



Review Article

ISSN : 2277-3657  
CODEN(USA) : IJPRPM

## *An Overview on vertigo Diagnostic and Management Approach in Primary Health Care Center*

Ahmed Hamed M Alshemary<sup>1\*</sup>, Abdulaziz Abdulrahman A Asiri<sup>2</sup>, Abdulaziz Ghazi Banah<sup>2</sup>, Ahmed Mohammed M Ghazwi<sup>3</sup>, Abdulelah Mohammed Hakami<sup>4</sup>, Abdulkarim Saleh A Alzahrani<sup>5</sup>, Alaa Nemer S Alruwaili<sup>6</sup>, Majid Rashid H Alyami<sup>7</sup>, Abdullah Mohammed Saleh Alwadai<sup>8</sup>, Abdullah Fahad Alhejaili<sup>9</sup>

<sup>1</sup>Faculty of Medicine, Baha University, Baha, KSA.

<sup>2</sup>Faculty of Medicine, King Khalid University, Abha, KSA.

<sup>3</sup>Faculty of Medicine, Imam Mohammed Bin Saud Islamic University, Riyadh, KSA.

<sup>4</sup>Department of Family Medicine, Al moshaf Primary Health Care Center, Jazan, KSA.

<sup>5</sup>Faculty of Medicine, King Abdulaziz University, Jeddah, KSA.

<sup>6</sup>Faculty of Medicine, Aljouf University, Aljouf, KSA.

<sup>7</sup>General Physician, Ras Tanura General Hospital, Ras Tanura, KSA.

<sup>8</sup>Faculty of Medicine, Najran University, Najran, KSA.

<sup>9</sup>Department of Internal Medicine, Madinah General Hospital, Madinah, KSA.

\*Email: Ahmad-0301@hotmail.com

---

### ABSTRACT

Vertigo is a well-known sub-category of dizziness that is often described as a state or sensation of an illusionary motion or spinning surroundings either revolving around an individual external world or revolving the individual in a certain space. Vertigo has been associated with various comorbidities including psychological and cardiovascular diseases. This review aims to improve the understanding and reintroduce the general clinical aspects of vertigo for family medicine physicians. This review was guided by the preferred electronic research engine of PubMed, Medline, and Google Scholar databases. This review discussed only published English and English translated documents, articles, systemic reviews related to the subject, and no rejected or papers were included. Vertigo can be presented as a benign or more serious acute disorders. The benefits of taking history and performing physical examination would exclude most patients who might report false symptoms experiencing vertigo and dizziness as the main complaint, particularly on initial presentation. Nevertheless, regarding definite diagnosis, many presented cases were not diagnosed accurately. However, patients are treated depending on the underlying cause.

**Key words:** Family practice, Vertigo, Benign paroxysmal positional vertigo, Dizziness, Vestibular neuritis, Menière's disease

---

### INTRODUCTION

Vertigo is a well-known sub-category of dizziness that is often described as a state or sensation of an illusionary motion or spinning surroundings either revolving around an individual external world or revolving the individual in a certain space. All ages experience vertigo effects. However, vertigo manifests differently in younger patients as they tend to have more precise factors than vertigo in older patients [1, 2]. The most relevant complaints are usually among patients more than 40 years and elderly. Elderly patients face a variety of balance disorders, vertigo, dizziness, and unsteadiness as vestibular symptoms can be a usual significant condition above the age of 65 to 85.

Moreover, the incidence of vertigo also with the increased risk of falls in the elderly [2]. Patients often experience peripheral etiologies of vertigo in Ménière disease, benign paroxysmal positional vertigo, vestibular neuritis, and labyrinthitis. However, systemic (central) causes are always considered in differential diagnosis, particularly conditions involving the vertebrobasilar and the cerebellar systems that should be ruled out in initial patient history and evaluation. Long-term medications are also known to induce vertigo effects [3, 4]. This review is based on several conducted studies to deliver a general understanding of the clinical importance in detecting vertigo relying on this particular cardinal symptom that may assist Family medicine physicians to clarify physical evaluation in the primary health care facility for patients with vertigo and vertigo associated diseases such as Ménière's disease, vestibular neuritis, and vestibular paroxysmia [5]. This review would actively participate in the care of patients that are affected by this condition.

