Assessment of the dizzy patient

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BACKGROUND Dizziness is a very common complaint in the community, especially among the elderly. The lack of objective measures of the condition can create difficulties in diagnosis and management.

OBJECTIVE This article aims to provide a framework for the assessment of the patient presenting with dizziness. The framework will provide a systematic means of obtaining a diagnosis and formulating a management plan.

DISCUSSION Despite the high prevalence of dizziness in the community many patients continue to have symptoms that are inadequately controlled. A systematic approach in the assessment of these patients, in particular a thorough history and examination will often provide a clear direction as to the diagnosis and most appropriate management.

Dizziness is a nonspecific symptom that describes a subjective sensation that is virtually impossible to objectively measure. Dizziness affects 50% of elderly patients and is the commonest cause of complaint in patients over 75 years of age.[1] In one United Kingdom (UK) study, 2% of all consultations were for dizziness.[2] Further UK studies show a lifetime prevalence of 25% of the population.[3] A study of outcomes, again in the UK general practice setting found that 1-5 people experienced recurrent and frequent dizziness, 15% were substantially disabled by their symptoms and 29% were more handicapped 18 months later.[4] The authors concluded that despite the widespread prevalence of dizziness in the community the symptom remains poorly treated. Common causes of dizziness are listed in Table 1.[5]

Initial assessment

When carrying out an initial assessment try to divide the symptoms into:

- inner ear disorder or peripheral vestibular
- brain disorder (brainstem or vestibulocerebellum) or central vestibular
- both
- neither.

The first three are considered vestibular disorders and the last a nonvestibular disorder which direct the physician toward other areas for investigation such as cardiovascular, drugs and metabolic causes.

Description of symptoms

The first principle in history taking is to find out what the patient means by the term dizziness. This is best done with an open ended question such as: 'Can you describe this dizziness?' It is important to check if the dizziness is getting worse, staying the same or improving.

Vestibular disorders (inner ear and/or brain) almost always present with the patient perceiving a sense of movement or motion. The medical term we use for this is vertigo. Patients will use terms such as: I felt drunk, falling or tilting to one side, a feeling of imbalance. It is important to note that the patient actually perceives a sensation of abnormal rotation of the head, rather than the sensation of the external environment spinning.

An important subset of vertigo involves persistent vestibular symptoms without a specific diagnosis, which is sometimes termed aural vertigo. It is a milder version of acute vertigo that occurs when the acute attack has often worn off. This is best described by patients as: 'Not feeling quite right' or 'I don't feel well and I cannot put it into words'. These nonspecific vestibular symptoms are common and can last for several weeks especially in conditions like Meniere's disease. They cause a great deal of anxiety in the patient; commonly

because there are no objective signs and all tests are normal. However, understanding and explaining the concept to the patient is often all that is necessary to provide reassurance and patient satisfaction.

Vertigo, by definition, implies a neural dysfunction of the inner ear, brain stem, or the vestibulocerebellum referred to as a vestibular disorder (VD). The patient with dizziness of functional or psychogenic origin is more likely to describe an internal spinning within the head, rather than the sensation of the external environment moving.

Patients with nonvestibular disorders (NVD) usually describe dizziness with terms such as: light headed, floating, weakness, wobbly, giddy, woozy, sinking feeling or some other term to describe a lack of blood flow to the brain. This decreased cerebral perfusion can be mediated by decreased cardiac output (eg. valvular heart disease, cardiac arrhythmia), volume depletion (eg. gastrointestinal haemorrhage, anaemia), orthostatic hypotension (can be drug induced such as with antihypertensives and some antidepressants), structural blockage of arterial flow to the brain, or a metabolic cause.[1]

A vague spinning sensation without true vertigo most likely indicates a nonvestibular disorder. The sensation that one has left one's body is characteristic of psychogenic dizziness.[1] Duration of the vertigo can also provide an indicator as to the diagnosis as shown in Table 2.

Table 1. Common causes of dizziness[5]

Benign positional vertigo	16.0%
Labrynthitis	9.0%
Meniere's disease	5.0%
Cerebrovascular disease	6.0%
Stroke	2.9%
TIA	2.6%
Acoustic neuromas	0.7%
Central vestibular causes (multiple sclerosis, migraine, epilepsy)	1.2%
presyncope (arrhythmia orthostatic hypotension)	6.0%
Psychiatric	16.0%
Metabolic infections	16.0%
Medications	5.9%
Unknown	13.0%

Table 2. Duration of vertigo as a diagnostic indicator

Common patterns

Seconds	—	benign positional vertigo
Minutes	—	cerebrovascular ischaemia
Hours	—	Meniere's disease
Days	—	viral labyrinthitis

Influencing circumstances

A history of positional changes causing symptoms versus postural changes causing symptoms can help define the cause as being vestibular or nonvestibular:

- positional changes triggering symptoms usually indicate a VD such as benign paroxysmal positional vertigo however, NVD such as anaemia or hypotension can mimic this. A reluctance to bend over often indicates a VD
- loud noise exacerbates VD
- if symptoms worsen with Valsalva - VD
- if symptoms exacerbated with exercise - usually NVD.

