check

Independent learning program for GPs

Unit 472 July 2011

Dizziness

The Royal Australian College of General Practitioners

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The five domains of general practice
Communication skills and the patient-doctor relationship
Applied professional knowledge and skills
Population health and the context of general practice
Professional and ethical role
Organisational and legal dimensions

The Royal Australian College of General Practitioners

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This unit of *check* looks at patients who present with dizziness. Dizziness can be classified into true vertigo and pseudovertigo. Patients will use different terms to describe various sensations, and an understanding of the terminology helps to competently evaluate the cause of the dizziness. A diagnostic approach to dizziness is summarised at the beginning of this unit, based on the author's classification of causes of dizziness into 'probability diagnosis', 'serious disorders not to be missed', 'pitfalls', the 'seven masquerades checklist' and 'is the patient trying to tell me something?'

The author of this unit is Emeritus Professor John Murtagh MBBS, MD, BSc, BEd, FRACGP, DipObstRCOG, who is an eminent and respected clinician, academic and author, with many years of experience in both rural and metropolitan general practice settings, visiting professorial teacher with Monash University, the University of Notre Dame and the University of Melbourne, and the author of many publications, such as *Murtagh's general practice*, now in its fifth edition, *Practice tips* and *Patient education*. His clinical and research interests include diagnostic methodology and musculoskeletal medicine.

The learning objectives of this unit are to:

- demonstrate an increased understanding of the terminology used by both patients and doctors in relation to dizziness and vertigo
- display increased confidence in the assessment of patients who present with dizziness or vertigo, using a systematic diagnostic approach
- display increased confidence in the management of patients with dizziness and vertigo, including giving advice to patients, and using medication where appropriate
- display increased confidence in performing the Epley manoeuvre and describing Brandt-Daroff exercises as treatments for benign paroxysmal positional vertigo
- recognise the importance of immediate referral in cases of vertigo that are suspected to be due to transient ischaemic attack, and urgent referral in cases of suspected acoustic neuroma.

We hope that this unit of *check* will assist you to confidently assess and manage patients who present with dizziness in general practice.

Kind regards

Catherine Dodgshun
Medical Editor

DIZZINESS

Some patients may use the term 'dizziness' to describe many different phenomena. A careful history may be required to unravel the problem. Patients may use different terms to explain the same sensation, such as 'giddiness', 'swimming in the head', 'swimming in the brain', 'whirling' and 'swinging'.

'Dizzy' comes from an old English word, *dysig*, meaning foolish or stupid. Strictly speaking, it means unsteadiness or lightheadedness without movement or motion, or spatial disorientation.

'Vertigo', on the other hand, comes from the Latin word for turning. The modern medical definition of vertigo is 'a sudden sense of movement'. It should describe a hallucination of rotation of self or surroundings in a horizontal or vertical direction.

The term 'dizziness', however, is generally used collectively to describe all types of equilibrium disorders and, for convenience, can be classified as shown in *Figure A*.

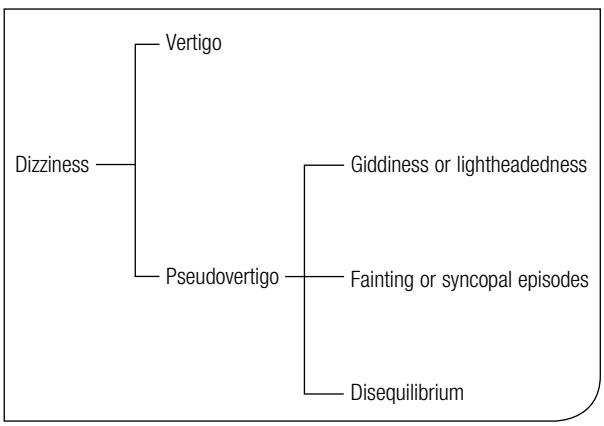

Figure A. Classification of dizziness

VERTIGO

Vertigo is an episodic sudden sensation of circular motion of the body or of its surroundings.

Other descriptions patients give for this symptom include: 'everything spins', 'my head spins', 'the room spins', 'whirling', 'reeling', 'swaying', 'pitching', 'rocking'.

Vertigo is characteristically precipitated by standing or turning the head, or by movement. Patients with vertigo may feel as though they are being impelled by some outside force tending to pull them to one side, especially while walking.

Patients have to walk carefully and may become nervous about descending stairs or crossing the road and usually seek support. As a result, vertiginous patients are usually very frightened and tend to remain immobile during an attack.

True vertigo is a symptom of disturbed function involving the vestibular system or its central connections. It invariably has an organic cause. Important causes are presented in *Table A*, while *Figure B* is a diagrammatic representation of some of the anatomical sites of the causes of vertigo, including the central neurological centres.

Nystagmus is often seen with vertigo and, since 80–85% of causes of vertigo are due to an ear problem, tinnitus and hearing disorders are associated with it. In acute cases there is usually a reflex autonomic discharge producing sweating, pallor, nausea and vomiting.

Table A. Causes of vertigo

Peripheral disorders
• Labyrinth
– acute vestibulopathy
– Meniere syndrome
– benign paroxysmal positional vertigo
– drugs
– trauma
• Eighth nerve
– vestibular neuronitis
– acoustic neuroma
– drugs
• Cervical vertigo
Central disorders
• Brainstem
– vertebrobasilar insufficiency
– infarction
– tumours
• Cerebellum
– degeneration
– tumours
– infarction
• Multiple sclerosis
• Migraine

GIDDINESS

Giddiness is a sensation of uncertainty or ill defined lightheadedness. Other ways patients describe the sensation include: 'a swimming sensation', 'walking on air', 'the ground going beneath me'. It usually contains no elements of rotation, impulsion, tinnitus, deafness, nausea or vomiting. The patient with giddiness, although fearful of falling or fainting, can nonetheless walk without difficulty if forced to do so.

SYNCOPAL EPISODES

Syncope may present as dizziness or lightheadedness in which there is a sensation of impending fainting or loss of consciousness. Common causes are cardiogenic disorders and postural hypotension, the latter is usually drug induced.

DISEQUILIBRIUM

Disequilibrium is a loss of balance or instability while walking, without any associated sensations of spinning. Other terms used to describe this include: 'unsteadiness on feet', 'the staggers', 'swaying feeling', 'dizzy in the feet'. It is often described as being 'like standing on a rocking boat' where the feeling underneath the feet is unsteady. Disequilibrium is usually of neurogenic origin.

A DIAGNOSTIC APPROACH

A summary diagnostic model to dizziness/vertigo is presented in *Table B*.

In medical school, students can gain the wrong impression that the common causes of dizziness or vertigo are the relatively uncommon causes such as Meniere syndrome, aortic stenosis, Stokes-Adams attacks, cerebellar disorders, vertebrobasilar disease and hypertension. In reality, the GP can be impressed by how often dizziness is caused by relatively common benign conditions such as hyperventilation associated with anxiety, vasovagal syncope, postural hypotension due to drugs and advanced age, inner ear infections, wax in the ears, post head injury, motion sickness and alcohol intoxication.

In most instances, a careful history can differentiate between dizziness and true vertigo, though finding the underlying cause of true vertigo can be difficult. The common causes of true vertigo seen in general practice are benign positional vertigo, vestibular neuronitis and acute viral labyrinthitis. Viral labyrinthitis is basically the same as vestibular neuronitis, except that the whole of the inner ear is involved causing deafness and tinnitus to arise simultaneously with severe vertigo.