## MATERIALS AND METHODS

This review was guided by preferred electronic research engine of PubMed, Medline, and Google Scholar database, using the keyword 'vertigo including words used in Mesh ((' Dizziness'[Mesh]), (('Ménière's'[Mesh]), (('Neuritis'[Mesh]), (('Family'[Mesh]), (('Benign'[Mesh])). This review discussed only published English and English translated documents, articles, and systemic reviews related to the subject and no rejected or papers were included.

### *Review*

#### *Epidemiology*

Vertigo has been associated with various comorbidities including psychological and cardiovascular diseases (3.8 -56.8%). Moreover, a recent systemic review has shown that the most frequent reasons for vertigo were peripheral otologic causes (5.4 - 42.1%) and cardiovascular disease. However, regarding definite diagnosis, up to 80% of the presented cases are not diagnosed accurately [6].

The prevalence of vertigo and dizziness is marked differently in several studies. Prevalence also depends on age; vertigo commonly affects about 30% of older people. Based on a 12-month prevalence study, vertigo was about 5% and annual incidence of 1.4%. Vertigo is estimated to occur in older women two or three times more than in older men [7].

#### *Pathophysiology*

The initial cause of vertigo is the asymmetry in the vestibular system that results from peripheral system dysfunction or damage that can be permanent or temporary depending on the size and type of the lesion. The most common examples of damages that appear in the peripheral system asymmetry manifest on the vestibular labyrinth. However, central disturbances usually manifest on the cerebellum or brainstem. Moreover, vertigo symptoms are never permanent as the central nervous system adapts to the situation in days to weeks [8].

Cerebellopontine angle tumors such as Schwannoma can be one of the causes of vertigo and dizziness. Meningiomas are the second most common lesion of cerebellopontine angle tumors that causes vertigo in adults [9, 10]. Chemoreceptor system tumors such as Glomus jugulotympanicum and Glomus jugulare are considered as primary tumors of the jugular foramen [11]. Metastatic neoplasms and multiple brain lesions must be considered [12].

Viral and bacterial infections must also be evaluated. Viral labyrinthitis infection that is caused by cytomegalovirus and Rubella is known to induce prenatal hearing loss. Moreover, viral infections are also involved in sudden sensorineural hearing loss [12, 13].

Bacterial agents such as Haemophilus influenzae and Streptococcus pneumoniae are typically associated with otomastoiditis infections of the mastoid and tympanic cavities. Varicella-zoster virus-related Postinfectious cerebellar ataxia involving acute cerebellitis (encephalitis) that is often common in children accounts as a major disorder associated with vertigo. Cholesteatoma that appears as a result of congenital or acquired proliferation and keratinization of the stratified squamous epithelium can also be a leading cause of vertigo [12, 14].

#### *Clinical evaluations*

The benefits of taking history and performing physical examination would exclude most patients who might report false symptoms experiencing vertigo and dizziness as the main complaint, particularly on initial presentation. It's also important to differentiate between central and peripheral causes that lead to vertigo. One of the best ways to reach diagnoses is eliciting the episodes of symptoms closely. Episodes of vertigo can relapse a few minutes after

the previous episodes. Some episodes are associated with vestibular migraine that can last for a few minutes up to hours these prolonged episodes are often more serious and are seen in both central and peripheral causes such as stroke or vestibular neuritis. (Table 1) explains the most common differentials of vertigo including benign and more serious causes, particularly in older patients who are at risk [8].

Vertigo can also be associated with other systemic symptoms as hearing loss, nausea, and vomiting. Psychiatric patients suffering from anxiety attacks can experience vertigo after hyperventilation. Other causes of vertigo involve loud noises (Tullio phenomenon) and medications such as salicylates, furosemide, and antihypertensives [8].

