BMJ Best Practice

Overview of vertigo

Straight to the point of care

Last updated: Jan 05, 2024

Table of Contents

Introduction

Vertigo is the sensation that the environment is spinning around relative to oneself (objective vertigo) or vice versa (subjective vertigo). The term is sometimes used erroneously to mean any form of dizziness. True vertigo is described as a rotary sensation of the patient or surroundings, and is often of vestibular origin. Vertigo may result from diseases of the inner ear or disturbances of the vestibular centres or pathways in the central nervous system (e.g., Meniere's disease, arteriosclerosis of cerebral vessels, brain lesion, head injury, motion sickness, or large and rapid variations in barometric pressure).[1] [2] Depending on the underlying cause/condition, it may be associated with nausea and vomiting, or accompanied by other symptoms and signs (e.g., headaches and visual symptoms). Most causes of vertigo are peripheral and non-life-threatening. However, those few central causes (vascular and neoplastic) are emergencies that should not be overlooked.

Related conditions

◊ Assessment of dizziness

» see our comprehensive coverage of Assessment of dizziness (https://bestpractice.bmj.com/topics/en-gb/71)

Patients may use the term dizziness to describe vertigo, pre-syncope, disequilibrium and lightheadedness (or non-specific dizziness). Dizziness is a common symptom: the prevalence in the general population ranges from 15% to 30%, and approaches 50% for patients aged over 85 years.[3] [4][5] The most common aetiologies in a primary care setting are vestibular, cardiovascular, neurological, and psychogenic.[6] These all present with vertigo symptoms.

◊ Benign paroxysmal positional vertigo

» see our comprehensive coverage of Benign paroxysmal positional vertigo (https://bestpractice.bmj.com/topics/en-gb/73)

A peripheral vestibular disorder characterised by sudden-onset, severe attacks of vertigo usually lasting <30 seconds and precipitated by specific head movements (e.g., looking up or bending down, getting up, turning the head, or rolling over to one side in bed).[7] Primary (idiopathic) benign paroxysmal positional vertigo (BPPV) has a peak incidence between 50 and 70 years of age, but can occur in any age group.[8] Diagnosis is clinical with other key diagnostic factors including episodic vertigo (repeated attacks over days, weeks, or months), absence of associated neurological or otological symptoms, normal neurological examination, and positive Dix-Hallpike manoeuvre (posterior canal BPPV) or positive supine lateral head turn (lateral canal BPPV).

◊ Meniere's disease

» see our comprehensive coverage of Meniere's disease (https://bestpractice.bmj.com/topics/en-gb/155)

Auditory and vestibular disease characterised by an episodic, sudden onset of vertigo; hearing loss and roaring tinnitus; and a sensation of pressure or discomfort in the affected ear. Vertigo lasts minutes to hours and may be associated with nausea and vomiting. Hearing loss is usually worse during acute attacks, especially in early stages of the disease. As the disease progresses, hearing loss increases in severity and may become constant. Meniere's disease (MD) is primarily a disease of adulthood, although several cases have been reported in children. Onset usually occurs in the fourth decade.[9] Risk factors for MD include positive family history, recent viral infection, and autoimmune disorders.

◊ Labyrinthitis

» see our comprehensive coverage of Labyrinthitis (https://bestpractice.bmj.com/topics/en-gb/72)

An inflammatory condition, which affects the labyrinth in the cochlea and vestibular system of the inner ear. Viral labyrinthitis is typically associated with a preceding upper respiratory tract infection. Other aetiological viral agents include varicella zoster virus, cytomegalovirus, mumps, measles, rubella, and HIV.[10] [11] Bacterial labyrinthitis is associated with acute or chronic otitis media, meningitis, and cholesteatoma. Labyrinthitis may also manifest in certain autoimmune inner ear conditions (e.g., Cogan's syndrome or Behcet's disease).[12] Patients typically present with severe room-spinning vertigo and associated nausea and vomiting. They may have unilateral hearing loss and tinnitus. Most acute episodes are short-lived and self-limited.