Secondary symptoms

The presence of other symptoms such as altered mental state, headache, hearing loss, tinnitus, nausea and vomiting, visual disturbances, focal motor/sensory deficit and ataxia along with vertigo whether VD or NVD may indicate medical or surgical conditions that require treatment. Altered mental state in the setting of NVD may be due to drug toxicity, cardiac arrythmias, and metabolic disorders. Severe anaemia or hypotension in VD indicates a life threatening emergency such as cerebellar haemorrhage or infarction. Headache associated with dizziness regardless of whether VD or NVD, could be meningitis, intracranial haemorrhage, aneurysm, migraine or febrile illness. Hearing loss is usually labyrinthine in origin. If vertigo is associated with hearing loss it is necessary to define which ear is affected, and whether the vertigo is continuous or pulsatile. Figure 1 shows a schematic representation of common patterns: acute, chronic, paroxysmal, or sudden and persistent.

Predisposing factors

History should also include the inquiry about conditions such as hypertension, diabetes, epilepsy, sepsis, hypercholesterolaemia, and obesity that may have a role in causing vertigo, usually NVD. Other factors that can cause or influence the pres-

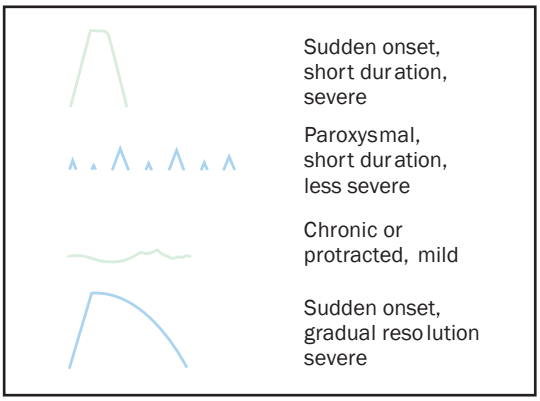

Figure 1. Common patterns

ence of vertigo include:

- trauma - temporal bone fracture damaging the labyrinth, whiplash injury, closed head injury
- history of chronic ear infections with the possible presence of a cholesteatoma or otosclerosis
- drugs - illicit, prescribed, over-the-counter
- infections - HIV, syphilis and other central nervous system diseases.

A thorough history will usually enable the patient to be placed in to one of the four categories mentioned above. It is important to remember that common things occur commonly. In most patients we would expect to see benign positional vertigo rather than a dissecting aneurysm of the aorta.

Physical examination

Following the history, a focussed physical examination should be performed. In patients suspected of having a VD, emphasis is placed on the eyes, ears and neurological examination. In patients with a likely NVD, emphasis should be placed on metabolic or cardiac systems. Examination should include the following:

- blood pressure lying and standing
- temperature
- heart rate, respiratory rate
- mental state
- head and neck - musculoskeletal
- cardiac auscultation for valve problems
- rectal examination for melaena
- cranial nerves, especially nystagmus
- clinical tests of hearing
- cerebellar tests
- audiological testing.

Special tests

Dix-Hallpike manoeuvre is clinically useful for the diagnosis of benign paroxysmal positional vertigo

(BPPV) (Figure 2). Lie the sitting patient down with the head to one side. If positive for BPPV this produces acute vertigo with rotary nystagmus, which has a latent period and is fatigable.

Laboratory tests

The principle is directed tests such as full blood examination, serum glucose, thyroid function tests, drug levels, VDRL and illicit drug screening. Electrocardiogram or Holter monitor may be appropriate. These more often provide the answer for the cause of NVD cases.

Imaging

Magnetic resonance imaging (MRI) or CT scan with contrast may be appropriate depending on findings. One of the main difficulties when approaching the problem of dizziness is that, due to multiple causes, it is impossible to devise an algorithmic approach, which directs the doctor down a pathway of ordering laboratory tests or X-rays.

As Walker and Barnes[1] have stated: 'It is an example of using the art of medicine rather than the science'. This helps explain why young graduates with little experience have such anxiety when faced with the patient who says: 'I'm dizzy'.

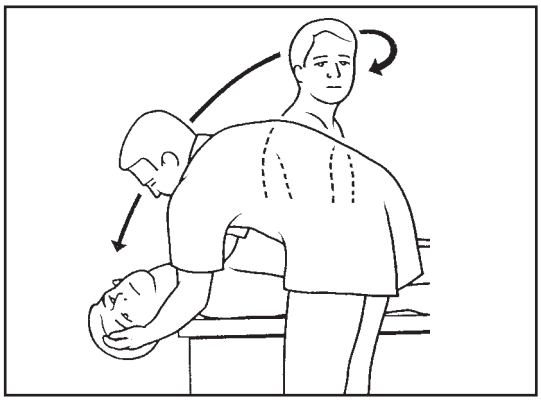

Figure 2. Dix-Hallpike manoeuvre

Diagnosis

Causes for dizziness can be classified simply into vestibular or nonvestibular disorders. In addition VDs can be thought of in two subgroups: peripheral or central causes.

