



GP Handbook v8.2

Neurology

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DIZZINESS & VERTIGO

Dizziness and vertigo are among the most common symptoms causing patients to visit a doctor (as common as back pain and headaches). The overall incidence of dizziness and vertigo is 5-10%, and it reaches 40% in patients older than 40 years.

Causes

- Dizziness is so common and non-specific that it can be associated with just about any medical conditions from URIs to brain tumours to leukaemias...
- True vertigo: usually indicating vestibular disorder, of which 85% are peripheral and only 15% are central
- Inner-ear diseases: commonly associated with tinnitus and/or hearing loss
- Migraine (10%): 40% have vertigo, motion sickness, and mild hearing loss
- Ménière's disease (<1%): a grossly over-diagnosed condition in Hong Kong
- Orthostatic hypotension, rather than hypertension (with which a lot of patients are obsessed), may be implicated.
- Non-specific/idiopathic: may be related to mood disorders (including depression, anxiety, panic attacks, hyperventilation syndrome...etc)

History

Vertigo vs non-vertigo

Ask the patient to describe their symptoms by using words other than "dizzy." - patients may use dizzy non-specifically to describe vertigo, unsteadiness, generalized weakness, syncope, presyncope, or falling.

- Vertigo (the true rotational movement of self or the surroundings) - often due to inner-ear disease
- Non-vertigo (light-headedness, unsteadiness, motion intolerance, imbalance, floating, or a tilting sensation) - may be due to CNS, cardiovascular, or systemic diseases

Onset, description and duration

Sudden onset and vivid description of vertigo episodes are often due to inner-ear disease, especially if hearing loss, ear pressure, or tinnitus is also present. Gradual and ill-defined symptoms are most common in mood disorders, CNS, cardiac, and systemic diseases.

Episodic vertigo that lasts for seconds and is associated with head or body position changes is probably due to benign paroxysmal positional vertigo (BPPV), a rather common condition. Vertigo of sudden onset that lasts for minutes can be due to brain or vascular disease, especially if cerebrovascular risk factors are present. Vertigo that lasts for hours or days is probably caused by vestibular neuronitis (especially after a flu syndrome), or much less frequently Ménière's disease (a grossly over-diagnosed condition).

Central vs peripheral vertigo

The most common cause of central dizziness is migraine, frequently referred to as vestibular migraine or migraine-associated dizziness. Central vertigo secondary to brainstem or cerebellar lesions are usually more serious and often associated with diplopia, autonomic symptoms, nausea, dysarthria, dysphagia, or focal weakness. Acoustic neuroma and demyelination are less common seen. Patients with peripheral vertigo (eg BPPV, vestibular neuronitis) can usually ambulate during episodes and are consciously aware of their environment.

Associated symptoms

A history of headaches, especially migraine headaches, can be associated with migraine-related dizziness. Previous viral illness, cold sores, or sensory changes in the cervical C2-C3 or trigeminal distributions usually indicate vestibular neuronitis or recurrent episodes of Ménière's disease.

The history should include a review of systems (especially head trauma and/or ear diseases) and screening for mood disorders and a proper drug history.

Physical Examination

For every patient with dizziness / vertigo

- Vital signs, supine and standing blood-pressure measurement, and evaluation of the cardiovascular and neurologic systems
- Auriscopy and hearing test (using a tuning fork or by whispering)
- Neck examination for range of movements
- A robust oculoccephalic reflex (doll's eye reflex) and dynamic visual acuity (intact visual acuity with active head movements) reflect good vestibular function.

Peripheral and central nystagmus

Peripheral nystagmus (indicating peripheral vestibular dysfunction) is usually rotatory and most evident with removing visual fixation, with the intensity of nystagmus increasing with gaze in the direction of the fast phase. Central nystagmus (indicating central vestibular dysfunction) is a purely horizontal or vertical gaze and not suppressed by visual fixation.

Positioning test

The positioning test (Dix-Hallpike test) is an important component of the vestibular examination to identify BPPV. It is performed by guiding the patient rapidly from a sitting position with the head turned 45° to one side to a lying position, and looking for nystagmus (vertical, horizontal or rotary).