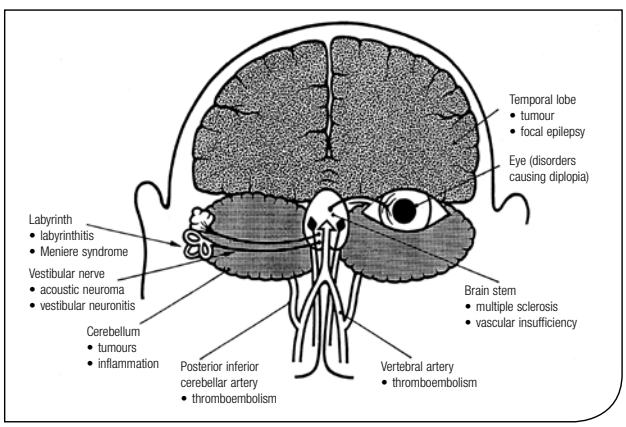

Figure B. Some anatomical sites of the causes of vertigo

Table B. Dizziness/vertigo: diagnostic strategy model

Probability diagnosis

- Anxiety – hyperventilation
- Postural hypotension
- Simple faint – vasovagal
- Acute peripheral vestibulopathy
- Benign positional vertigo
- Motion sickness
- Post head injury

Serious disorders not to be missed

- Neoplasia
  - acoustic neuroma
  - posterior fossa tumour
  - other brain tumours (primary or secondary)
  - intracerebral infection (eg. abscess)
- Cardiovascular
  - arrhythmias
  - myocardial infarction
  - aortic stenosis
- Cerebrovascular
  - vertebrobasilar insufficiency
  - brainstem infarct (eg. PICA thrombosis)
- Multiple sclerosis

Pitfalls (often missed)

- Ear wax
- Otosclerosis
- Arrhythmias
- Hyperventilation
- Alcohol and other drugs
- Cough or micturition syncope
- Vestibular (vertiginous) migraine
- Parkinson disease
- Meniere syndrome
- Postural orthostatic tachycardia syndrome.

Seven masquerades checklist

- Depression – YES
- Diabetes – POSSIBLE
- Drugs – YES
- Anaemia – YES
- Thyroid disease – POSSIBLE
- Spinal dysfunction – YES
- Urinary tract infection – POSSIBLE

Is the patient trying to tell me something?

Very likely – consider anxiety and/or depression

CASE 1

GEORGE HAS DEVELOPED PREAURICULAR PAIN

George is 60 years of age and is a GP in excellent health but he has developed left sided preauricular pain of 1 week duration. He visited the best dentist he knew with the self diagnosis of left temporomandibular joint dysfunction but the oral occlusion contraption provided by the dentist was ineffective. The pain became excruciating and he developed deafness in the left ear, as well as tinnitus, vertigo and a fever. On examination, regional lymphadenopathy was noted and visualisation of the left tympanic membrane was not possible because of swelling and tenderness of the ear canal. He was treated with amoxycillin for presumed furunculosis. Two days later he developed the staggering gait of ataxia, increasing vertigo, nystagmus and a left sided facial nerve palsy of the lower motor neuron type. A difficult repeat auriscopic examination revealed vesicles on the posterior wall of the left ear canal.

QUESTION 1

What is your probability diagnosis?

QUESTION 2

What complication has George developed?

QUESTION 3

How should George be managed?

CASE 1 ANSWERS

ANSWER 1

It is likely that George has Ramsay-Hunt syndrome, which consists of facial nerve palsy, vertigo, tinnitus and deafness. Technically, Ramsay-Hunt syndrome (also known as 'geniculate neuralgia' and 'nervus intermedius neuralgia') is thought to be due to reactivation of herpes zoster infection of the geniculate ganglion of the seventh cranial nerve, though other cranial nerves, particularly the eighth cranial nerve, can be involved (through direct spread of virus across the nerves inside the internal auditory canal, or possibly through infection of the vestibular or spiral ganglions). The infection can also involve the fifth, sixth and ninth cranial nerves.

Ramsay-Hunt syndrome is usually characterised by vesicles along the distribution of the sensory branch of the facial nerve, as occurred in George's case. However, vesicles may also occur on the pinna.

ANSWER 2

George has developed involvement of the brainstem causing ataxia.

ANSWER 3

George should be managed in hospital and given intravenous aciclovir (because of brainstem involvement) followed by oral aciclovir, famciclovir or valaciclovir.[1] Antiviral therapy is more effective if commenced within 72 hours of the onset of the rash. Corticosteroids are used in some medical centres but their use is controversial.

The intensity of the vertigo can be reduced with a benzodiazepine such as diazepam (eg. 5 mg orally every 4–6 hours) which can be used in the acute phase of vertigo.

Opioid analgesics, such as controlled release oxycodone, may be needed for the intense pain that can occur as part of this syndrome.

FEEDBACK

The five features of Ramsay-Hunt syndrome are:

- facial nerve palsy
- (with) vesicular lesions on the tympanic membrane
- (with or without) vesicular lesions of the external ear
- (with) vertigo
- (with) tinnitus
- (with or without) deafness.

CASE 2

SARAH IS EXPERIENCING SUDDEN DIZZINESS

Sarah Franks, 69 years of age, presents to you with a 3 day history of sudden episodes of dizziness. She describes the episodes of dizziness as 'the room spinning when first sitting up after waking', 'a sense of falling backwards when attempting to lie back in bed' and 'the room spinning when rolling over in bed'. She also describes brief rotatory sensations occurring during the day, precipitated by sudden head movements including looking upwards, for instance when opening a high cupboard or hanging out the washing on the clothesline, but also with reversing the car and bending down to tie up her shoes.

Sarah's general health has been good with no history of head trauma, labyrinthitis or other ear problems. She is not taking any medication and denies any other symptoms such as visual disturbance, hearing loss or tinnitus.

Physical examination, including otoscopic, cardiovascular and neurological examinations, is normal. Her pulse rate and blood pressure are within normal limits and there is no postural drop.

QUESTION 1

What is the probability diagnosis?

QUESTION 2

Describe the special clinical test used to confirm this diagnosis.

QUESTION 3

What other disorder can cause symptoms resembling this condition?

FURTHER INFORMATION

You perform the Hallpike manoeuvre on Sarah and note that the vertigo and nystagmus begin 1–2 seconds after her head is tilted toward the right ear, increasing to a maximum before settling after 30 seconds. The nystagmus was a linear rotatory type in an anticlockwise direction when the right ear was down. When Sarah was returned to the sitting position, the vertigo and the nystagmus quickly subsided.

QUESTION 4

What is the underlying cause of the condition leading to Sarah's symptoms?

QUESTION 5

How would you manage Sarah?

QUESTION 6

What is the Epley manoeuvre? Describe how to perform this.

QUESTION 7

What would you tell Sarah about her prognosis (based on your provisional diagnosis)?

QUESTION 8

What other treatment can be used (rarely) for chronic, refractory cases of this condition?

CASE 2 ANSWERS

ANSWER 1

This is the typical history of benign paroxysmal positional vertigo (BPPV) or positioning vertigo, which is the most common cause of vertigo in the elderly, and accounts for over 25% of patients who present with peripheral vestibular disorders. The typical symptoms of vertigo in cases of BPPV occur in clusters that persist for several days. There is usually a latency period of several seconds following a head movement before symptoms develop, and symptoms subside within 10–60 seconds, usually fewer than 30 seconds.

