

**Chih-Hung Kuo**

BSc(Med), MBBS, is an intern, Royal Prince Alfred Hospital, Sydney, New South Wales. ckuo@unswalumni.com

**Leo Pang**

BSc(Med), MBBS, is an advanced trainee in ENT, Liverpool Hospital, Sydney, New South Wales.

**Robert Chang**

FRCS(Edin), DLO(Lond), is Head, ENT Department, Liverpool Hospital, Sydney, New South Wales.

# Vertigo

## Part 2 – management in general practice

### Background

Vertigo is a common clinical problem managed by general practitioners.

### Objective

This article focuses on the acute management of a vertigo attack, specific management of conditions causing vertigo, and the long term management issues associated with chronic vertigo.

### Discussion

Supportive treatment, antiemetic and vestibular blocking agents help relieve an acute vertigo attack, however the prolonged use of such medications is not recommended. Specific treatments for various conditions causing vertigo are available, however, the majority of patients are managed symptomatically. The patient's ability to drive safely should be carefully assessed according to Austroads guidelines and advice from an ear, nose and throat surgeon should be sought when in doubt. There is evidence to support the efficacy of vestibular rehabilitation programs for unilateral peripheral vestibular disorder and these programs should be considered. A simple program including patient education and home based exercises can be sufficient.

■ **The majority (91%) of individuals suffering from vertigo are managed by their general practitioner.<sup>1</sup> Part 1 of this article discussed assessment of vertigo in general practice (AFP May 2008). This article discusses the management of vertigo in general practice.**

### Management of an acute vertigo attack

An acute and severe episode of vertigo, regardless of the underlying cause, will usually settle by itself within 24–48 hours due to the effect of brainstem compensation. During the acute phase, supportive measures, bed rest, antiemetics and vestibular blocking agents can be used to provide symptomatic relief (*Table 1*). Clinical use of vestibular blocking agents is based on animal experiment models and there are no randomised control trials to support their efficacy.<sup>2</sup> As there is no single effective medication for vertigo, a combination of an antihistamine (eg. promethazine) and an antiemetic is commonly used. There is evidence to show that use of vestibular blocking agents can delay the compensatory mechanism of brainstem and prolong the symptoms of vertigo.<sup>2–4</sup> In addition, these medications carry risks of side effects. Therefore, prolonged use of symptomatic medications for acute vertigo is best avoided, especially if a specific treatable cause is identified.

### Management of vertigo with specific causes

#### Benign paroxysmal positional vertigo

Benign paroxysmal positional vertigo (BPPV) is the most common underlying cause of vertigo.<sup>1</sup> The pathophysiology of BPPV is the lodgement of a 'canalith' inside the posterior semicircular canal. A canalith is made up of small crystals of calcium carbonate that have detached from the utricle in the vestibule of the inner ear. Movement of the canalith activates vestibular hair cells to create an overall asymmetrical vestibular input. Patients usually experience a brief but intense vertigo when they turn in bed at night or change their head position. The most important clinical test to perform is the Dix-Hallpike manoeuvre (see *Part 1 – AFP May*). A positive Dix-Hallpike manoeuvre serves three purposes: to confirm the diagnosis, to

Table 1. Pharmacological treatments for acute symptomatic relief of vertigo<sup>2-4</sup>

Vestibular blocking agents		Dosage
Antihistamines	Promethazine	12.5–25.0 mg orally, IM or rectally every 4–12 hours
	Betahistine*	4–16 mg 8 hourly per day
Benzodiazepines	Diazepam	2–10 mg orally or IV every 4–8 hours
	Lorazepam	0.5–2.0 mg orally, IM or IV every 4–8 hours
Antiemetics	Prochlorperazine	5–10 mg orally or IM every 6–8 hours or 25 mg rectally every 12 hours
	Metoclopramide	10–20 mg orally every 6 hours or 10–20 mg by slow IV every 6–8 hours

\* Betahistine also selectively increase the blood flow to the inner ear<sup>4</sup>

localise the affected side, and to demonstrate canalith mobility. The success rate of therapies with the Epley manoeuvre, discussed below, will depend on the mobility of the canalith.

A recent Cochrane review has concluded that the Epley or canalith repositioning manoeuvre is a safe and effective way to treat BPPV.<sup>5</sup> It has a single treatment success rate of at least 50 and up to 90%,<sup>6-8</sup> and the success rate approaches 100% with repeated manoeuvres over time.<sup>9</sup> A short video demonstrating the Epley manoeuvre can be viewed at the Australian Prescriber website (see *Resources*). Note that the patient should remain in the Dix-Hallpike supine position until the induced nystagmus or the sensation of spinning stops before proceeding to the next part of the Epley manoeuvre.