Test of vestibulospinal reflexes

Vestibulospinal reflexes can be evaluated with Romberg test. Clinical testing of postural stability is qualitative and requires both experience on the part of the examiner and cooperation by the patient.

Hyperventilation test

If the results of vestibular examination normal, hyperventilation for 2 minutes is helpful in identifying patients with hyperventilation syndrome. This should be done in the sitting position.

Hyperventilation must be done while the examiner monitors for nystagmus. Hyperventilation can accentuate both central and peripheral vestibular dysfunction and reproduce dizziness and neurological symptoms due to hyperventilation syndrome.

Investigations

Further investigations must be tailored according to the history and physical findings.

- General blood screening
- Audiometry
- CT/MRI: The yield (acoustic neuromas, or other brainstem and posterior fossa lesions...etc) in patients younger than 50 years is low (<1%).
- Vestibular tests (eg neurologic examination, and audio and vestibular studies): rarely indicated nowadays as results are not diagnostic in the medical sense, eg unilateral vestibular loss can be due to vestibular neuronitis or an acoustic tumor

Treatment

In Hong Kong most patients with dizziness or vertigo are wrongly diagnosed as suffering from Meniere's disease. Very unfortunately most of these patients firmly believe the wrong diagnosis because their conditions seem to respond to the symptomatic treatment prescribed by the doctors. This has delayed the diagnosis of the more sinister diseases, and caused an over-prescription of vestibular suppressants, the unscrupulous use of them can impair the brain's natural compensatory mechanism for peripheral vertigo.

Acute dizziness and vertigo is usually managed with vestibular suppressants (eg Dimenatate 50mg qid, Bymeriere 6mg qid, PCP 5mg qid, Diazepam 2mg tds), antiviral medications, and antiemetic medications. Steroids can be used in selected patients.

Vestibular Neuronitis

Vestibular neuronitis is a common cause of acute vertigo with an incidence of 170 case per 100,000 people. It is believed to be of viral etiology. A prodromal upper respiratory tract illness may or may not be present. Vertigo without auditory symptoms develops and lasts for several days.

Vestibular compensation proceeds in the usual fashion, with the most severe vertigo resolving in 1 week. The predilection for the superior division of the vestibular nerve leaves the function of the posterior canal intact in most cases. This effect predisposes to posterior canal benign paroxysmal positioning vertigo as a sequela.

A brief course of an antiemetic and vestibular suppressants is usually needed in the acute phase. Corticosteroids may improve long-term outcomes. Early vestibular rehabilitation is important. Antiviral medications have not proven helpful, possibly because a large spectrum of viruses can cause vestibular neuronitis. One third of patients have chronic vestibular symptoms.

Benign Paroxysmal Positioning Vertigo (BPPV)

In BPPV dizziness is generally thought to be due to debris which has collected within a part of the inner ear. This debris is called otoconia, which are small crystals of calcium carbonate derived from the utricle, which may have been damaged by head injury, infection, or other disorder of the inner ear, or may have degenerated because of advanced age.

About 20% of all dizziness is due to BPPV, and about 50% of all dizziness in older people is due to BPPV. The symptoms of BPPV include dizziness or vertigo, lightheadedness, imbalance, and nausea. The triggering activities (getting out of bed or rolling over in bed, use of shampoo bowls in beauty parlours) typically vary among persons, but symptoms are almost always precipitated by a change of position of the head with respect to gravity. Some patients notice worsening of symptoms with stress. An intermittent pattern is common.

In Hong Kong, most of the cases diagnosed as Meniere's disease are actually BPPV.

Causes

The most common cause of BPPV in people under age 50 is head injury. There is also an association with migraine. In older people, the most common cause is degeneration of the vestibular system of the inner ear. BPPV becomes much more common with advancing age. In half of all cases, BPPV is idiopathic. Vestibular neuronitis, minor strokes, and Meniere's disease are significant but unusual causes. Occasionally BPPV follows surgery, where the cause is felt to be a combination of a prolonged period of supine positioning, or ear trauma when the surgery is to the inner ear. BPPV is also associated with ototoxic medications such as gentamicin.

