

## CLINICAL PRESENTATION

Patients usually present with acute constant dizziness, recurrent spontaneous attacks, or recurrent positional attacks. Less commonly, patients present with chronic constant dizziness. The physical examination is a critical part of the assessment. If the general examination is unrevealing, then the focus should shift to the ocular motor examination because vestibular disorders have highly characteristic findings, particularly regarding the presence and pattern of nystagmus (see Table 113-1). Hearing should be tested one ear at a time with either tuning forks or finger rub.m

## DIFFERENTIAL DIAGNOSIS

The differential diagnosis can generally be categorized as follows: a peripheral vestibular disorder, a central nervous system disorder, a general medical disorder (e.g., anemia, metabolic derangement, anxiety disorder), or a chronic otherwise undefined disorder. There are three common peripheral vestibular disorders: vestibular neuritis, Meniere's disease, and benign paroxysmal positional vertigo (BPPV). An understanding of these three disorders is important because each one is the primary consideration for the cause of one of the three common dizziness presentation categories (Table 113-2). In addition, these disorders are the prototypes for most pathology that involves the peripheral vestibular system.

Vestibular neuritis manifests with the abrupt onset of severe vertigo, nausea, and imbalance without other neurologic symptoms. The disorder is caused by a viral disturbance of the vestibular nerve, analogous to Bell's palsy. On examination, the acute peripheral vestibular pattern of nystagmus is seen (see Table 113-2; Video 113-3). A positive head-thrust test in the direction of the affected ear (but in the direction opposite the fast phase of nystagmus) further supports vestibular nerve localization. If the nystagmus changes direction with gaze (i.e., look left, beat left; then look right, beat right), then vestibular neuritis is not the diagnosis because these findings localize to the central nervous system. Small strokes of the cerebellum or brainstem can closely mimic vestibular neuritis.

Meniere's disease is characterized by recurrent episodes of vertigo, nausea, and imbalance typically lasting hours; prominent auditory features must be present to make the diagnosis. Early in the course, auditory symptoms fluctuate along with vertigo attacks, but later they become a fixed symptom. The auditory symptoms are nearly always unilateral at the onset and consist of hearing loss, roaring tinnitus, or severe fullness in one ear. If attacks are brief (i.e., minutes rather than hours), then transient ischemic attacks should be considered. The dizziness of migraine can also closely mimic Meniere's disease.

Patients with BPPV report very brief episodes (<1 minute) of vertigo triggered by head movement; most often tilting the head back to look up, getting in or out of bed, or rolling over in bed. Dizziness from any cause may worsen after certain movements, but the dizziness of BPPV is *triggered* by certain movements. The most common form of BPPV occurs when otoliths enter the posterior canal. Posterior canal BPPV is identified at the bedside using the Dix-Hallpike test (Fig. 113-1). In response to the Dix-Hallpike test, otoliths move in the canal and lead to a burst of upbeat-torsional nystagmus lasting about 20 to 30 seconds (Video 113-4). BPPV is less commonly caused by otoliths in the horizontal canal and very rarely the anterior canal. When the otoliths are in one of these other canals, the pattern of nystagmus is different from that of posterior canal BPPV, as are the repositioning maneuvers used to treat BPPV. Positional vertigo and nystagmus are common in patients with migraine. If a persistent downbeating nystagmus is seen during the Dix-Hallpike test, then a central nervous system cause (e.g., Chiari malformation, cerebellar tumor, or cerebellar degeneration) should be considered.

If the patient reports imbalance as the principal symptom and has a gait disorder, then the following causes should be considered: stroke (if the onset was acute), a musculoskeletal disorder, peripheral neuropathy, bilateral vestibulopathy (frequently attributable to ototoxicity, particularly from gentamicin), or a neurodegenerative disorder involving the cerebellum.

If a specific peripheral vestibular disorder is not identified and the neurologic examination is normal, then general medical causes should be considered. The list of medications should be

**TABLE 113-2** COMMON CATEGORIES OF DIZZINESS PRESENTATIONS

|                       | ACUTE CONSTANT DIZZINESS   | RECURRENT SPONTANEOUS ATTACKS   | RECURRENT POSITIONAL ATTACKS   |
|-----------------------|--|---|--|
| Primary consideration | Vestibular neuritis  | Meniere's disease   | BPPV   |
| Key features          | Constant vertigo, unidirectional horizontal nystagmus,* positive head-thrust test <sup>†</sup>                               | Vertigo lasting hours, unilateral auditory symptoms   | Positionally triggered, brief (<1 min) attacks<br>Upbeat-torsional burst of nystagmus in DH position, cured by Epley maneuver <sup>‡</sup> |
| Red flags             | Other CNS features, other patterns of nystagmus, imbalance as the principal symptom, chest pain, cardiovascular risk factors | Other CNS features, CNS patterns of nystagmus, imbalance as the principal symptom, attacks lasting only minutes, chest pain, cardiovascular risk factors, recent onset, crescendo pattern | Other CNS features, CNS patterns of nystagmus  |
| Other considerations  | Stroke, myocardial infarction, metabolic disturbances, demyelinating attack  | TIA, cardiac arrhythmia, migraine, panic attacks  | Horizontal or anterior canal BPPV, migraine, Chiari malformation, posterior fossa tumor, orthostatic hypotension                           |

BPPV, Benign paroxysmal positional vertigo; CNS, central nervous system; DH, Dix-Hallpike; TIA, transient ischemic attack.

\*This nystagmus never changes direction. Gaze in the direction of the fast phase will increase the velocity of the nystagmus, whereas gaze in the opposite direction will decrease the velocity of the nystagmus.

<sup>†</sup>The head-thrust test will be positive in the direction of the affected ear, which is opposite the direction of the fast phase of nystagmus.

<sup>‡</sup>These features apply to BPPV stemming from the posterior canal.