Explanation of the procedure before the manoeuvre takes place and appropriate reassurance are important to minimise patient discomfort and anxiety. It is recommended that patients be educated in how to perform the program at home, either a modified Epley manoeuvre, Brandt-Daroff exercises (see *Patient education*) or the Semont manoeuvre (see *Resources*). Two small trials have shown that a modified Epley manoeuvre performed at home is the most effective among the three exercises, with up to 95% response rate 1 week post-treatment.<sup>10,11</sup> In particular, if the side of labyrinth affected can be clearly identified, the modified Epley manoeuvre is the treatment of choice. A large, long term, phase 3 randomised control study comparing the Epley manoeuvre, Semont manoeuvre, Brandt-Daroff exercises, and nonspecific vestibular habituation exercises is currently underway in the United States and should elucidate the best treatment option for this common condition.

### Acute peripheral vestibulopathy

Vestibular neuritis and labyrinthitis are sometimes used interchangeably but are two separate conditions. Vestibular

neuritis describes an inflammation of the vestibular nerve which results in severe vertigo that usually lasts for days, whereas in labyrinthitis hearing loss is an additional feature. Viruses such as mumps and influenza are thought to be the causative organisms. However, there is no evidence to support such claims and hence the preferred term is acute peripheral vestibulopathy.<sup>12</sup> Cerebellar infarction is the major differential diagnosis and should always be considered.<sup>12</sup>

During the acute phase, patients benefit from bed rest and short term symptom relief treatments. A randomised control trial has demonstrated the efficacy of methylprednisolone in acute treatment and improves functional recovery.<sup>13</sup> In Australia, a high dose of prednisolone (125 mg) is given and the dosage is slowly tapered down over 18 days. Antiviral medication has not been shown to be of any benefit.<sup>13</sup> In patients with suppurative labyrinthitis, usually following a bacterial otitis media infection, hospitalisation with intravenous antibiotic treatment is required. Early mobilisation as tolerated in a safe environment will encourage the brainstem compensatory mechanism. Vestibular rehabilitation exercises can also be introduced to allow a more rapid and complete compensation of vestibular function.<sup>14</sup>

### Meniere disease

Meniere disease is caused by an idiopathic abnormal dilatation of endolymphatic organ producing symptoms of progressive vertigo, tinnitus, aural fullness and fluctuating low frequency hearing loss.

There is no cure for Meniere disease so treatment is focused on relieving the debilitating vertigo. Acute treatment of an attack is bed rest, and antiemetic and vestibular blocking agents. A low salt diet (<1–2 g/day), diuretics and betahistines are all recommended treatments for Meniere disease. However, there is no evidence to support the efficacy of betahistine,<sup>15</sup> diuretics<sup>16</sup> and dietary control in reducing vertigo.

In patients with severe debilitating vertigo, labyrinth ablation therapies with intratympanic gentamicin injection or surgical repair or removal of the labyrinth are required if conservative and medical treatments have failed.<sup>17</sup> Unfortunately, there is currently no effective treatment for hearing loss and tinnitus. Regular clinical assessments and formal hearing tests are important to monitor disease progression.

### Migrainous vertigo

Migrainous vertigo is a relatively common but underdiagnosed condition.<sup>18</sup> Typical migrainous headache can be absent, and both spontaneous and positional vertigo can be associated with migraine. It is important to make an accurate diagnosis as patients usually respond well to lifestyle changes, migraine treatments and prophylaxis. There is no definitive diagnostic test for migraine and sometimes the diagnosis can only be verified by the response to the migraine treatment.

### Central pathology

The most feared diagnosis of true vertigo is a transient ischaemic attack or stroke.<sup>12</sup> These are not uncommon conditions, especially among patients with cardiovascular risk factors and central neurological findings, and should always be excluded. The emphasis on management is in detailed assessment, urgent hospital referral, and neuroimaging in suspected cases. Long term cardiovascular risk factors modification and anticoagulation treatment can help prevent further episodes. Acoustic neuroma and multiple sclerosis rarely produce an isolated vertigo without any other symptoms and signs. The presence of hearing impairment or cerebellar signs in patients with vertigo should always raise suspicion. Prompt referral for formal hearing testing to either a neurologist or an ENT surgeon is required.

### Psychogenic vertigo

Anxiety disorder, hyperventilation and depression can all manifest as chronic vertigo. Reassurance from the clinician addressing any underlying fears is the only treatment required. In more persistent cases, referral for counselling services, cognitive behavioural therapy and selective serotonin reuptake inhibitors might be useful.<sup>19</sup>

### Trauma induced vertigo

About 80% of patients experience vertigo following head trauma and 20% of these patients continue to have residual vertigo at 6 months.<sup>20</sup> Head trauma can either cause direct injury to the labyrinth and its central connections or can cause a canalith dislodgement resulting in a BPPV-like syndrome, which can be treated accordingly. Cervical vertigo, which occurs following a whiplash neck injury, is a specific

syndrome of dizziness associated with neck pain. Treatment is with physiotherapy and neck immobilisation. Specialist involvement is usually required.