**Table 1.** Vertigo Differential Diagnosis [8]

Differential Diagnosis	Vertigo duration and the onset	Triggering factors	Special Features	Physical exam findings
Benign paroxysmal positional vertigo	Seconds	Changing head position	positional	Positive Dix-Hallpike
Labyrinthitis	Few seconds to minutes	Changing head position	Tinnitus	Presents with hearing loss
Vestibular neuronitis	Seconds to minutes	Provoked by upper respiratory tract infections	Presents of horizontal or rotational lead to imbalance, and the fast component direction is usually away from the side of the lesion.	Hearing loss is not present
Meniere's Disease	Hours	Spontaneously	Tinnitus and hearing loss	Assessing hearing loss for sensorineural

#### *Benign paroxysmal positional vertigo*

Primary care clinicians must deal with the fact and correlation of the presence of benign paroxysmal positional vertigo and increased risk of falls in the elderly. Adults older than 65 years tend to present with features of benign paroxysmal positional vertigo. However, examining benign paroxysmal positional vertigo in the elderly does not differ from younger patients [2]. Furthermore, benign paroxysmal positional vertigo may be associated with vestibular migraine and Ménière disease [3].

The Dix-Hallpike maneuver is necessary if benign paroxysmal positional vertigo is predicted during clinical evaluation. This maneuver has an effective way to confirm the diagnosis. However, it does not need further ancillary testing [15].

On the other hand, the Epley maneuver is used to treat benign paroxysmal positional vertigo (Table 2) [8]. The procedure has a success rate of over 77% to 100%. However, it is advised not to perform this maneuver on patients with neck injuries, heart disease, and carotid stenosis [16].

**Table 2.** Epley maneuver steps

1. Seat the patient comfortably on the bed.
2. Hyperextend the neck and try to laterally rotate it to 45 degrees, then ask the patient to lie in the supine position.
3. The patient needs to wait in the supine position for one minute.
4. Turn the head to the opposite side with lateral rotation up to 45 degrees and wait for one minute before moving to the next step.
5. Tilt the position of the patient's head, chest, and pelvis to 135 degrees downwards, and maintain the position for one minute.
6. Seat the patient upright and manage to tilt the head towards the affected side.

#### *Labyrinthitis*

The spread of infections in the middle ear can cause labyrinthitis. Usually, in labyrinthitis, vertigo is associated with hearing loss. The clinician must refer the patient to the emergency department for otitis media drainage in cases of acute suppurative labyrinthitis [8, 13].

### *Ménière disease*

Ménière disease is a common struggle in women after the age of 60. There is no cure as hearing loss eventually becomes permanent. Clinicians have the option to refer the patient for surgical treatment if the patient is not willing to accommodate medical treatment [8, 13].

### *Vestibular neuritis*

Vestibular neuritis epidemic outbreaks are associated with respiratory tract infections in both middle-aged men and women. Vestibular neuritis is mostly presented in patients with falls. No referral is needed for these patients as the symptoms improve with bed rest and antiemetics [8, 13].

### *Treatment*

The treatment of vertigo usually depends on the cause, this means treating the underlying causes can help improve the symptoms. As a primary care physician, medical suppression of symptoms in acute episodes is advised including antibiotics, antihistamines, and antiemetics, especially in an elderly patient. Methylprednisolone is recommended to accelerate peripheral vestibular function recovery. Recommending physical balance training for the patient three times for at least 15 minutes daily for 4 weeks can promote quick recovery. The surgical option is recommended especially if the patient's symptoms were disabling [8, 17].

## **CONCLUSION**

Vertigo is a well-known sub-category of dizziness that is often associated with other systemic symptoms as hearing loss, nausea, and vomiting. Vertigo can be presented as benign or more serious acute depending on the clinical evaluation phase so taking accurate history is required to magnify central and peripheral etiologies of vertigo, particularly in older patients and patients who are at risk. Patients affected with vertigo are treated depending on the underlying cause.