ANSWER 2

Benign paroxysmal positional vertigo is readily recognised by the typical history and a positive Hallpike manoeuvre, which is head positional testing to induce vertigo and nystagmus (*Figure 1*).[2]

In the Hallpike manoeuvre the examiner explains to the patient what they are going to do, then sits the patient upright with their head rotated 30–45 degrees laterally. The examiner then rapidly moves the patient to a supine position with the head hanging position 30 degrees below the level of the couch. This is performed 3 times: with head straight, head rotated to the right and head rotated to the left. The examiner holds on to the patient's head for 30 seconds and carefully observes the patient for nystagmus and asks about the presence of vertigo. A positive result is characterised by:

- a brief latency of several seconds before the onset of vertigo
- the presence of nystagmus (though this may not always occur) with the affected ear lowermost
- reversal (upon sitting, the direction of the nystagmus is reversed for a brief period of time)

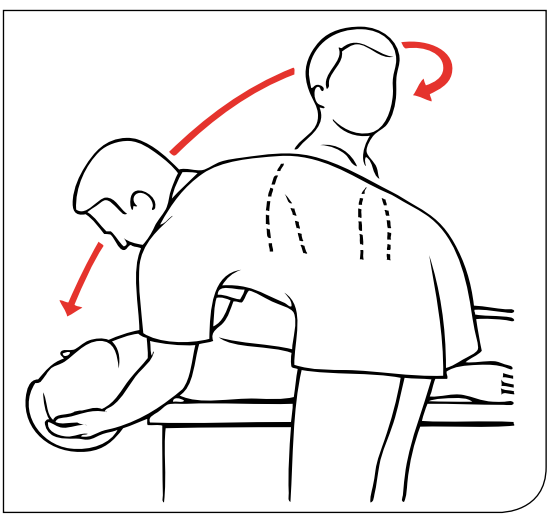

Figure 1. Illustration of positional testing with the Hallpike manoeuvre in BPPV. The head is rotated to 45 degrees then taken rapidly from a sitting position to a hanging position. Repeat the movement with the head turned to the opposite side and with the head straight

- fatigability (repetition of the test results in less nystagmus each time).

A positive Hallpike manoeuvre suggests a diagnosis of BPPV.

ANSWER 3

Dysfunction of the cervical spine can cause symptoms resembling BPPV.

ANSWER 4

The underlying cause of BPPV is unknown. The generally accepted theory of causation is that fine pieces of calcium carbonate ('otoconia' or 'otoliths' which are normally present in the utricle and saccule) become loose, settle at the bottom of one of the semicircular canals, and generate endolymphatic movement, causing nystagmus with certain head positions. However, some authorities consider it is of cervical origin and is related to cervical spondylosis (degenerative osteoarthritis) or mechanical dysfunction of the cervical spine.

The associations with BPPV are of interest. In one large series, 17% were associated with trauma and 15% with labyrinthitis but about 50% have no clear predisposing factor other than age.[2]

ANSWER 5

You would manage Sarah with:

- appropriate explanation and reassurance that this condition usually resolves spontaneously
- explanation of avoidance measures, though the patient soon begins to move in a certain way of their own accord to avoid triggering the vertigo
- Brandt-Daroff exercises[3,4] (*Table 1*) or the Cawthorne-Cooksey exercises[3] that are designed to repeatedly induce the symptoms of vertigo. The principle of the Brandt-Daroff exercises, which are curative in more than 90% of cases of BPPV, is to flush out the otoconia which are either resorbed or displaced to other parts of the labyrinth.These exercises should be started as soon as possible after diagnosis and education. Cawthorne-Cooksey exercises involve performing eye movements, head movements and movements of the body in sitting and standing positions, then moving about with the eyes closed and with the eyes open
- cervical mobilisation measures, especially traction, may alleviate the symptoms and many anecdotal cases support this.

FEEDBACK

Medication is generally not useful in treating BPPV because, although the vertigo is severe, it lasts only for seconds. Also, if the vestibular imbalance is obscured by 'vestibular suppressant' medication such as prochlorperazine, central adaptive behaviour can be inhibited. The strategy therefore is to use as few medications as possible and to encourage appropriate head movement and early ambulation.

Table 1. Brandt-Daroff exercises for BPPV[3,4]

- Used to treat benign paroxysmal positional vertigo
- Specifically designed to treat those cases in which the cause is considered to be pieces of calcium carbonate in one of the semicircular canals of the inner ear
- Designed to disperse the calcium carbonate away from the delicate balance membrane

Rules

- Perform 3 times per day (if possible)
- Take about 10 minutes each time
- Usually perform 5 or more times to each side
- The exercises are beneficial only if dizziness is reproduced
- Take antinausea tablets if nausea is a problem

Method

- Sit on the edge of a bed
- Turn your head to the left side (about 45 degrees)
- Lie down quickly on the right side (ensure the back of the head rests on the bed)
- Wait for 20–30 seconds or for any dizziness to settle
- Sit up straight
- Wait for 20–30 seconds or for any dizziness to settle
- Repeat on the other side – turn the head to the right side before lying down quickly on your left side

Note

- It doesn't matter on which side you lie down first
- Turn your head away from the side on which you lie down
- It is important to reproduce dizziness with the exercises
- If the exercises are performed regularly, the symptoms should settle over a period of several days but this may vary from 3–4 days to weeks

ANSWER 6

The Epley manoeuvre (*Figure 2*) is a treatment performed by the doctor as an office procedure.[5] It is reported to have a cure rate of 80%. The principle of the exercise is to return displaced otoconia to the utricle. It consists of moving the patient's head into four different positions and holding the head in each position for 1 minute. After doing this, the patient is left to sit still for 10 minutes to allow the crystals to settle.

Method

- The patient sits on the bed with the head slightly extended and turned 45 degrees in the direction that precipitated the vertigo (*Figure 2A*)
- The patient then lies on their back with the head hanging over a pillow placed at the shoulder level. Wait 1 minute (*Figure 2B*)

- From this position, turn the head through 90 degrees to the opposite side and wait for 1 minute (*Figure 2C*)
- Turn the head through a further 90 degrees and roll onto that side so that the ear is parallel to the floor. Wait 1 minute (*Figure 2D*)
- Slowly sit the patient upright with the head in a neutral position and sit still for 10 minutes (*Figure 2E*).

This treatment can be repeated in the office until the attacks subside.

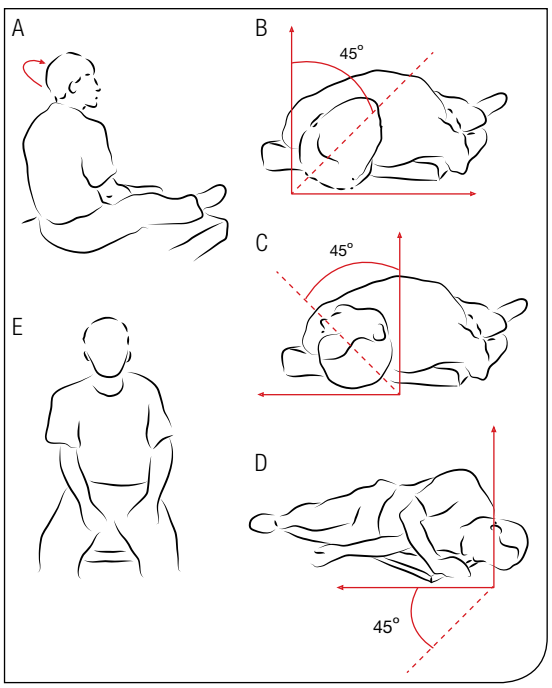

Figure 2. The Epley manoeuvre

Follow up

Get the patient to sleep in a semi-upright position. This treatment can be repeated in the office until the attacks subside. However, the patient can supplement this exercise with the Brandt-Daroff exercises at home.