◊ Vestibular migraine

» see our comprehensive coverage of Vestibular migraine (https://bestpractice.bmj.com/topics/en-gb/)

A common cause of vertigo and the most common cause of spontaneous episodic vertigo.[1][13] It affects approximately 20% of patients with migraine.[14] Symptoms include spontaneous and positional vertigo, head motion vertigo/dizziness and ataxia, all of variable duration, ranging from seconds to days, and independent of migraine associated headache.[1][13] Photophobia, phonophobia, or aura may be diagnostic symptoms.[1]

◊ Vestibular neuritis

» see our comprehensive coverage of Vestibular neuritis (https://bestpractice.bmj.com/topics/en-gb/711)

Balance disorders may be caused by disorders at the level of the vestibular apparatus, cerebellum or brainstem, extrapyramidal, spinal cord, or neuromuscular system. A thorough history will indicate the most likely system to be causing the balance disorder. Balance disorders should be distinguished from syncope or pre-syncope, in which degrees of loss of consciousness occur and which are likely to be due to cardiovascular or neurovascular causes, and require urgent evaluation. The prevalence of balance problems at aged 70 years is reported to be 36% in women and 29% in men.[15]

◊ Post-traumatic vertigo

» see our comprehensive coverage of Post-traumatic vertigo (https://bestpractice.bmj.com/topics/en-gb/)

Typically, occurs as a result of blunt head trauma such as a fall, an assault, or a motor vehicle accident. Presenting symptoms may be of a traumatic perilymphatic fistula or post-traumatic Meniere's disease.[16] Patients may complain of vertigo, disequilibrium, tinnitus, pressure, headache, and diplopia. Other causes are post-surgical (middle-ear surgery, cochlear implantation) and diving.[17] [18] [19] Superior semicircular canal dehiscence should be differentiated from post-traumatic vertigo; it is characterised by episodes of vertigo associated with loud sounds and/or altered middle-ear pressure.[20]

◊ Cerebrovascular causes

» see our comprehensive coverage of Cerebrovascular causes (https://bestpractice.bmj.com/topics/en-gb/)

Dizziness is a common presenting feature in cerebrovascular events. Cerebellar stroke (due to infarction or haemorrhage) may present in a similar fashion to peripheral causes of vertigo with sudden intense vertigo, nausea, and vomiting. Nystagmus (bilateral or vertical) may suggest a central cause of the vertigo. Other neurological signs include limb ataxia and impaired gait. Patients with cerebellar stroke usually cannot stand without support, even with the eyes open, whereas a patient with acute vestibular neuritis or labyrinthitis is usually able to do so. Unlike peripheral causes, the head-impulse test is negative (no saccadic adjustment of the eyes on sudden head twisting).[21] Urgent magnetic resonance imaging should be requested in all patients with acute vertigo who have significant risk factors for a cerebellar stroke, such as hypertension, diabetes mellitus, smoking, and cardiovascular disease, since it is possible that central signs on examination may not present.

◊ Neoplastic causes

» see our comprehensive coverage of Neoplastic causes (https://bestpractice.bmj.com/topics/en-gb/)

Intracranial tumours and vestibular schwannomas may present with vertigo, as well as other symptoms such as signs of intracranial pressure (e.g., headache, altered mental status, nausea, and/or vomiting) and gait abnormality. Cranial nerve deficits may also manifest.[21] Neuroimaging with computed tomography/magnetic resonance imaging is essential.

REFERENCES

Key articles

References

1. Muncie HL, Sirmans SM, James E. Dizziness: approach to evaluation and management. Am Fam Physician. 2017 Feb 1;95(3):154-62. Full text (https://www.aafp.org/pubs/afp/issues/2017/0201/p154.html) Abstract (http://www.ncbi.nlm.nih.gov/pubmed/28145669?tool=bestpractice.bmj.com)

2. Thompson TL, Amedee R. Vertigo: a review of common peripheral and central vestibular disorders. Ochsner J. 2009 Spring;9(1):20-6. Full text (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3096243) Abstract (http://www.ncbi.nlm.nih.gov/pubmed/21603405?tool=bestpractice.bmj.com)

3. Kerber KA, Callaghan BC, Telian SA, et al. Dizziness symptom type prevalence and overlap: a US nationally representative survey. Am J Med. 2017 Dec;130(12):1465.e1-9. Full text (https://www.amjmed.com/article/S0002-9343(17)30714-3/fulltext) Abstract (http://www.ncbi.nlm.nih.gov/pubmed/28739195?tool=bestpractice.bmj.com)

4. Karatas M. Central vertigo and dizziness: epidemiology, differential diagnosis, and common causes. Neurologist. 2008 Nov;14(6):355-64. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/19008741?tool=bestpractice.bmj.com)