**ACKNOWLEDGMENTS :** None

**CONFLICT OF INTEREST :** None

**FINANCIAL SUPPORT :** None

**ETHICS STATEMENT :** None

## **REFERENCES**

1. Cranfield S, Mackenzie I, Gabbay M. Can GPs diagnose benign paroxysmal positional vertigo, and does the Epley manoeuvre work in primary care? *Br J Gen Pract.* 2010;60(578):698-9.
2. Balatsouras DG, Koukoutsis G, Fassolis A, Moukos A, Apris A. Benign paroxysmal positional vertigo in the elderly: current insights. *Clin Interv Aging.* 2018;13:2251-66.
3. Strupp M, Dieterich M, Brandt T. The treatment and natural course of peripheral and central vertigo. *Dtsch Arztebl Int.* 2013;110(29-30):505-15.
4. Jiang Y, Zhou X. Frontal lobe epilepsy manifesting as vertigo: a case report and literature review. *J Int Med Res.* 2020;48(9):300060520946166.
5. Ren-Zhang L, Chee-Lan L, Hui-Yin Y. The awareness and perception on Antimicrobial Stewardship among healthcare professionals in a tertiary teaching hospital Malaysia. *Arch Pharm Pract.* 2020;11(2):50-9.
6. Bösner S, Schwarm S, Grevenrath P, Schmidt L, Hörner K, Beidatsch D, et al. Prevalence, aetiologies and prognosis of the symptom dizziness in primary care - a systematic review. *BMC Fam Pract.* 2018;19(1):33.
7. Neuhauser HK. The epidemiology of dizziness and vertigo. *Handb Clin Neurol.* 2016;137:67-82.
8. Dommaraju S, Perera E. An approach to vertigo in general practice. *Aust Fam Physician.* 2016;45(4):190-4.
9. Thapa PB, Shahi S, Jha RK, Shrestha D. Vestibular Schwannoma: An Experience in a Developing World. *World J Oncol.* 2019;10(2):118-22.
10. Hu M, Tang Y, Long G, Zhang D, Kresak JL, Lai J. Primary Extracranial Meningioma of Mastoid in a Patient with History of Skin Squamous Cell Carcinoma, Lung Adenocarcinoma, and Prostatic Carcinoma. *Anticancer Res.* 2019;39(6):3197-201.

11. Li XX, Cui WN, Gao GD. Vertigo as the sole complaint of tympanomastoid paraganglioma. *J Otol.* 2020;15(1):33-5.
12. Ribeiro BNF, Correia RS, Antunes LO, Salata TM, Rosas HB, Marchiori E. The diagnostic challenge of dizziness: computed tomography and magnetic resonance imaging findings. *Radiol Bras.* 2017;50(5):328-34.
13. Walther LE. Current diagnostic procedures for diagnosing vertigo and dizziness. *GMS Curr Top Otorhinolaryngol Head Neck Surg.* 2017;16.
14. García-Iñiguez JP, López-Pisón FJ, Madurga Revilla P, Montejo Gañán I, Domínguez Cajal M, Monge Galindo L, et al. Acute cerebellitis in paediatric patients: Our experience. *Neurologia (Engl Ed).* 2019;34(5):291-9.
15. You P, Instrum R, Parnes L. Benign paroxysmal positional vertigo. *Laryngoscope Investig Otolaryngol.* 2019;4(1):116-23.
16. Uz U, Uz D, Akdal G, Çelik O. Efficacy of Epley Maneuver on Quality of Life of Elderly Patients with Subjective BPPV. *J Int Adv Otol.* 2019;15(3):420-4.
17. Strupp M, Długaiczek J, Ertl-Wagner BB, Rujescu D, Westhofen M, Dieterich M. Vestibular Disorders. *Dtsch Arztebl Int.* 2020;117(17):300-10.