

## Vertigo-diagnosis and management in the primary care

Daljit Singh Sura and Stephen Newell

### General Information

1. Vertigo is the hallucination of movement of the environment around the patient, or of the patient with respect to the environment<sup>1</sup>. It is not a fear of heights.
2. Vertigo is not necessarily the same as dizziness
3. Dizziness is a non-specific term which can be categorised into four different subtypes according to symptoms described by the patients:
  - a. Vertigo
  - b. Presyncope: the sense of impending faint, caused by a reduced total cerebral perfusion
  - c. Light-headedness: often described as giddiness or wooziness<sup>2</sup>
  - d. Disequilibrium: a feeling of unsteadiness or imbalance when standing<sup>2</sup>

### Classification

Vertigo may be classified as:

1. Central - due to a brainstem or cerebellar disorder
2. Peripheral - due to disorders of the inner ear or the Vestibulocochlear (VIIIth) cranial nerve

### Incidence/Prevalence:

Most patients who complain about dizziness do not have true vertigo:

1. 5 community based studies into dizziness indicated that around 30% of patients were found to have vertigo, rising to 56.4% in an older population<sup>3</sup>
2. A postal questionnaire study which examined 2064 patients, aged 18-65, 7% described true vertigo in the previous year<sup>3</sup>
3. A full time GP can therefore expect between 10-20 patients with vertigo in one year<sup>3</sup>
4. 93% of primary care patients with vertigo have either benign paroxysmal positional vertigo (BPPV), acute vestibular neuronitis, or Ménière's disease<sup>4</sup>. These conditions are highlighted in Table 2

### Causes

A wide range of conditions can cause vertigo, and identifying whether deafness or CNS signs are present, can help narrow the differential diagnosis, as shown in Table 1.

### Symptoms

1. Vertigo may be due to central lesions or peripheral lesions. Vertigo may also be psychogenic or occur in conditions which limit neck movement, such as vertigo caused by cervical spondylosis, or following a "whiplash" flexion-extension injury.
2. It is essential to determine whether the patient has a peripheral or central cause of vertigo<sup>1</sup>.

**Table 1 Causes of vertigo**

Vertigo with deafness	Vertigo without deafness	Vertigo with intracranial signs
Ménière's disease	Vestibular neuronitis	Cerebellopontine angle tumour
Labyrinthitis	Benign positional vertigo	Cerebrovascular disease : TIA / CVA
Labyrinthine trauma	Acute vestibular dysfunction	Vertebro-basilar insufficiency and thromboembolism: - lateral medullary syndrome - subclavian steal syndrome - basilar migraine
Acoustic neuroma	Medication induced vertigo e.g. aminoglycosides	Brain tumour: - e.g. ependymoma or metastasis in the fourth ventricle
Acute cochleo-vestibular dysfunction	Cervical spondylosis	Migraine
Syphilis (rare)	Following flexion-extension injury	Multiple sclerosis
		Aura of epileptic attack – especially temporal lobe epilepsy
		Drugs – e.g. phenytoin, barbiturates
		Syngobulbia

3. Information obtained from the history that can be used to make this distinction includes<sup>1</sup>:
  - a. The timing and duration of the vertigo
  - b. Provoking or exacerbating factors
  - c. Associated symptoms such as
    - i. Pain
    - ii. Nausea
    - iii. Neurological symptoms
    - iv. Hearing loss
4. Central vertigo:
  - a. The vertigo usually develops gradually
  - b. Except in: an acute central vertigo is probably vascular in origin, e.g. CVA
  - c. Central lesions usually cause neurological signs in addition to the vertigo
  - d. Auditory features tend to be uncommon.
  - e. Causes severe imbalance
  - f. Nystagmus is purely vertical, horizontal, or torsional and is not inhibited by fixation of eyes onto an object
5. The duration of vertigo episodes and associated auditory symptoms will help to narrow the differential diagnosis<sup>5</sup>. This is illustrated for various pathologies that cause vertigo, in Table 2

Pathology	Duration Of Episode	Associated Auditory Symptoms	Peripheral or Central Origin
Benign Paroxysmal Positional Vertigo	Seconds	No	Peripheral
Vestibular Neuronitis	Days	No	Peripheral
Ménière's Disease	Hours	Yes	Peripheral
Perilymphatic Fistula	Seconds	Yes	Peripheral
Transient Ischemic Attack	Seconds / Hours	No	Central
Vertiginous Migraine	Hours	No	Central
Labyrinthitis	Days	Yes	Peripheral
Stroke	Days	No	Central
Acoustic Neuroma	Months	Yes	Peripheral
Cerebellar Tumour	Months	No	Central
Multiple Sclerosis	Months	No	Central