ANSWER 7

Sarah can be reassured that the prognosis is good – BPPV is usually self limiting and settles spontaneously after a few weeks. Most patients will be ready to return to their regular activities after 1 week. Recurrences are common and attacks occur in clusters. The main features of BPPV are shown in *Table 2.*

Table 2. Main features of BPPV

- Female to male ratio 2:1
- Affects all ages, especially the elderly
- Each attack is brief – usually lasting 10–60 seconds, and subsiding rapidly
- Attacks not accompanied by vomiting, tinnitus or deafness
- Diagnosis confirmed by head position testing (Hallpike manoeuvre)
- Recurs periodically for several days
- Usually spontaneous recovery in weeks
- Exercises (eg. Brandt-Daroff exercises or Cawthorne-Cooksey exercises) or particle repositioning manoeuvres (eg. Epley manoeuvre) are the mainstays of treatment

ANSWER 8

An operation can be performed that involves severing the nerve to the affected semicircular canal. This operation should only be considered for patients who have been symptomatic for more than 2 years, in whom the site of lesion is certain, and who have not benefited from exercises or cervical mobilisation. There is a significant risk of hearing impairment associated with this surgery. In practice, this operation is rarely performed.

CASE 3

PAM IS TOO DIZZY AND NAUSEOUS TO GET OUT OF BED

Pam Murphy, 40 years of age, requests a home visit because of a sudden onset of a sensation of 'whirling and spinning' of her head which started earlier in the day. This is the first attack of this sensation that she has ever had. The feeling is worse when she lifts her head off the pillow, an action which also aggravates her severe nausea. She cannot get out of bed without falling and vomiting. Pam complains of a flickering feeling of the eyes, although she feels that her vision is normal. She has no hearing loss or tinnitus and there are no other bodily sensations. Pam has recently suffered an upper respiratory tract infection, for which she took paracetamol in small doses.

On examination, Pam is pale and distressed and prefers to lie flat and still. Vital signs are normal and there is no postural drop in blood pressure. She has signs of a mild upper respiratory tract infection. You note that she has spontaneous nystagmus and marked disturbance of balance. Neurological examination is normal. Otoscopic examination is normal.

QUESTION 1

What is the probability diagnosis and what is the most likely cause of this condition?

QUESTION 2

What important complication of this condition should be excluded?

QUESTION 3

What is the treatment of this condition?

QUESTION 4

What is the prognosis?

CASE 3 ANSWERS

ANSWER 1

The probability diagnosis is acute vestibular syndrome, which is usually due to an acute peripheral vestibulopathy or an acute vestibular failure.[2,6] Acute vestibular failure is the sudden loss of function in one balance organ. The presumptive cause of acute peripheral vestibulopathy is vestibular neuritis (also known as vestibular neuronitis). Recent evidence suggests reactivation of herpes simplex type 1 virus in the vestibular ganglion is responsible. The attack is often confused with the first attack of Meniere syndrome (except there is no hearing disturbance in acute peripheral vestibulopathy) or BPPV. The main features of acute peripheral vestibulopathy are listed in *Table 3*.

Table 3. Main features of acute peripheral vestibulopathy

- Mainly in young adults and middle aged people
- Single attack of vertigo
- Abrupt onset of persistent vertigo
- Often follows a 'flu-like' illness
- Accompanied by nausea and vomiting
- No hearing loss or tinnitus
- Gradual recovery over days to weeks
- Spontaneous horizontal nystagmus (in acute phase)
- Caloric stimulation confirms impaired vestibular function

ANSWER 2

The important complication of acute peripheral vestibulopathy that should be excluded is suppuration in the middle ear or mastoid cavity. Suppuration in the middle ear is excluded by checking for fever and visualising the eardrum for an injected, bulging drum. Suppuration in the mastoid cavity is excluded by checking for fever, as well as swelling, tenderness and redness of the mastoid process.

ANSWER 3

Treatment of acute peripheral vestibulopathy consists of:

- rest in bed, lying very still on the affected ear
- keeping gaze in the direction that eases symptoms
- using medication to lessen vertigo.

The following 'vestibular suppressant drugs' can be used:

- prochlorperazine 12.5 mg intamuscular (if severe), followed by 5–10 mg orally in 6 hours, or
- diazepam 5–10 mg intamuscular stat for the acute attack then 5 mg orally 3 times per day. Diazepam reduces the intensity of the vertigo by decreasing the brainstem response to vestibular stimuli. Diazepam is preferred to prochlorperazine because symptoms subside more quickly with use of diazepam, and it results in less rebound vertigo upon cessation.

Vestibular suppressant drugs are useful in the acute phase of vertigo but it is recommended that they be discontinued as soon as possible to avoid prolonged recovery time and long term disequilibrium from inadequate compensation. Rehabilitation with vestibular physiotherapy should be considered for persistent dysfunction over the ensuing weeks or months.

A short course of corticosteroids such as prednisolone in a tapering dose over 9 days often promotes recovery.[7]

ANSWER 4

Acute peripheral vestibulopathy is a self limiting disorder and usually settles over several days or weeks. The vestibular loss does not recover, but a central process of compensation occurs, with resettling of the vestibular input parameters. For a variable period after the acute event there may still be short episodes of acute rotational vertigo.

Vestibular neuritis involves the vestibular nerve, and acute labyrinthitis can involve the organs of balance (utricle, saccule and semicircular canals) and the organ of hearing (the cochlea). The symptoms of each are summarised in the diagnostic triads below.

Diagnostic triads

- Acute vertigo + nausea + vomiting = vestibular neuritis
- Acute vertigo + nausea + vomiting + hearing loss ± tinnitus = acute labyrinthitis.

CASE 4

ABDUL HAS BEEN HAVING ATTACKS OF 'SPINNING AND WHIRLING'

Abdul Hussain, 45 years of age, presents at your office complaining of a sudden onset of distressing episodes of 'spinning and whirling' in his head. He says that he has had three of these episodes over the last year, and the episodes last for about 2 hours each. The 'spinning and whirling' is preceded by a sensation of fullness in his right ear, associated with a buzzing or roaring sound in both ears, and hearing difficulty and noises sounding 'tinny' in his right ear. He also experiences nausea and vomiting during these attacks.

QUESTION 1

What is the probability diagnosis?

QUESTION 2

What is the pathology underlying this disorder?

QUESTION 3

What are the likely examination findings in between attacks?

QUESTION 4

What special tests may be requested to help confirm the diagnosis?

QUESTION 5

What would your management of Abdul be in the acute stage? In the long term? If he had severe symptoms that persisted despite treatment?

CASE 4 ANSWERS

ANSWER 1

The probability diagnosis is Meniere syndrome. Meniere syndrome is characterised by recurrent bouts of vertigo, each bout of vertigo lasting at least 20 minutes (and often not more than a few hours, though the after effect of disequilibrium can persist for longer) associated with hearing loss and either or both of tinnitus and aural fullness. It differs from acute peripheral vestibulopathy in that it is recurrent, and attacks of the vertigo itself do not last as long as in acute peripheral vestibulopathy. The main features of Meniere syndrome are shown in *Table 4*.

