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SPINNING STORIES: A CONCISE REVIEW OF VERTIGO

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ABSTRACT

Vertigo is a well-known subcategory of dizziness, often described as a sensation of illusory motion or spinning—either of the surroundings around the individual or of the individual within a certain space. Vertigo has been associated with various comorbidities, including psychological and cardiovascular disorders. This review aims to enhance understanding and reintroduce the general clinical aspects of vertigo, particularly for family medicine physicians. Vertigo may present as a benign condition or as a more serious acute disorder. A detailed history and thorough physical examination are essential, as they help rule out many patients who may report false symptoms of vertigo and dizziness—especially during the initial clinical encounter. However, despite these measures, many cases remain inaccurately diagnosed. Ultimately, treatment is guided by the underlying cause.

INTRODUCTION

Vertigo is a well-recognized subtype of dizziness, often described as the sensation of illusory motion or a spinning environment—either the external world revolving around the individual or the individual rotating within a certain space. Vertigo affects individuals across all age groups, but it presents differently in younger patients, who tend to have more specific underlying causes compared to older individuals [1,2].

Most complaints related to vertigo are seen in individuals over 40 years of age, with an increasing prevalence in the elderly population. Elderly patients often experience a range of balance disorders, including vertigo, dizziness, and unsteadiness, with vestibular symptoms becoming a common concern in those aged between 65 and 85 years. Additionally, the incidence of vertigo in this age group is linked to a higher risk of falls [2].

Peripheral causes of vertigo, such as Ménière's disease, benign paroxysmal positional vertigo (BPPV), vestibular neuritis, and labyrinthitis, are commonly diagnosed. However, it is crucial to consider central causes in the differential diagnosis, particularly conditions affecting the vertebrobasilar and cerebellar systems, which must be ruled out during the initial evaluation and history-taking process. Long-term use of certain medications is also a known contributor to vertigo [3, 4].

This review draws from multiple studies to provide a comprehensive understanding of the clinical significance of diagnosing vertigo. The focus is on recognizing this primary symptom, which can assist family medicine physicians in conducting thorough physical examinations within primary care settings. This is particularly important for the identification of conditions associated with vertigo, such as Ménière's disease, vestibular neuritis, and vestibular paroxysmia. This review aims to play a proactive role in improving the care of patients suffering from vertigo and its related disorders.

Understanding the pathophysiology of vertigo and its various etiologies is essential for effective management and intervention in primary care. Early identification can significantly improve patient outcomes and reduce the impact of vertigo on quality of life.

Epidemiology

Vertigo has been linked to various comorbidities, including psychological and cardiovascular diseases, with reported associations ranging from 3.8% to 56.8%. A recent systematic review revealed that the most common causes of vertigo are peripheral otologic disorders (ranging from 5.4% to 42.1%) and cardiovascular diseases. Despite these associations, up to 80% of cases are inaccurately diagnosed, presenting significant challenges in clinical practice [5].

The prevalence of vertigo and dizziness varies across different studies. Its occurrence is notably influenced by age, with approximately 30% of older adults experiencing vertigo. According to a 12-month prevalence study, vertigo affects about 5% of the general population, with an annual incidence rate of 1.4%. Additionally, vertigo is estimated to affect older women two to three times more frequently than older men [6].

Pathophysiology

The primary cause of vertigo is the asymmetry in the vestibular system, which results from dysfunction or damage to the peripheral system. This dysfunction can be either temporary or permanent, depending on the size and type of the lesion. Common examples of damage leading to peripheral system asymmetry typically affect the vestibular labyrinth. In contrast, central disturbances are often related to the cerebellum or brainstem. Notably, vertigo symptoms are generally not permanent, as the central nervous system adapts to the condition within days to weeks [7].

Cerebellopontine angle tumors, such as Schwannomas, are one of the potential causes of vertigo and dizziness. Meningiomas, the second most common lesion in the cerebellopontine angle, are also associated with vertigo in adults [8, 9]. Tumors affecting the chemoreceptor system, such as Glomus jugulotympanicum and Glomus jugulare, are considered primary tumors of the jugular foramen [10].

Additionally, metastatic neoplasms and multiple brain lesions should always be considered in the differential diagnosis [11].

Viral and bacterial infections also play a significant role in the pathophysiology of vertigo. Viral labyrinthitis, often caused by cytomegalovirus and Rubella, is known to induce prenatal hearing loss. Furthermore, viral infections are frequently implicated in sudden sensorineural hearing loss [11, 12].

Bacterial agents, including Haemophilus influenzae and Streptococcus pneumoniae, are typically associated with infections of the mastoid and tympanic cavities, such as otomastoiditis. Varicella-zoster virus, which is linked to Postinfectious cerebellar ataxia and acute cerebellitis (encephalitis), often in children, is another major cause of vertigo. Lastly, cholesteatoma, resulting from congenital or acquired proliferation and keratinization of the stratified squamous epithelium, can also be a significant contributor to vertigo [11, 13].

