Therefore, one cannot always readily distinguish these patients (in whom future spontaneous resolution would clarify the episodic nature of the process) from patients who will remain dizzy and therefore qualify as a true AVS case. Typical examples include patients with Meniere disease, vestibular migraine, or transient ischemic attack who present early, while still symptomatic. Just as a patient with transient ischemic attack should be treated presumptively as a patient with stroke if they remain symptomatic at clinical presentation, so too should these episodic patients be treated as an AVS case until subsequent events clarify the true nature of the event. Although they enter into differential diagnostic consideration, these conditions are discussed fully in other articles. Finally, dizziness in adults has been emphasized, recognizing that much less is known about AVS among children, other than a suspicion that strokes are less common and some disorders of childhood are likely to be more common (eg, genetic disorders, cerebellitis, posterior fossa tumors).

GENERAL MEDICAL CONDITIONS WITHOUT OBVIOUS STRUCTURAL NEUROLOGIC DISEASE

Numerous toxicologic, metabolic, and systemic infectious conditions can cause some degree of persistent dizziness, although the proportion of such patients presenting with symptoms truly consistent with or closely mimicking an AVS, in the absence of other symptoms indicating a clear cause, is unknown. Experience would suggest