



Dizziness and Vertigo

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DEFINITION/EPIDEMIOLOGY

Dizziness is a common term that is used by patients and providers to group a variety of different symptoms including a spinning sensation, lightheadedness, disorientation, or imbalance. Other more vague symptoms are also often labeled as “dizziness.” Vertigo is the term used for a false sense of movement, typically spinning. The problem with defining the type of dizziness is that patients are often inconsistent when describing dizziness. In addition, the type of dizziness generally does not adequately discriminate among disorders. Approximately 30% of the general population reports having had some type of bothersome dizziness.

PATHOLOGY

Pathology that causes dizziness can stem from many systems of the body. Understanding the vestibular system and common peripheral vestibular disorders is of central importance in the evaluation of patients with dizziness. This is because the dilemma is often discriminating a benign peripheral vestibular disorder from a focal brain lesion. The vestibular system is a common source of confusion. Many clinicians assume a “peripheral” cause in the absence of motor, sensory, or language deficits, but this approach is flawed. A more effective approach is to aim to “rule in” a *specific* peripheral vestibular disorder. The three common peripheral vestibular disorders all have highly characteristic history and examination features, thus enabling this approach. When a specific peripheral vestibular disorder does not fit, then one must consider other potential etiologies.

BASIC VESTIBULAR SYSTEM CONCEPTS

The peripheral vestibular system maintains a balanced tonic input to the brain. The input represents the circuitry that links the inner ear to eye movements, the vestibulo-ocular reflex

(VOR). A normal functioning VOR is important for balance and maintaining clear vision when moving. Vertigo ensues when an imbalance is caused by a lesion (e.g., vestibular neuritis) or aberrant stimulation (e.g., benign paroxysmal positional vertigo). A characteristic sign of vestibular system imbalance is nystagmus: rhythmic slow and fast movements of the eyes in opposite directions. The location of pathology determines the pattern of nystagmus (Table 113-1). Dysfunction at the semicircular canal level leads to nystagmus in the plane of the affected canal. Therefore problems in the vertical canals (i.e., posterior and anterior canals) lead to vertical and torsional nystagmus, whereas problems in the horizontal canal lead to horizontal nystagmus. At the vestibular nerve level a mixed horizontal-torsional nystagmus is generated because input from all the semicircular canals converge at this level and the signals from the vertical canals mostly cancel each other out. The pathways and thus the patterns of eye movements become less predictable with lesions of the central vestibular pathways, although some general rules apply. Pure vertical (downbeat or upbeat) spontaneous nystagmus, bidirectional gaze-evoked nystagmus (look left, beats left; look right, beats right) (Video 113-1), and persistent downbeat-positional nystagmus are signs of central dysfunction (see Table 113-1).

Another characteristic sign of vestibular disturbance is a positive head-thrust test (Video 113-2). A person with an intact VOR will maintain gaze on a stationary, straight-ahead target after a brief, small-amplitude, high-acceleration movement of the head to one side. A person with vestibular impairment on one side loses this reflex on the ipsilateral side and therefore, after the quick head movement, will need to make a re-fixation voluntary eye movement (i.e., a “saccade”) back to the target because the eyes moved with the head. This so-called “catch-up” or “corrective” saccade is easily appreciated at the bedside and indicates vestibular deafferentation.

TABLE 113-1 COMMON TYPES AND PATTERNS OF NYSTAGMUS

TYPES	PATTERNS	LOCALIZATION	PRINCIPAL CAUSES
Spontaneous	Unidirectional horizontal >>> torsional Downbeat, upbeat, or pure torsional	Vestibular nerve, or less commonly the brainstem Brain	Vestibular neuritis, or less commonly stroke Stroke
Gaze-evoked	Unidirectional Bidirectional	Vestibular nerve Brain	Vestibular neuritis (recovery pattern) Stroke, cerebellar syndrome, medication side effect*
Positional	Burst of upbeat torsional with DH Horizontal with supine positional testing Persistent downbeat	Posterior SCC Horizontal SCC or less commonly the brainstem Brain	BPPV BPPV, brainstem lesion Chiari malformation, cerebellar degeneration

BPPV, Benign paroxysmal positional vertigo; DH, Dix-Hallpike positional test; SCC, semicircular canal; >>>, greater than.

*Most common with antiepileptic drugs.