6. It is important to differentiate vertigo from non-rotatory dizziness (presyncope, disequilibrium, light-headedness). Patients can be asked whether they "felt light headed or felt as if the world was spinning around" during a dizzy spell <sup>3</sup>.
7. Important points in the history:
  - a. Onset - specific provoking events such as flying or trauma
  - b. Duration:
    - i. Seconds - Benign positional vertigo
    - ii. Hours - Ménière's Disease
    - iii. Weeks - Labyrinthitis, Post-head trauma, Vestibular neuronitis
    - iv. Years - may be psychogenic
  - c. Associated auditory symptoms - rare in primary CNS lesion
  - d. Other associated symptoms
    - i. Nausea and vomiting in a vestibular cause
    - ii. Neurological symptoms such as visual disturbance, dysarthria in a central lesion

#### Physical/signs

1. Examination of ear drums (Otoscopy/ Pneumatic otoscopy) for:
  - a. Vesicles (Ramsay Hunt syndrome)
  - b. Cholesteatoma
2. Tuning fork tests for hearing loss – Rinne/Weber tests
3. Cranial nerve examination. Cranial nerves should be examined for signs of:
  - a. Nerve palsies
  - b. Sensorineural hearing loss
  - c. Nystagmus <sup>3</sup>
4. Hennebert's sign <sup>1</sup>
  - a. Vertigo or nystagmus caused by pushing on the tragus and external auditory meatus of the affected side
  - b. Indicates the presence of a perilymphatic fistula.
5. Gait tests:
  - a. Romberg's sign (not particularly useful in the diagnosis of vertigo <sup>1</sup>)
  - b. Heel-to- toe walking test
  - c. Unterberger's stepping test <sup>1</sup> (The patient is asked to walk on the spot with their eyes closed – if the patient rotates to one side they have labyrinth lesion on that side)
6. Dix-Hallpike manoeuvre <sup>1</sup>
  - a. The most helpful test to perform on patients with vertigo <sup>1</sup>
  - b. If rotational nystagmus occurs then the test is considered positive for BPPV. During a positive test, the fast phase of the rotatory nystagmus is toward the affected ear, which is the ear closest to the ground.

7. Head impulse test/head thrust test
  - a. Useful in recognizing acute vestibulopathy <sup>6</sup>
8. Caloric tests
  - a. Cold or warm water or air is irrigated into the external auditory canal
  - b. Not commonly used

#### Investigations/Testing to consider:

1. Special auditory tests
  - a. Audiometry helps establish the diagnosis of Ménière's disease
2. The history is most important and may give a quite good indication of the cause of vertigo. General medical causes such as anaemia, hypotension and hypoglycaemia may present with dizziness, and therefore should be investigated.
3. If features of CNS causes is suspected from the history or examination:
  - a. CT/MRI Brain imaging as appropriate

#### Treatment

1. Treatment should ideally aim at the cause of the vertigo <sup>7</sup>:
  - a. Medical management – as described below.
  - b. Vestibular rehabilitation exercises – e.g. Cawthorne-Cooksey exercises <sup>5</sup>.
    - i. These exercises aim to help the patient return to normal activity more quickly.
    - ii. Moving the eyes from side to side and up and down while in bed or sitting down - then moving the head, first with your eyes open and then closed
    - iii. Other forms use gaze and gait stabilising exercises. Most exercises involve head movement
2. For most patients the main priority is effective control of the symptoms.
  - a. For acute attacks, treatments include <sup>5,8</sup>: -
    - i. Betahistine hydrochloride 8-16mg upto TDS
    - ii. Cinnarizine, 15-30 mg TDS or
    - iii. Prochlorperazine should be reserved for rapid relieve of acute symptoms only <sup>8,12</sup> - tablets 5-10 mg or buccal 3mg TDS or injection 12.5 mg IM or 25mg PR suppository - if vomiting
  - b. Preventive measures for recurrent attacks include:
    - i. Restrict salt and fluid intake - stop smoking and restrict excess coffee or alcohol <sup>9,10</sup>
    - ii. Betahistine hydrochloride 16mg regularly TDS seems most effective in Ménière's
    - iii. Cinnarizine 15-30 mg TDS
3. Points to consider
  - i. Warn patients when drugs may sedate <sup>10</sup>.
  - ii. Prochlorperazine is less sedating than some other recommended antihistamines, but may cause a dystonic reaction (particularly in children and young women) <sup>11</sup>.
  - iii. Benzodiazepines are not recommended <sup>9</sup>.
4. Recurrent vertigo
  - i. The most important first step in the management of recurrent vertigo is to distinguish vertigo from 'dizziness'.
  - ii. In attacks of vertigo there is a sense of mobile disequilibrium ("the room spinning") which, if severe, results in uncontrolled staggering in one direction which may be only prevented by grabbing a solid object<sup>10</sup>.
5. Epley's manoeuvre
  - a. Aims to remove debris from the semicircular canals and deposit it in the utricle where hair cells are not stimulated <sup>1</sup>
  - b. Contraindications include <sup>10</sup>:
    - i. Severe carotid stenosis
    - ii. Unstable heart disease
    - iii. Severe neck disease (cervical spondylosis with myelopathy)