5. Balatsouras DG, Koukoutsis G, Fassolis A, et al. Benign paroxysmal positional vertigo in the elderly: current insights. Clin Interv Aging. 2018;13:2251-66. Full text (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6223343) Abstract (http://www.ncbi.nlm.nih.gov/pubmed/30464434?tool=bestpractice.bmj.com)

6. Bösner S, Schwarm S, Grevenrath P, et al. Prevalence, aetiologies and prognosis of the symptom dizziness in primary care - a systematic review. BMC Fam Pract. 2018 Feb 20;19(1):33. Full text (https://www.doi.org/10.1186/s12875-017-0695-0) Abstract (http://www.ncbi.nlm.nih.gov/pubmed/29458336?tool=bestpractice.bmj.com)

7. Parnes LS, Agrawal SK, Atlas J. Diagnosis and management of benign paroxysmal positional vertigo (BPPV). CMAJ. 2003 Sep 30;169(7):681-93. Full text (http://www.cmaj.ca/content/169/7/681.full) Abstract (http://www.ncbi.nlm.nih.gov/pubmed/14517129?tool=bestpractice.bmj.com)

8. Hilton MP, Pinder DK. The Epley (canalith repositioning) manoeuvre for benign paroxysmal positional vertigo. Cochrane Database Syst Rev. 2014 Dec 8;(12):CD003162. Full text (https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD003162.pub3/full) Abstract (http://www.ncbi.nlm.nih.gov/pubmed/25485940?tool=bestpractice.bmj.com)

9. da Costa SS, de Sousa LC, Piza MR. Meniere's disease: overview, epidemiology, and natural history. Otolaryngol Clin North Am. 2002 Jun;35(3):455-95. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/12486835?tool=bestpractice.bmj.com)

10. Chan YM, Adams DA, Kerr AG. Syphilitic labyrinthitis-an update. J Laryngol Otol. 1995 Aug;109(8):719-25. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/7561492?tool=bestpractice.bmj.com)

11. Davis LE, Johnsson LG. Viral infections of the inner ear: clinical, virologic, and pathologic studies in humans and animals. Am J Otolaryngol. 1983 Sep-Oct;4(5):347-62.

12. Girasoli L, Cazzador D, Padoan R, et al. Update on vertigo in autoimmune disorders, from diagnosis to treatment. J Immunol Res. 2018 Sep 26;2018:5072582. Full text (https://www.doi.org/10.1155/2018/5072582) Abstract (http://www.ncbi.nlm.nih.gov/pubmed/30356417?tool=bestpractice.bmj.com)

13. Bisdorff AR. Management of vestibular migraine. Ther Adv Neurol Disord. 2011;4:183-191. Full text (http://journals.sagepub.com/doi/pdf/10.1177/1756285611401647) Abstract (http://www.ncbi.nlm.nih.gov/pubmed/21694818?tool=bestpractice.bmj.com)

14. Vuković V, Plavec D, Galinović I, et al. Prevalence of vertigo, dizziness, and migrainous vertigo in patients with migraine. Headache. 2007 Nov-Dec;47(10):1427-35. Full text (https://headachejournal.onlinelibrary.wiley.com/doi/10.1111/j.1526-4610.2007.00939.x) Abstract (http://www.ncbi.nlm.nih.gov/pubmed/18052952?tool=bestpractice.bmj.com)

15. Jönsson R, Sixt E, Landahl S, et al. Prevalence of dizziness and vertigo in an urban elderly population. J Vestib Res. 2004;14(1):47-52. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/15156096?tool=bestpractice.bmj.com)

16. Marzo SJ, Leonetti JP, Raffin MJ, et al. Diagnosis and management of post-traumatic vertigo. Laryngoscope. 2004;114:1720-1723. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/15454760?tool=bestpractice.bmj.com)

17. Albera R, Canale A, Lacilla M, et al. Delayed vertigo after stapes surgery. Laryngoscope. 2004;114:860-862. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/15126744?tool=bestpractice.bmj.com)

18. Fina M, Skinner M, Goebel JA, et al. Vestibular dysfunction after cochlear implantation. Otol Neurotol. 2003;24:234-242. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/12621338?tool=bestpractice.bmj.com)

19. Al Felasi M, Pierre G, Mondain M, et al. Perilymphatic fistula of the round window. Eur Ann Otorhinolaryngol Head Neck Dis. 2011;128:139-141. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/21288793?tool=bestpractice.bmj.com)