A perilymphatic fistula, commonly due to barotrauma, is typically found in people who work in an environment with sudden atmospheric pressure changes, such as pilots or divers. The fistula will usually heal after 2 weeks from the onset of symptoms with appropriate bed rest and avoidance of straining and coughing. Initial and follow up audiological assessments are mandatory and surgical repair is required if there is progressive hearing loss.

### Medication induced vertigo

This is usually of slow onset with bilateral hearing and vestibular functional impairment. The offending medications should be ceased. However, the damage may be irreversible.

### Driving

Driving safety is an important consideration in patients suffering from vertigo. Current Austroads recommendations for patients with vestibular disorders are summarised in *Table 2*. As a general rule, patients should be advised not to drive if they have persistent vertigo or suffer from sudden and unheralded vertigo attacks.<sup>21</sup> Functions of the vestibular system can be assessed by performing the Romberg test. If the Romberg test is positive within 30 seconds, the patient should not drive until they are assessed further by an ENT surgeon.<sup>21</sup>

### Vestibular rehabilitation

While the brainstem has an amazing ability to restore the homeostasis from a vestibular or central insult, the extent of the compensation can be limited, especially in the elderly population. Exercise and movement

Table 2. Assessment for fitness to drive in patients with vestibular disorders<sup>21</sup>

	Private vehicle standard	Commercial vehicle standard
<b>Vestibular disorder</b>		
Exclusion from unconditional licence	Recurrent vertigo from Meniere disease; acute neurolabyrinthitis; acute labyrinthitis and unheralded acute vertigo	If the person has or has had in the previous 12 months, any condition of recurrent vertigo. This includes confirmed Meniere disease, recurrent unheralded vertigo with or without treatment or any other type of vertigo
	Patients with BPPV and symptoms in the upright position should not drive while symptoms persist in the upright position	BPPV with or without treatment
Granting a conditional licence	Driver licensing authority may consider the opinion of the treating doctor and the nature of the driving task. This is also subject to periodic review with consideration of the nature of the condition, response to treatment, and functional ability to drive safely	Driver licensing authority may consider the nature of the driving task and the opinion of an ENT specialist regarding the nature of the condition, response to treatment, and functional ability to drive safely
		Subject to periodic review and the disease specific symptom free period: <ul style="list-style-type: none"> <li>• Meniere disease: at least 12 months free of vertigo</li> <li>• Acute neurolabyrinthitis: at least 6 months free of vertigo</li> <li>• BPPV: at least 2 months free of symptoms and signs of BPPV</li> </ul>

based vestibular rehabilitation programs are designed to implement visual cues and other techniques to achieve a better functional recovery. In a recent Cochrane review, vestibular rehabilitation was shown to be a safe and effective treatment for unilateral peripheral vestibular disorders, including postlabyrinthectomy vestibular dysfunction.<sup>22</sup> A simple rehabilitation program of patient education and home exercise appear to be as effective as a formal rehabilitation program.<sup>22</sup> The timing of rehabilitation still remains controversial, as there is no evidence to show that early participation in a rehabilitation program during the acute phase of illness alters the final outcome.<sup>23</sup> Efficacy of rehabilitation in patients with central vertigo is still unknown.<sup>24</sup> Rebuilding the confidence in mobilisation and implementation of fall preventive measures can allow resumption of independent living for elderly patients with impaired vestibular function.

## Conclusion

Management of vertigo can be a daunting task due to a large number of potential underlying conditions. Treatment for vertigo is still mainly symptomatic. While some underlying conditions can be satisfactorily managed, further research is needed to establish treatment efficacy for other conditions. General practitioners play a vital role in providing holistic management to minimise vertigo associated disability and improve the patient's quality of life.

## Resources

- Australian Prescriber – Epley manoeuvre  
[www.australianprescriber.com/upload/issue\\_files/2804\\_epley.mov](http://www.australianprescriber.com/upload/issue_files/2804_epley.mov)
- Modified Semont manoeuvre  
[www.neurology.org/content/vol63/issue1/images/data/150/DC1/video1.mpg](http://www.neurology.org/content/vol63/issue1/images/data/150/DC1/video1.mpg)
- Modified Epley manoeuvre  
[www.neurology.org/content/vol63/issue1/images/data/150/DC1/video2.mpg](http://www.neurology.org/content/vol63/issue1/images/data/150/DC1/video2.mpg)
- Brandt-Daroff exercise animation  
[www.dizziness-and-balance.com/disorders/bppv/brandt/first.html](http://www.dizziness-and-balance.com/disorders/bppv/brandt/first.html)

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