Expectant treatment

BPPV has often been described as "self-limiting" because symptoms often subside or disappear within 2 months of onset. With expectant treatment certain modifications in daily activities may be beneficial:

- Use two or more pillows at night.
- Avoid sleeping on the "bad" side.
- In the morning, get up slowly and sit on the edge of the bed for a minute.
- Avoid bending down to pick up things, and extending the head, such as to get something out of a cabinet.
- Be careful when at the dentist's office, the beauty parlor when lying back having ones hair washed, when participating in sports activities and when lying supine.

Symptoms tend to wax and wane. Anti-emetics are sometimes helpful in relieving the associated nausea but are otherwise rarely useful. In general, medications are NOT effective in the treatment of BPPV.

The Epley maneuver

The Epley maneuver is very effective, with roughly an 80% cure rate. Taking about 15 minutes to complete, the maneuver is intended to move otoconia out of the posterior canal to a less sensitive location. The procedure involves sequential movement of the head into 4 positions, staying in each position for roughly 30 seconds. The recurrence rate for BPPV after these maneuvers is about 30 percent at one year, and in some instances a second treatment may be necessary. Use of an antiemetic prior to the maneuver may be helpful if nausea is anticipated.

Other treatment

There are other maneuvers/exercises to use if the Epley maneuver fails. When all of them have been tried, the diagnosis is clear, and symptoms are still intolerable, surgical management (posterior canal plugging) may be offered.

Ménière's disease

It entails the classic triad of episodic vertigo, tinnitus, and hearing loss. Untreated, severe hearing loss and unilateral vestibular paresis are inevitable. Bilateral involvement occurs in 1/3 of patients. The mechanism can be hereditary, autoimmune, infectious, or idiopathic. The common pathophysiology is disordered fluid homeostasis in the inner ear, with endolymphatic hydrops representing a histologic footprint rather than an etiology.

More than 80% of patients respond to conservative therapy with salt restriction and diuretics. Corticosteroids, given orally or intratympanically, can be used to stabilize active disease. The role of surgical therapy, such as shunting the endolymphatic sac, is controversial. The literature demonstrates wide variation in the effectiveness, or lack thereof, of surgery.

HEAD INJURY

Initial Assessment

- History (interview eye witness if possible)
- Mechanism of injury (height, speed, landing part on the ground...)
- Any loss of consciousness?
- Symptoms suggesting intracranial pathology (nausea and vomiting, headache especially during morning...)
- Past history (fits, DM, arrhythmia, bleeding diathesis...)

Physical Examination

- Full examination for whole body for associated injury
- Vital signs and neurological exam including pupil
- Palpation of skull for depressed fracture
- Inspect ear and nose (haemotympanum, CSF leaks, Battle's sign*...)

** Battle's sign is seen several days following a basal skull fracture. There may have been bloody drainage from the ear immediately after the fracture occurred.*

Indications for Brain Scan / Hospitalization

- Neurological signs or symptoms
- Persistent vomiting.
- Tense fontanelle in children
- History of unconsciousness or confusion
- Skull fracture
- Penetrating injury
- Palpable depression in scalp
- Laceration down to bone
- Cephalohaematoma
- Injury with haemorrhage around the eyes / CSF rhinorrhoea / otorrhoea / haemotympanum
- <1 year of age
- Coagulation disorders

Minor Head Injury

- Make sure the patient can be properly looked after by a caretaker.
- Warn the patient to come back if there is nausea / vomiting / lethargy / earache / convulsions.
- Give written instructions to the patient or the caretaker as to what to do in case the above symptoms appear.

HEADACHE

It was estimated that 85% of the population experienced headache within 1 year. The important diagnoses not to be missed are subarachnoid haemorrhage and meningitis. One should keep in mind the possibility of medications as a cause of headache: alcohol, analgesics (rebound headache), caffeine, steroids, H2 antagonists, NSAIDs (indomethacin)

Tension Headache

Usually bilateral, a feeling of constant and dull tight pressure, continuous, usually worse in the afternoon and evenings, related to stress and over work, radiating from forehead to occiput.