- iv. Advanced rheumatoid arthritis

**Consultation and referral:**

1. Refer to secondary care if <sup>10</sup>:
  - i. Recurrent separate episodes
  - ii. Neurological symptoms e.g. dysphasia, paraesthesiae or weakness
  - iii. Associated sensorineural deafness
  - iv. If there is an inadequate visualisation of the entire tympanic membrane or an abnormality (e.g. cholesteatoma)
  - v. Atypical nystagmus e.g. non-horizontal, persisting for weeks, changing in direction or differing in each eye
  - vi. Positive fistula sign: pressure on the tragus reproducing symptoms (suggests endolymphatic fistula)
2. If the patient has hearing problems in addition to vertigo then referral should be made to an ENT specialist. Other cases should be referred to a neurologist <sup>10</sup>.
3. While awaiting referral:
  - i. Consider symptomatic drug treatment for no longer than 1 week because prolonged use may delay vestibular compensation
  - ii. It is important that the person stops symptomatic treatment 48 hours before seeing a specialist, as it will interfere with diagnostic tests such as the Dix-Hallpike manoeuvre.
  - iii. If the person's symptoms deteriorate, seek specialist advice.

**When to consider hospitalization**

1. Admit the patient to hospital if they have severe nausea and vomiting, and are unable to tolerate oral fluids <sup>9</sup>.
2. Admit or urgently refer the person to a neurologist if they have:
  - a. Very sudden onset of vertigo (within seconds) that persists.
  - b. Acute vertigo associated with neurological symptoms or signs (e.g. new type of headache - especially occipital, gait disturbance, truncal ataxia, numbness, dysarthria, weakness) which may suggest CVA, TIA, or multiple sclerosis <sup>9</sup>.
3. Admit or refer the person as an emergency to an ENT specialist if they have acute deafness without other typical features of Ménière's disease (tinnitus and a sensation of fullness in the ear). Sudden onset unilateral deafness would suggest acute ischaemia of the labyrinth or brainstem, but can also occur with infection or inflammation.
  - a. Emergency treatment may restore hearing. The person should be seen within 12 hours of the onset of symptoms <sup>9</sup>

4. The urgency of referral depends on the severity of symptoms (e.g. requirement for intravenous fluids because of excessive vomiting) and the suspected diagnosis <sup>9</sup>.

**Patient Information**

The Ménière's Society [www.menieres.org.uk](http://www.menieres.org.uk)  
[www.patient.co.uk/doctor/Vertigo.htm](http://www.patient.co.uk/doctor/Vertigo.htm)

**Competing Interests**

None declared

**Author Details**

Daljit Singh Sura, GP ST3 Registrar, North Street Medical Care, RM1 4QJ, UK  
 Stephen Newell, General Practitioner, North Street Medical Care, RM1 4QJ, UK  
 CORRESPONDENCE: Dr Daljit Singh Sura, GP ST3 Registrar, North Street Medical Care, RM1 4QJ, UK  
 Email: [daljit.singhsura@nhs.net](mailto:daljit.singhsura@nhs.net)

**REFERENCES**

1. Ronald H. Labuguen. Initial Evaluation of Vertigo. *Am Fam Physician* 2006;73:244-51, 254
2. Kuo CH, Pang L, Chang R. Vertigo - part 1 - assessment in general practice. *Aust Fam Physician.* 2008;37(5):341-7
3. Barraclough K, Bronstein A. Vertigo. *BMJ.* 2009;339:b3493
4. Hanley K, O'Dowd T, Considine N. A systematic review of vertigo in primary care. *Br J Gen Pract.* 2001;51(469):666-71
5. Randy Swartz. Treatment of vertigo. *Am Fam Physician* 2005;71:1115-22, 1129-30
6. Information from your family doctor. Vertigo-A Type of Dizziness. *Am Fam Physician* 2005;71: 6
7. Hanley, K. and O'Dowd, T. (2002) Symptoms of vertigo in general practice: a prospective study of diagnosis. *British Journal of General Practice* 52(483), 809-812.
8. British National Formulary
9. NHS Clinical Knowledge Summaries
10. GP Practice Notebook
11. Swartz R. Treatment of vertigo. *Am Fam Physician* 2005;71:1115-22, 1129-30
12. Hamid M. Medical management of common peripheral vestibular diseases. *Curr Opin Otolaryngol Head Neck Surg.* 2010 Oct;18(5):407-12.