Table 4. Main features of Meniere syndrome
Most common in 30–50 year old age group

- Characterised by paroxysmal attacks of:
  - vertigo
  - tinnitus
  - hearing loss (fluctuating or progressive)
- Also possibly characterised by:
  - nausea and vomiting
  - sweating and pallor
- Abrupt onset – patient may fall
- Attacks last at least 20 minutes
- Variable interval between attacks (twice per month to twice per year)
- Examination
  - nystagmus (during an attack, often to side opposite the affected inner ear)
  - sensorineural deafness
  - caloric test impaired vestibular function
- Audiometry
  - sensorineural deafness
  - loudness recruitment
  - electrocochleography
  - charactersistic changes

ANSWER 2

The pathology underlying Meniere syndrome is hydrops of the labyrinth (ie. an intralabyrinthine pressure effect).[8] The most likely cause is an episode of viral labyrinthitis that leaves the labyrinth damaged and liable to bouts of endolymphatic hydrops. Secondary forms related to otosclerosis, trauma and longstanding sensorineural hearing loss are also implicated and recognised.

ANSWER 3

There are usually no abnormal examination findings in between attacks, though hearing loss may be present. Hearing loss in Meniere syndrome can be fluctuating and occur with the attacks of vertigo, or it can be progressive and persist in between attacks of vertigo.

ANSWER 4

Special tests that could be used to confirm the diagnosis include:

- audiometry (hearing tests), which may show a characteristic sensorineural loss of 30–40 decibels in Meniere syndrome
- a caloric test (tests the vestibulo-ocular reflex by infusing warm and cold water into the external auditory canal) demonstrates impaired vestibular function. This test is useful but not diagnostic
- electrocochleography (a test that measures electrical potentials generated in the inner ear in response to stimulation by sound), which may be abnormal in Meniere sydrome.

ANSWER 5

Acute management

- Intravenous diazepam 5 mg or intramuscular prochlorperazine 12.5 mg, although the latter is not recommended by some authorities. Many practitioners prescribe a combination of medications
- Reassurance with a very careful explanation of this condition to the patient who often associates it with malignant disease.

Long term management

- Advice to avoid caffeine
- Advice to avoid excessive intake of alcohol and tobacco
- Advice for a low salt diet – this is the mainstay of treatment
- Alleviating anxiety by using appropriate sedation and, preferably, counselling such as cognitive behaviour therapy
- Referral for a neurological assessment (to exclude acoustic neuroma)
- Prescribing a diuretic (eg. hydrochlorothiazide/amiloride) to be taken daily
- Advice to follow the 'NEAT paradigm' of lifestyle management (*Table 5*).

Management if symptoms persist despite treatment

- Considering surgery for intractable cases which persist despite conservative treatment. Surgery could consist of:
  - myringotomy with grommet
  - endolymphatic sac decompression, or
  - labyrinthectomy.

Table 5. NEAT paradigm of lifestyle management

N – nutrition: optimal low fat diet

E – exercise/physical activity

A – avoidance or moderation of potentially harmful substances (CATS):

- caffeine
- alcohol
- tobacco
- sugar, salt, social drugs

T – tranquillity: recreation, relaxation, meditation

CASE 5

SUSAN IS EXPERIENCING GIDDINESS AND PINS AND NEEDLES

Susan Lim, 16 years of age, presents with complaints of episodes of 'giddiness' and 'lightheadedness' that have been occurring intermittently for several weeks. On specific questioning, she doesn't describe spinning sensations of her head or of her surroundings. Each of her episodes tends to last for a couple of hours. During some of these episodes, she has noted 'pins and needles' in her hands and around her mouth. She has no aural or visual symptoms and tells you she is not on any medication and is taking no drugs. On examination she appears pale, tense and anxious. Her vital signs are normal and there is no postural drop. Otoscopic, cardiovascular and neurological examinations are all normal and blood sugar level at the beside is normal.

QUESTION 1

What is the probability diagnosis?

QUESTION 2

What simple office test can be performed to help confirm this diagnosis?

FURTHER INFORMATION

You perform this office test and find that, after breathing heavily for 2 minutes, Susan indicates that she is feeling lightheaded, hot and sweaty with some blurring of her vision.

QUESTION 3

What factor usually underlies this diagnosis?

QUESTION 4

How would you manage Susan?

FURTHER INFORMATION

Sometimes individuals with hyperventilation develop carpopedal spasm, which is manifested as flexion of the wrists, flexion of the fingers at the metacarpophalengeal joints, and extension of the fingers at the interphalangeal joints, with the fingers joined together with strongly adducted thumbs.

QUESTION 5

What is your biochemical explanation of the syndrome described above?

CASE 5 ANSWERS

ANSWER 1

Hyperventilation is the most likely cause for Susan's symptoms. The main features of hyperventilation sydrome are shown in *Table 6*.

Table 6. Main features of hyperventilation syndrome

- Usually a manifestation of anxiety
- Main symptoms:
  - breathlessness
  - palpitations
  - sweating
  - dry mouth with aerophagy
  - agitation
  - fatigue and malaise
- Other symptoms:
  - paraesthesia of the extremities
  - perioral paraesthesia
  - carpopedal spasm

ANSWER 2

Ask Susan to breathe heavily (sitting and walking) for 2 minutes. She should breathe at twice the normal rate and raise her hand with the onset of any symptoms. Most who undergo this office test experience some dizziness after 2–3 minutes.

ANSWER 3

Anxiety is usually an underlying factor in hyperventilation. Depression may also be an underlying factor.

ANSWER 4

Management of Susan could involve:

- determining the cause of any underlying anxiety or depression if either of these conditions are present
- reassuring Susan that there is no serious physical underlying cause, but ensure careful follow up
- advising Susan to consciously slow down her respiratory rate and encouraging her to identify the cause, and then control the rate and depth of her breathing
- advising Susan to breathe into a paper (not plastic) bag or cupped hands if necessary
- prescribing minor tranquilisers, only as a last resort
- providing specialist referral if appropriate.

ANSWER 5

The carbon dioxide loss from hyperventilation leads to respiratory alkalosis. Positive hydrogen ions are depleted and replenished from plasma proteins. Protein anions accumulate and take up ionised calcium. Thus ionised calcium is depleted and this causes hypocalcaemic tetany.[9] *Figure 3* demonstrates this in equations.

Equations: $H^+ + HCO_3^- \lesseqgtr CO_2 + H_2O$

Blow off CO_2: $pCO_2 \downarrow \rightarrow HCO_3^- \downarrow$ and pH $\uparrow$

H (protein) $\lesseqgtr H^+ + Pr^-$

Mopping up ionised calcium $Ca^{++} + 2\ Pr^- = Ca\ (Pr)_2 \rightarrow$ hypocalcaemia

Figure 3. Equations demonstrating cause of hypocalcaemic tetany

CASE 6

ROD FEELS UNSTEADY AND HAS SLIGHT NUMBNESS

Rod Grollo, 61 years of age, asks your advice because he has noticed increasing unsteadiness of gait over the last month, especially while he is walking over rough ground. He has also experienced two mild bouts of dizziness in the past 2 days which occurred while he was reversing his car. Rod has noticed tinnitus, a feeling of 'fullness' and progressive deafness in his right ear for the last 6 months, he has attributed this to a collection of wax. Recently he has noticed slight numbness of the right side of his face and slight headaches, especially when he wakes in the morning. He has had no visual symptoms or nausea. He drinks alcohol in moderation. Examination reveals nystagmus, hypoalgesia in the distribution of the fifth cranial nerve on the right side of the face, a diminished corneal reflex of the right eye, diminished hearing in the right ear and unsteadiness of gait with a tendency to veer to the right.

QUESTION 1

What is the probability diagnosis?

QUESTION 2

Which cranial nerves are usually involved in this condition?

QUESTION 3

What investigations would be appropriate to confirm your diagnosis?