Clinical Evaluation

Taking a thorough patient history and performing a physical examination are crucial in excluding individuals who may report false symptoms of vertigo or dizziness, especially upon initial presentation. One of the primary goals in clinical evaluation is to differentiate between central and peripheral causes of vertigo. Eliciting a detailed history of the symptoms, particularly the pattern of episodes, is one of the best ways to reach a diagnosis. Episodes of vertigo may relapse within minutes after the previous episode, and some are associated with vestibular migraines, which can last anywhere from a few minutes to several hours. These prolonged episodes are often more concerning and may be seen in both central and peripheral causes, including conditions like stroke or vestibular neuritis.

(Table 1) outlines the most common differential diagnoses for vertigo, including both benign and more serious causes, particularly in older patients who may be at higher risk [7].

Table 1: Differential Diagnosis For Vertigo

Differential diagnosis	Onset and duration	Provoking factors	Special features	Physical exam findings
Labyrinthitis	Few seconds to minutes	Change in the head position	Tinnitus	Hearing loss present
Vestibular neuronitis	Seconds to minutes	Recent upper respiratory tract infection	Imbalance, while nystagmus is horizontal or rotational, the direction of the fast component is away from the side of the lesion	Absence of hearing loss
Benign paroxysmal positional vertigo	Seconds	Change in the head position	Positional	Positive Dix-Hallpike
Ménière's disease	Hours	Spontaneous	Hearing loss and tinnitus	Hearing assessment for sensorineural hearing loss

Treatment

The management of vertigo primarily depends on identifying and treating the underlying etiology. During acute episodes, symptomatic treatment is essential to provide immediate relief (Table 2) [14]. Subsequently, specific therapy should be tailored according to the definitive diagnosis and cause of vertigo (Table 3) [14].

Symptomatic Treatment (during acute attacks):

Vestibular suppressants such as meclizine, promethazine, or dimenhydrinate may be used for short-term relief. Antiemetics like ondansetron or metoclopramide are helpful to control associated nausea and vomiting. In cases of

vestibular neuritis, corticosteroids (e.g., prednisolone) have shown benefits if administered early. Adequate hydration and bed rest may be required during severe attacks.

Etiology-Specific Treatment:

Benign Paroxysmal Positional Vertigo (BPPV): Treated with repositioning maneuvers such as the Epley or Semont maneuver.

Meniere's Disease: Managed with salt restriction, diuretics (e.g., hydrochlorothiazide), betahistine, and sometimes intracochlear steroid injections.

Vestibular Neuritis: Requires corticosteroids, vestibular rehabilitation, and sometimes antivirals if a viral etiology is suspected.

Central Vertigo (e.g., from stroke or tumors): Needs urgent neuroimaging, referral, and management of the central pathology.

Medication-Induced Vertigo: Discontinuation or adjustment of the offending drug.

Vestibular rehabilitation therapy (VRT) should be considered in most patients after the acute phase, especially in those with persistent imbalance or chronic vertigo.

Table 2: Treatment Of Acute Vertigo

Class of drug	Drug	Dosage
Antihistamines	Promethazine	12.5-25 mg orally IM or rectally every 4-12 h
	Betahistine	4-6 mg 8 h per day
Benzodiazepines	Diazepam	2-10 mg orally or IM every 4-8 h
	Lorazepam	0.5-2 mg orally, IM or EV every 4-8 h
Antiemetics	Prochlorperazine	5-10 mg orally or IM every 6-8 h or 25 mg rectally every 12 h
	Metoclopramide	10-20 mg orally every 6 h or 10-20 mg by slow EV every 6-8 h

IM: Intramuscularly; **IV:** intravenously; **EV,** endovenously.

Table 3: Treatment Of Causes Of Vertigo

Cause	Treatment
BPPV	Meclizine 25-50 mg orally every 4 to 6 h Epley maneuver Vestibular rehabilitation
Ménière disease	Salt restriction (<1-2 g to sodium per day) and/or diuretics Intratympanic dexamethasone or gentamicin Endolymphatic sac surgery
Vestibular neuritis	Methylprednisolone 100 mg orally daily then tapered to 10 mg orally daily over three weeks
Migrainous vertigo	Migraine prophylaxis with serotonin receptor agonists (triptans)

CONCLUSION

Vertigo, a recognized subtype of dizziness, is often accompanied by other systemic symptoms, including hearing loss, nausea, and vomiting. It can present as either a benign condition or a more serious acute disorder, depending on the clinical evaluation. Accurate history-taking is essential to differentiate between central and peripheral etiologies of vertigo, particularly in older patients and those at higher risk. Treatment for vertigo is tailored to the underlying cause, emphasizing the importance of proper diagnosis for effective management.

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