20. Banerjee A, Whyte A, Altas MD. Superior canal dehiscence: review of a new condition. Clin Otolaryngol. 2005;30:9-15. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/15748182?tool=bestpractice.bmj.com)

21. Baloh RW. Differentiating between peripheral and central causes of vertigo. Otolaryngol Head Neck Surg. 1998;119:55-59. Abstract (http://www.ncbi.nlm.nih.gov/pubmed/9674515?tool=bestpractice.bmj.com)

Disclaimer

BMJ Best Practice is intended for licensed medical professionals. BMJ Publishing Group Ltd (BMJ) does not advocate or endorse the use of any drug or therapy contained within this publication nor does it diagnose patients. As a medical professional you retain full responsibility for the care and treatment of your patients and you should use your own clinical judgement and expertise when using this product.

This content is not intended to cover all possible diagnosis methods, treatments, follow up, drugs and any contraindications or side effects. In addition, since such standards and practices in medicine change as new data become available, you should consult a variety of sources. We strongly recommend that you independently verify specified diagnosis, treatments and follow-up and ensure it is appropriate for your patient within your region. In addition, with respect to prescription medication, you are advised to check the product information sheet accompanying each drug to verify conditions of use and identify any changes in dosage schedule or contraindications, particularly if the drug to be administered is new, infrequently used, or has a narrow therapeutic range. You must always check that drugs referenced are licensed for the specified use and at the specified doses in your region.

Information included in BMJ Best Practice is provided on an “as is” basis without any representations, conditions or warranties that it is accurate and up to date. BMJ and its licensors and licensees assume no responsibility for any aspect of treatment administered to any patients with the aid of this information. To the fullest extent permitted by law, BMJ and its licensors and licensees shall not incur any liability, including without limitation, liability for damages, arising from the content. All conditions, warranties and other terms which might otherwise be implied by the law including, without limitation, the warranties of satisfactory quality, fitness for a particular purpose, use of reasonable care and skill and non-infringement of proprietary rights are excluded.

Where BMJ Best Practice has been translated into a language other than English, BMJ does not warrant the accuracy and reliability of the translations or the content provided by third parties (including but not limited to local regulations, clinical guidelines, terminology, drug names and drug dosages). BMJ is not responsible for any errors and omissions arising from translation and adaptation or otherwise.Where BMJ Best Practice lists drug names, it does so by recommended International Nonproprietary Names (rINNs) only. It is possible that certain drug formularies might refer to the same drugs using different names.

Please note that recommended formulations and doses may differ between drug databases drug names and brands, drug formularies, or locations. A local drug formulary should always be consulted for full prescribing information.

Treatment recommendations in BMJ Best Practice are specific to patient groups. Care is advised when selecting the integrated drug formulary as some treatment recommendations are for adults only, and external links to a paediatric formulary do not necessarily advocate use in children (and vice-versa). Always check that you have selected the correct drug formulary for your patient.

Where your version of BMJ Best Practice does not integrate with a local drug formulary, you should consult a local pharmaceutical database for comprehensive drug information including contraindications, drug interactions, and alternative dosing before prescribing.

Interpretation of numbers

Regardless of the language in which the content is displayed, numerals are displayed according to the original English-language numerical separator standard. For example 4 digit numbers shall not include a comma nor a decimal point; numbers of 5 or more digits shall include commas; and numbers stated to be less than 1 shall be depicted using decimal points. See Figure 1 below for an explanatory table.

BMJ accepts no responsibility for misinterpretation of numbers which comply with this stated numerical separator standard.

This approach is in line with the guidance of the International Bureau of Weights and Measures Service. https://www.bipm.org/en/about-us/

Figure 1 – BMJ Best Practice Numeral Style

5-digit numerals: 10,000

4-digit numerals: 1000

numerals < 1: 0.25

Our full website and application terms and conditions can be found here: Website Terms and Conditions. http://www.bmj.com/company/legal-information/

Contact us

+ 44 (0) 207 111 1105
support@bmj.com

BMJ
BMA House
Tavistock Square
London
WC1H 9JR
UK

BMJ Best Practice

Contributors:

// Authors:

Editorial Team,

BMJ Publishing Group
DISCLOSURES: This overview has been compiled using the information in existing sub-topics.