CASE 6 ANSWERS

ANSWER 1

The probability diagnosis is an acoustic neuroma, which is a benign schwannoma (tumour arising from the Schwann cells). The diagnostic triad of symptoms is tinnitus (unilateral) + hearing loss + unsteady gait. Although arising from the vestibular nerve (eighth cranial nerve) an acoustic neuroma does not usually present with vestibular symptoms due to the very slow loss of vestibular function. An acoustic neuroma gradually grows to occupy the cerebellopontine angle.[10]

ANSWER 2

Although an acoustic neuroma usually arises from the eighth cranial nerve, it can spread to involve the fifth and seventh cranial nerves, and occasionally involves the sixth cranial nerve.

ANSWER 3

The appropriate investigations would be:

- audiometry (hearing tests) which should show selective sensorineural hearing loss in the right ear. The acoustic reflex (movement of the tympanic membrane in response to intense sound) is delayed in cases of acoustic neuroma
- auditory brainstem response, which records brainwave activity in response to sound, and tests the pathway from the cochlea to the brainstem. This should show an absence of waveforms and an increase in the latency of the fifth wave
- a computed tomography (CT) scan or, preferably, a magnetic resonance imaging (MRI) scan – a CT scan may identify the tumour but an MRI scan provides better definition.

Early diagnosis is based on audiological assessment, particularly auditory brainstem response, and an MRI.

FEEDBACK

The treatment of an acoustic neuroma is neurosurgical. Small tumours may be removed with microsurgical techniques that allow preservation of the eighth cranial nerve using a middle cranial fossa route to preserve the remaining hearing, or a translabyrinthine route where no useful hearing remains. Large tumours are removed by a combination of both the translabyrinthine and suboccipital approaches.

CASE 7

MRS CASEY IS SUFFERING SEVERE DIZZINESS

You are called in urgently early one morning to visit Mrs Maude Casey, 74 years of age, who suffered severe 'dizziness' on rising in the morning. She explains that this has been happening for the last few weeks, for most mornings of the week, and that it can also recur briefly throughout the day when she stands up from a sitting position but that this morning it was particularly severe. When you arrive she is resting comfortably in bed.

QUESTION 1

What specific questions would you ask Mrs Casey?

QUESTION 2

Which medications would you be interested in asking about?

FURTHER HISTORY

Mrs Casey complains that she feels as though she is going to have a blackout. Lying down on her bed completely relieves this feeling. There are no other symptoms. She has had no recent respiratory tract infections, is not taking any medication, and has no psychological problems.

QUESTION 3

What is your provisional diagnosis?

QUESTION 4

What physical examination would you perform?

FURTHER INFORMATION

Physical examination reveals these blood pressure recordings:

- lying: 180/90
- sitting: 175/90
- standing: 160/90.

The rest of her cardiovascular examination, and neurological examination is normal. Blood sugar level at the bedside is normal.

You decide to request blood tests including a full blood examination (FBE) and fasting blood glucose level (BGL), as well as an electrocardiogram (ECG). All these tests are normal.

QUESTION 5

What is the most likely cause of Mrs Casey's episodes of dizziness?

QUESTION 6

What is the main differential diagnosis of orthostatic hypotension leading to dizziness and perhaps syncope in the elderly?

QUESTION 7

What would be your management of Mrs Casey?

QUESTION 8

What are significant causes of orthostatic hypotension leading to syncope with an onset in the young?

CASE 7 ANSWERS

ANSWER 1

Specific questions you could ask Mrs Casey include questions about the nature of her dizziness to ascertain whether it is true vertigo, lightheadedness or a feeling of an impending blackout. You can also ask to following questions about associated features.

- Have you had any nausea or vomiting?
- Have you had any tinnitus or deafness?
- Have you had any visual disturbance?
- Have you had any unusual sensations in your extremities?
- Have you had any recent respiratory infections?
- Have you been taking any medications?

ANSWER 2

You would want to ask about medications that have been implicated in dizziness, these include:

- antihypertensives
- aspirin/salicylates
- quinine
- diuretics
- antidepressants
- tranquillisers.

Keep in mind that alcohol consumption of variable amounts depending on the tolerance of the individual can also be implicated in dizziness.

ANSWER 3

Your provisional diagnosis is orthostatic hypotension.

ANSWER 4

Physical examination should consist of:

- examination of the cardiovascular system: blood pressure (lying, sitting, standing); pulse rate and rhythm; heart for murmurs; neck for carotid bruits
- a complete neurological examination including the limbs, cranial nerves and cerebellum
- otoscopic examination
- examination of the cervical spine.

ANSWER 5

The most likely cause of Mrs Casey's episodes of dizziness is 'senile orthostatic hypotension', which is usually idiopathic and runs a benign course. In cases of senile orthostatic hypotension, the blood pressure is often quite normal when taken in the office.

ANSWER 6

In cases of orthostatic hypotension leading to dizziness and perhaps syncope, the main differential diagnosis is autonomic failure which can be primary (eg. age related, multiple system atrophy) or secondary (eg. to medications used for hypertension and other cardiovascular problems, or to diabetes or amyloid). Autonomic failure leads to hypoperfusion syncope. Precipitants include orthostasis, meals and alcohol. Recovery from syncope due to autonomic failure is usually rapid.

FEEDBACK

Dizziness is a relatively common complaint of the elderly. Common causes of dizziness in the elderly include:

- orthostatic hypotension
- cardiac arrhythmias
- malignancy (primary and secondary).

True vertigo in the elderly can be due to:

- an accumulation of wax in the external auditory canal – this is more common than generally appreciated
- middle ear disease – but disease of the auditory nerve, inner ear, cerebellum, brainstem and cervical spine are common underlying factors
- cerebrovascular disease – especially affecting the brainstem.

ANSWER 7

Your management of Mrs Casey would be to:

- reassure her that her condition does not indicate any serious underlying problems
- advise her to train herself to rise slowly when standing up
- advise her to exercise her legs before standing up
- advise her to wear firm, elastic stockings.

FEEDBACK

In cases of dizziness presenting with similar symptoms to Mrs Casey's but where there is doubt about blood pressure fluctuations, it would be reasonable to request a Holter monitor in order to pursue an alternative cause, such as an arrhythmia, for the symptoms.

ANSWER 8

There are two conditions, one common and the other uncommon, that are relevant to onset of orthostatic hypotension in the young.

Reflex syncope

This is a hypotensive response that affects 30% of the population, and these often have a strong family history. The multiple precipitants include coughing, micturition, fright, standing and heat. Although consciousness quickly returns, recovery can be delayed (eg. malaise for 12–24 hours).

Postural orthostatic tachycardia syndrome

This recently described condition[11] is orthostatic intolerance with dysautonomia (autonomic dysfunction) upon changing from the supine to the upright position or head up tilt. Tachycardia with decreased ventricular filling is a feature with hypotension and possibly syncope. There are a myriad of symptoms including dizziness, blurred vision, fatigue, chest pain, exercise intolerance and cognitive impairment. If recognised, referral to a 'syncope' unit is recommended for this complex and debilitating problem.

CASE 8

MRS ANASTASIS IS EXPERIENCING SEVERE SPINNING OF HER HEAD

Mrs Sophie Anastasis, 66 years of age, presents to you with three separate episodes of severe spinning of her head causing her to veer to the left. She says that each of these episodes are of sudden onset and are about 10–15 minutes duration, associated with blurred vision, slurred speech, numbness in the legs and numbness and tingling around the mouth. She has had no vomiting, tinnitus or deafness, no recent respiratory infections and is not taking any medications or drugs. When she consults you, she is free from symptoms and feels quite well.