Management

- Reassurance
- Relaxation
- Mild analgesics (paracetamol and/or NSAID) +/- sedative +/- hypnotic

Migraine

- Affecting 10% of men and 30% of women
- Aura: sensory (paraesthesia), visual (scotoma and hemianopia)
- Unilateral temporal frontal
- Radiating to retro-orbital and occipital regions
- Throbbing in nature
- Recurrent
- Onset at young age
- Family history

Aggravated by

- alcohol
- red wine
- cheese
- excessive noise
- emotional stress
- bright light
- hormonal change

Relieved by

- sleeping
- vomiting

Management

- Rest in quiet dark room; use cold pack; avoid aggravating factors,
- First line medications: Paracetamol (DHAMol) 1gm qid + Metoclopramide 10mg qid prn
- Alternatives: Sumatriptan succinate (Imigran) 50mg at the first prodromal symptoms, repeat in 2 hours prn (contraindicated in coronary artery disease)

Prophylaxis

- Indications: > 2 attacks per month, poor response to treatment

- Not so commonly indicated with the advent of Imigran
- Ergot preparations seldom used nowadays
- Typical prescriptions: propranolol 40mg bd, and amitriptyline 25mg bd

Migraine associated dizziness

About 25% of migraine sufferers have dizziness. All forms of dizziness can occur with migraine: vertigo, positional dizziness, disequilibrium, motion intolerance, and visual motion sensitivity. Dizziness can occur as an aura or as part of a headache. However, 1/3 of patients consistently have dizziness in the interval between headaches.

The treatment of migraine related dizziness is the same as the treatment of migraine.

Cluster Headache

- Over one eye, radiating to frontal and temporal, male to female ratio = 6:1
- Frequency: 1-3 times/day, commonly at regular time each day
- Duration: 15min - 2 hr
- Associated with rhinorrhoea, redness of the ipsilateral eye
- Management: as in acute attacks of migraine

Frontal Sinusitis

- Preceding history of URTI, dull throbbing in nature, usually in the morning.
- Aggravated when bending forward
- Maxillary tenderness (isolated frontal sinusitis is a rare, bacterial and potentially serious condition that requires immediate referral)
- Relieved by antihistamines/decongestants and drainage of nose or sinuses

Diagnoses Not to Miss

Subarachnoid haemorrhage (SAH)

- Sudden onset
- Impaired consciousness
- Vomiting
- Focal neurological signs

Meningitis

- Fever
- Neck stiffness
- Kerning sign

Temporal arthritis

- Elderly patient
- Persistent unilateral throbbing pain over temporal region
- Worse in morning

INSOMNIA

Insomnia is defined as dissatisfaction with the amount of sleep, either in difficulty in getting into sleep or early morning waking, or both.

Sleep Hygiene

Do

- Make the bedroom a place to sleep, not a place to work or to solve problems.
- Establish a pre-sleep routine to tell the brain that you are going to sleep.
- Go to bed and get up at roughly the same time each day.
- Go to bed only when you feel sleepy - otherwise do something else, eg reading.
- Sit out of bed and do something else until sleep seems possible again if you cannot sleep after being in bed for a while (eg 20 min).

Do NOT

- take caffeine, nicotine or alcohol 4 hours before sleep (alcohol may induce sleep, but you may wake up a few hours later with rebound alertness).
- eat or exercise right before sleep.
- take daytime naps.
- drink warm milk or other beverages right before retiring as they could cause nocturia.

Pharmacological Treatment

General

- Hypnotics may help in both short term and long term insomnia.
- An initial treatment period of 2 weeks is recommended and regular follow-up is necessary. Tapering off the hypnotic when the patient does not need it.
- Side effects: hang-over, tolerance, rebound insomnia, amnesia and withdrawal symptoms
- Contraindications: hypersensitivity, sleep apnoea syndrome, respiratory insufficiency, children and liver impairment

Non-benzodiazepines

- For short term insomnia try a sustained release sedating antihistamine first, eg dexchlorpheniramine (Rhiniramine) 6 mg 1 tab hs
- If antihistamines are not effective, try zolpidem (Stilnox) 10mg hs

Benzodiazepines

- For moderate to severe insomnia benzodiazepines midazolam (Dormicum) 7.5-15mg hs, or flunitrazepam (Rohypnol) 0.5-2mg hs can be tried.
- There seems to be no ceiling dosage for individual patients, and special attention should be given to avoid overdosage, the symptoms of which include drowsiness, vomiting, respiratory depression, hypotension and ataxia.