Vertigo and dizziness

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Introduction
Vertigo is the sensation of abnormal movement in relation to oneself, typically a rotary sensation of the patient or surroundings. Often patients may describe ‘dizziness’ – it is important to identify whether the patient is describing lightheadedness or vertiginous symptoms. There are many different types and causes of vertigo. Common causes of vertigo in the hospitalised patient include stroke, aminoglycoside antibiotic use (causing vestibulotoxicity), benign paroxysmal positional vertigo and vestibular neuritis.

Case 1 – you are a junior doctor on the geriatric ward and are asked to review a 78 year-old female, Mrs M, who has been admitted with an upper respiratory tract infection. She states she feels dizzy, and the nurse thinks she is describing vertigo.

1. Initial questions over the phone?
   - Important to identify whether this may be an acute cardiac or neurological event
   - What are the vital signs?
   - Has there been a recent fall or other trauma?
   - Is the patient dehydrated? Are they anaemic?

2. Outline your assessment approach by the bedside
   - History:
     - Clarify the time of onset – if this is an acute stroke they may be eligible for thrombolysis (3 hours) or clot retrieval (6 hours)
     - Clarify whether the symptom is indeed vertigo (this is a neurological symptom)
       - Abrupt onset, of constant intensity and getting worse – suggestive of stroke
       - If there are other signs suggestive of acute stroke (e.g. facial droop, dysarthria) the patient’s care needs to be urgently escalated
     - Assess patient’s risk factors for stroke e.g. hypertension, dyslipidaemia
     - Features suggestive of other differentials:
       - BPPV: sudden onset following a fall or turning head in bed, symptomatology resolves within 30 seconds
       - Vestibular neuritis: of gradual onset, worsens with time
       - Meniere’s disease: describe a feeling of fullness in one ear or hearing impairment that is progressive over time
     - Associated symptoms:
       - Nausea and vomiting: not very helpful, most patients with vertigo will be nauseous
       - Tinnitus and hearing loss: if the history is suggestive of a chronic relapsing problem, these associated features are suggestive of Meniere’s disease; however, if the hearing loss is acute it may be suggestive of a central problem

Summarised by Dr Antonia Clarke, Resident, Royal Prince Alfred Hospital. March 2016
**Examination:**
- Review the patient for associated neurological signs e.g. facial droop, hemiplegia
- Assess for nystagmus:
  - Peripheral lesions: typically horizontal, nystagmus beats in one direction, as you move toward the direction of beating, the nystagmus will speed up e.g. vestibular neuritis
  - Central lesions: torsional nystagmus, up-beat or down-beat nystagmus
  - In the case of BPPV: no nystagmus at rest but a positive Dix-Hallpike test with no other neurological signs
- Head impulse test: examines the vestibulo-ocular reflex
  - Always ask if the patient has a sore neck or if they have a history of rheumatoid arthritis or other joint disease (do not do this test in these cases)
  - Rapidly thrust the patient’s head to the left and right:
    - If the patient’s eyes can fix on a target, the reflex is intact
    - When the head is turned towards the affected side, the vestibular ocular reflex fails and the eyes make a corrective saccade to re-fixate on the visual target
  - A positive Head Impulse test in the presence of vertigo suggests unilateral hypofunction of the peripheral vestibular system
  - A negative Head Impulse test in the presence of vertigo raises concerns for a central lesion
- Dix-Hallpike manoeuvre: a positive manoeuvre is diagnostic for BPPV (specifically, the posterior canal)
  - It is useful to google a video for this test
  - At the end of the test, the patient’s head should be extended back 45 degrees and tilted to the side; a pillow under the patient’s back can assist with this manoeuvre
  - It is important to instruct the patient to keep their eyes open – you are looking for torsional nystagmus in the direction of the floor, this is a positive Dix-Hallpike manoeuvre
- Cerebellar exam: ensure they are not dysmetric
- Red flags: nystagmus that changes direction with different directions of gaze, torsional nystagmus or disturbance of extraocular movements i.e. brainstem signs

**3. Investigations**
- Imaging is usually unnecessary for the more reassuring patient with clear signs
- In other cases, need to exclude intracranial lesions:
  - Non-contrast CT brain: stroke (normal CT doesn’t exclude an acute cerebellar stroke), intracranial tumour, haemorrhage
  - CT perfusion and angiogram as part of a stroke work-up (this is not performed at all centres)
  - MRI brain at a later stage
  - NB: if the patient has tinnitus or hearing symptoms, notify the radiologist – the patient should have further sequences examining the inner ear and nerves
- Consider other investigations as part of stroke work up

**4. Management**
- BPPV: Epley manoeuvre (particularly beneficial for posterior canal BPPV)
- Anti-emetics for nausea
- Anti-histamines for vertigo
- Consider a Neurology consult:
  - Stroke call if concerned
  - Persistent vertigo where the cause is not clear
  - Intractable nausea and vomiting
5. **Take home messages**
   - If you think the patient is having a stroke, activate a stroke call
   - Learn and practice the head impulse test and the Dix-Hallpike manoeuvre
   - Identify the difference between the features of central and peripheral nystagmus

**References**