- Peripheral vestibular disorders commonly have symptoms such as vertigo and vomiting, which for the sufferer, can be very disabling but are not life threatening, eg. benign positional vertigo, labrynthitis, Meniere's disease, acoustic

Figure 3. Cawthorne-Cooksey exercises

IN BED	1. Eye movements - at first slowly, then quickly
	a. up and down
	b. from side to side
	c. focussing on finger moving from 3-1 feet away from face
	2. Head movements - at first slowly, then quickly, later with eyes closed
	a. bending forwards and backwards
	b. turning from side to side
SITTING	3. 1 and 2 as above
	4. Shoulder shrugging and circling of arms
	5. Bending forward and picking up objects from the ground
STANDING	6. 1a, 2, 3 and 4 as above
	7. Changing from sitting to standing position with eyes open and shut
	8. Throwing a small ball from hand to hand (above eye level)
	9. Throwing ball from hand to hand under knee
	10. Change from sitting to standing and turning around in between
MOVING ABOUT	11. Circle around centre person who will throw a ball back and forth
	12. Walk across room with eyes open and then closed
	13. Walk up and down slope with eyes open and then closed
	14. Walk up and down steps with eyes open and then closed
	15. Any game involving stooping or stretching and aiming such as skittles, bowls or basketball

neuroma and motion sickness. A very rare cause but one that is always mentioned in articles is a perilymphatic fistula.

- Central vestibular disorders may be more insidious in onset with milder symptoms. Causes include progressive central nervous system problems such as upper and lower brain stem lesions, basilar artery migraines, vertebrobasilar ischaemia or stroke, multiple sclerosis, acute cerebella lesions, cerebellopontine tumours and damage to the vestibular portion of the eighth cranial nerve. Epilepsy is a rare cause. Although less common than peripheral vestibular disorders the clinical diagnosis is often more crucial.
- The physical sign of nystagmus in peripheral vestibular disorders is usually horizontal and often has a rotary component. The duration of the nystagmus is only minutes to weeks.
- Nystagmus associated with central vestibular disorders can occur in any direction and dissociation of movements between the eyes is possible. There is no relation between the direction of the nystagmus and the location of the lesion. Vertical nystagmus is always central in location. Central nystagmus may be present for years. A useful indicator of central type nystagmus is that the patient is often able to visually suppress the nystagmus by fixation.

When to refer to a specialist

Red flag signs that would indicate the need for referral to an ear nose and throat surgeon or a neurologist include:

- serious vertigo which is disabling, or ataxia out of proportion to vertigo
- vertigo lasting longer than four weeks
- vestibular disorders, whether or not accompanied by vertigo
- changes in hearing performance
- pure vertical or downbeat nystagmus or other abnormal eye movements such as gaze palsy or vertical misalignment of the eyes
- disorders of the central nervous system, eg. focal neurological signs.

Treatment

Initial treatment involves the identification and management of the underlying cause. Commonly vertigo is the result of a peripheral vestibular disorder. In such cases management is aimed at

alleviating the symptoms. Occasionally this involves hospitalisation and administration of intravenous fluids and antiemetics but more often this can be done in the home.

Forms of treatment

Pharmacotherapy

The most commonly used medications in Australia are stemetil, betahistine dihydrochloride (Serc), diazepam, and intramuscular promethazine.[6] Betahistine dihydrochloride (Serc) is a histamine analogue that acts as an h3 antagonist which can be very useful for the long term treatment of vertigo. Diazepam is very useful for the short term treatment of a severe attack. Stemetil is for short term use only, either intramuscularly or orally. Unfortunately many elderly patients remain on long term stemetil inappropriately, risking parkinsonion side effects.

Adaptation exercises and vestibular physiotherapy

The principle of adaptation, such as Cawthorne-Cooksey exercises (Figure 3) consist of getting the patient accustomed to their dizziness through exercises, in the same way people become used to motion in ships avoiding seasickness. These exercises are especially useful for BPPV and can be taught by the physician or physiotherapist with an interest in vertigo.

Surgery

Surgery is sometimes necessary in severe cases where conservative treatment has failed and usually involves severing the vestibular nerve or destroying the inner ear. However, new less invasive techniques are now being developed (see John Tonkin's article: New treatment for Meniere's disease in this issue of AFP).

Conclusion

Dizziness is one of the most common presenting complaints in general practice. Due to the myriad possible differential diagnoses, it can be a heartsink symptom for the inexperienced doctor. However, a simple thorough history and examination will point to the diagnoses in most cases. Remember to beware the prolonged or severe attack (in the elderly with no previous history) as these groups will often have a neurological cause needing specialist management.

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