QUESTION 1

What is your probability diagnosis?

QUESTION 2

What is the main differential diagnosis?

QUESTION 3

What are the most important aspects of the physical examination?

QUESTION 4

How would you manage Mrs Anastasis?

CASE 8 ANSWERS

ANSWER 1

The probability diagnosis is vertebrobasilar insufficiency, or transient ischaemic attacks occurring in the vertebrobasilar artery territory. Vertebrobasilar insufficiency rarely presents with isolated vertigo, instead it usually presents with a constellation of symptoms such as those described in the case study.

ANSWER 2

The main differential diagnosis is 'basilar' migraine, a migraine variant. Basilar migraine can manifest as vertigo without a headache, which results in temporary neurological symptoms and signs in the vertebrobasilar territory that resolve completely without neurological deficit. This is more likely in those with a past history or family history of migraine and less commonly starts for the first time in the elderly.

ANSWER 3

The most important aspects of the physical examination are:

- the cardiovascular system, especially the arteries in the neck and arms
- a complete neurological examination, especially of the cranial nerves and also looking for signs of brainstem involvement.

ANSWER 4

As Mrs Anastasis is having transient ischaemic attacks of her vertebrobasilar arterial territory, she requires urgent referral to a stroke unit or appropriate specialist.[1] She is in danger of having a completed stroke.

FEEDBACK

Appropriate investigations in a stroke unit include:

- full blood count
- blood glucose, urea, electrolytes, creatinine
- lipids
- ECG
- CT or MRI scan
- angiography of cerebrovascular system.

CASE 9

WING SOON IS EXPERIENCING DIZZINESS WITH HEADACHES

Wing Soon, 23 years of age, presents with a 2 year history of recurrent attacks of severe 'spinning of the head', and a sensation that the room is also spinning. The attacks can last for several hours and are associated with nausea and sometimes vomiting. She has to rest in bed by lying down until she recovers. Frequently, but not invariably, the attacks are followed by a headache. Recovery is complete but the attacks tend to recur every 2–3 months. Physical examination is normal.

QUESTION 1

What is the probability diagnosis?

QUESTION 2

What further information would assist you in supporting your provisional diagnosis?

QUESTION 3

What would your treatment for the condition you have diagnosed be?

CASE 9 ANSWERS

ANSWER 1

It would be appropriate to consider migrainous vertigo ('vestibular migraine') as the cause of this clinical presentation. Migraine is a relatively common cause of vertigo, especially in younger age groups. It is often not recognised because of its many guises. Vertigo, which is usually not violent, can occur as an aura that precedes the migraine headache, or even as an isolated condition where it replaces the headache which is referred to as 'benign recurrent vertigo'. The main features of migrainous vertigo are shown in *Table 7*.

Table 7. Main features of migrainous vertigo[12]

- Has a central cause
- Is a vascular phenomenon
- Lasts minutes to days
- Can occur with or without headache
- Only transient neurological signs
- May have triggers
- Responds to antimigraine treatment

Migranous vertigo should be strongly suspected if there is a past and/or family history of migraine, and also when there is a history of vertigo or ataxia that persists for hours or days in the absence of aural symptoms such as tinnitus and deafness.

ANSWER 2

It is important to seek a past history and/or family history of migraine or migraine variants. This includes questions about other migrainous features such as headaches, visual auras or vomiting. Enquire about diet, exposure to chemicals (including smoking) and lifestyle (including stressors).

ANSWER 3

Appropriate reassurance and education about the diagnosis, and avoidance of triggers is the first step to management. It is worthwhile promoting the NEAT paradigm of lifestyle (*Table 5*).

Prophylactic antimigraine therapy such as pizotifen, propranolol or verapamil can provide dramatic relief of all of these symptoms in some patients. One study showed that migraine treatments were effective in 90% of patients with migraine associated vertigo.[12] In otherwise unexplained cases or recurrent vertigo, a trial or prophylactic migraine therapy may be indicated, especially if there is a history of headache.

CASE 10

BRETT IS HAVING DIZZY SPELLS AND STAGGERING

Brett Vodovic, 17 years of age, presents to you with a 10 day history of 'dizzy spells' especially when he gets out of bed or stands up after sitting down. His mother observed at home that he 'staggers' and veers to one side. During some of these episodes, the room spins around and he feels nauseated and frightened. He has not had any tinnitus or deafness. He has been otherwise well and before this episode had been prescribed minocycline for facial acne vulgaris. Physical examination at the time of presentation (including pulse, blood pressure – lying and standing, cardiovascular, neurological and otoscopic examination) is normal.

QUESTION 1

What is the probability diagnosis?

QUESTION 2

What is the explanation of this problem?

QUESTION 3

How would you manage this problem?

CASE 10 ANSWERS

ANSWER 1

It is likely that Brett has is drug induced vertigo due to minocycline.

ANSWER 2

Minocycline is one of many antibiotics that can cause adverse vestibular effects, presumably vestibular neuronitis. It is occasionally encountered in patients who are prescribed the antibiotic for acne. Drugs that commonly cause dizziness are presented in *Table 8*.

Table 8. Drugs that can cause dizziness[9,13]

- Aspirin and salicylates
- Antibiotic (streptomycin, gentamicin, tetracyclines)
- Antiepileptics (phenytoin)
- Antidepressants
- Antihypertensives
- Antihistamines
- Quinine-quinidine
- Tranquillisers (phenothiazines, benzodiazepines)
- Diuretics in large doses (intravenous frusemide, ethacrynic acid)
- Glyceryl trinitrate
- Alcohol
- Cocaine

ANSWER 3

Discontinue the antibiotic and treat expectantly. The problem should resolve soon after its withdrawal. Otherwise one of the antivertiginous drugs, such as metoclopramide or promethazine,[13] can be prescribed while still symptomatic.

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PROFESSIONAL RESOURCES

- Therapeutic Guidelines Neurology Expert Group. Therapeutic guidelines: neurology, version 4, 2007 has prescribing information for vertigo. Available at www.tg.org.au
- The International Headache Society has information regarding the diagnosis of migraine. Available at http://ihs-classification.org/en/_suche/?view=search_result&query_string=migraine
- The stroke foundation has information on assessment and early treatment of transient ischaemic attack/stroke. Available at www.strokefoundation.com.au
- DVDs demonstrating the Hallpike manoeuvre and nystagmus in BPPV available at www.bmj.com/content/339/bmj.b3493.full
- Epley manoeuvre DVD available at www.australianprescriber.com/upload/issue_files/2804_epley.mov
- DVDs on various diagnostic and therapeutic manoeuvres available at www.dizziness-and-balance.com/sitedvd.htm
- Check Program. Ear nose and throat. Case 4, April 2011; unit 469.

PATIENT RESOURCES

- The Better Health Channel has information on dizziness and vertigo for patients. Available at www.betterhealth.vic.gov.au/bhcv2/bhcarticles.nsf/pages/dizziness_and_vertigo?open
- Headache Australia has information on migraine for patients. Available at http://headacheaustralia.org.au/headache-types/17-migraine-a-common-and-distressing-disorder
- Menieres Australia provides information on Meniere syndrome and support services. Available at www.menieres.org.au.

FURTHER READING

- The following article provides a summary of clinical assessment and treatment of dizziness/vertigo. Mark Paine. Dealing with dizziness. Aust Prescr 2005;28:94–7. Available at www.australianprescriber.com/magazine/28/4/94/7
- This article outlines a diagnostic approach to vertigo and highlights red flags to be aware of in cases of vertigo. Kevin Barraclough, Adolfo Bronstein. Diagnosis in general practice: Vertigo. BMJ 2009;339:b3493. Available at www.bmj.com/content/339/bmj.b3493.full.

Dizziness

In order to qualify for 6 Category 2 points for the QI&CPD activity associated with this unit:

- read and complete the unit of *check* in hardcopy or online at the *gplearning* website at www.gplearning.com.au, and
- log onto the *gplearning* website at www.gplearning.com.au and answer the following 10 multiple choice questions (MCQs) online
- complete the online evaluation.

If you are not an RACGP member, please contact the *gplearning* helpdesk on 1800 284 789 to register in the first instance. You will be provided with a username and password that will allow you access to the test.

The expected time to complete this activity is 3 hours.

Please note:

- from January 2011, there will no longer be a Category 1 activity (ALM) associated with *check* units. This decision was made due to a lack of interest in this activity. The RACGP apologises for any inconvenience caused by this change
- do not send answers to the MCQs into the *check* office. This activity can only be completed online at www.gplearning.com.au.

If you have any queries or technical issues accessing the test online, please contact the *gplearning* helpdesk on 1800 284 789.

QUESTION 1

Hank is 35 years of age and presents with a painful rash on his right ear associated with vertigo, tinnitus and deafness of the right ear, and drooping of the right side of the face. On examination, he is ataxic, has nystagmus, a right sided facial nerve palsy, and you note the presence of vesicles on his right ear and diagnose Ramsay-Hunt syndrome. Which of the following is true of Ramsay-Hunt syndrome?

A. It is thought to be due to reactivation of herpes simplex infection of the geniculate ganglion of the seventh cranial nerve

B. It is characterised by a facial nerve palsy of the upper motor neuron type

C. It involves the seventh cranial nerve, but can also involve the fifth, sixth, eighth and ninth cranial nerves

D. Opioids can be used to reduce the intensity of the vertigo

E. Corticosteroids are the drug of choice used to treat Ramsay-Hunt syndrome.

QUESTION 2

Alice is 62 years of age and presents with a 3 day history of brief episodes of 'spinning' of the head when performing daily tasks such as hanging washing on the line or getting a cup from the overhead kitchen cupboard. You suspect that she has benign paroxysmal positional vertigo (BPPV). Which of the following is true of BPPV?

A. It occurs most commonly in young adults

B. Attacks are usually accompanied by vomiting

C. The Epley manoeuvre is used to confirm the diagnosis

D. Prochloperazine is useful in treating BPPV

E. It usually resolves spontaneously.

QUESTION 3

Fiona is 49 years of age, and presents with her first episode of vertigo, which has been present for the last 6 hours. Her vertigo is associated with nausea and vomiting. Regarding treatment of acute peripheral vestibulopathy due to vestibular neuritis, which of the following is true?

A. Rest in bed, lying on the unaffected ear, may help reduce symptoms

B. Prochlorperazine can be used for several weeks without concern

C. The rationale for use of diazepam in acute peripheral vestibulopathy is to reduce anxiety associated with the vertigo

D. Treatment with vestibular physiotherapy in the acute phase can help prevent complications

E. A short course of corticosteriods in a tapering dose may promote recovery.

QUESTION 4

Tony is 45 years of age. He is a scientist who presents to you with vertigo, which you suspect is due to vestibular neuritis. He has been researching on the internet and is confused about terminology. Regarding terminology, which of the following is **not** correct?

A. Acute peripheral vestibulopathy is usually due to vestibular neuritis

B. Vestibular neuritis involves the vestibular nerve

C. Acute labyrinthitis is characterised by acute vertigo, nausea, vomiting, hearing loss and possibly tinnitus

D. Acute labyrinthitis involves the cochlea and organs of balance

E. Acute vestibular syndrome is synonymous with acute vestibular failure.

QUESTION 5

John is 53 years of age and over the last few months has had several bouts of vertigo, each lasting about 3 hours, and associated with tinnitus and deafness. You suspect that John has Meniere syndrome. What is the next step in the management of Meniere syndrome?

A. Reassure John that Meniere syndrome usually undertakes a benign course

B. Advise a salt free diet

C. Prescribe betahistine

D. Refer for audiological assessment and possibly neurological assessment

E. Refer for consideration of surgery.

QUESTION 6

Michelle is 26 years of age, and she presents with recurrent episodes of true vertigo, some of which have been associated with hearing loss, and the most recent of which was preceded by an upper respiratory tract infection. She also has a past history of migraine. In differentiating Meniere syndrome from other causes of true vertigo, which of the following is **not** correct?

A. Recurrent, severe attacks of vertigo lasting 30 minutes each are more likely to suggest a diagnosis of Meniere syndrome than acute peripheral vestibulopathy

B. Tinnitus and deafness occur in Meniere syndrome but not in migrainous vertigo or acute peripheral vestibulopathy

C. A past or family history of migraine favours a diagnosis of migraine

D. In both migrainous vertigo and Meniere syndrome, there may be identifiable triggers of episodes

E. True vertigo lasting 5 hours is more consistent with a diagnosis of Meniere syndrome than migraine.

QUESTION 7

Samantha is 18 years of age, and she presents to you having had an episode of dizziness, that you suspect is hyperventilation. Regarding management of Samantha's hyperventilation you:

A. encourage Samantha to breathe into a plastic bag

B. prescribe minor tranquilisers

C. advise Samantha that calcium supplements can help prevent hypocalcaemic tetany

D. advise Samantha that dealing with any underlying anxiety is one of the most helpful measures to reduce her symptoms

E. request investigations to exclude more serious causes of symptoms such as supraventricular tachycardia and phaechromocytoma.

QUESTION 8

Elsie is 88 years of age, and complains of lightheadedness which comes almost to the point of 'fainting'. You suspect that she has orthostatic hypotension. Regarding orthostatic hypotension, which of the following is correct?

A. Orthostatic hypotension is usually due to middle ear disease

B. Orthostatic hypotension can be precipitated by eating meals and alcohol consumption

C. Dizziness occurring in any position (lying, sitting or standing) is consistent with a diagnosis of orthostatic hypotension

D. Orthostatic hypotension leads to symptoms from which recovery is usually prolonged

E. 'Senile orthostatic hypotension' is usually associated with a postural drop on examination in the office.

QUESTION 9

Janiki is 51 years of age and presents with an unsteady gait, deafness in her left ear and numbness of the left side of her face. You suspect that she may have an acoustic neuroma. Which of the following is true of acoustic neuroma?

A. It usually arises from the seventh cranial nerve and spreads to involve the fifth and eighth cranial nerves

B. It usually presents with vestibular symptoms

C. The diagnostic triad of symptoms is hearing loss + facial numbness + unsteady gait

D. The diagnosis is usually confirmed on a computed tomography scan

E. Auditory brainstem response is characterised by an increase in the latency of the fifth wave.

QUESTION 10

Osvaldo is 65 years of age, and presents with episodes of experiencing the sensation of the room spinning. You obtain further history and decide that he has vertebrobasilar ischaemia. Regarding vertebrobasilar ischaemia, which of the following is true?

A. Symptoms of vertebrobasilar ischaemia include dysphasia and unilateral weakness of the respective upper and lower limb

B. Vertebrobasilar ischaemia is usually accompanied by a headache

C. Vertebrobasilar ischaemia often presents with isolated vertigo

D. Symptoms of vertebrobasilar ischaemia may resemble those of a basilar migraine

E. Vertebrobasilar ischaemia may occasionally be accompanied by tinnitus.