Case 6:

EDINBURGH UNIVERSITY
EAR NOSE & THROAT
SOCIETY

The Edinburgh ENT Soc cases have not been proofread by any professionals or members of the medical school. They have been made based on the guidelines available at the time.

For questions and feedback please email us at edinburghentsoc@gmail.com or use our social media pages (@EUENTSOC on instagram, @EdinburghENTSoc on Facebook).

Samuel Gibson, a 65-year-old male, presents to his GP complaining of episodes of dizziness with associated collapsing, nausea and vomiting. He describes the episodes as a sensation of the room spinning, lasting up to a few hours. The attacks have been occurring for 1 year.

He also experiences fluctuating hearing loss and ringing in his left ear. The attacks are random, with no exacerbating or relieving factor.

Question 1: What is the most likely diagnosis?

Question 2: What investigation(s) would confirm the diagnosis?

Answers to Q1-2:

The combination of the following symptoms makes **Meniere's disease** most likely:

- Vertigo (≥2 episodes lasting 20mins-12hours)
- Fluctuating hearing, tinnitus, and/or perception of aural fullness in affected ear
- Hearing loss in the affected ear before, during, or after an episode of vertigo (≥1 occasions)

Some other conditions may be on your differential diagnosis at this point:

- **Benign Paroxysmal Positional Vertigo (BPPV)** manifests as sudden, short-lived (<30 seconds) episodes of vertigo elicited by specific head movements.
- **Multiple Sclerosis** is unlikely; though vertigo may be present in MS, it only affects 1/3 patients. Typical MS symptoms include visual loss, tingling, numbness and limb weakness.
- **Vestibular neuronitis** manifests as acute-onset episodes of vertigo which last days-weeks.

In terms of investigations, **audiometry** is recommended to confirm the low-frequency, sensorineural hearing loss seen in Meniere's. However, diagnosis may be challenging due to the relapsing-remitting nature of the disease.

MRI may exclude other causes of symptoms (e.g. acoustic neuroma).

A positive Dix-Hallpike manoeuvre would confirm Benign Paroxysmal Positional Vertigo, not Meniere's.

Question 3: What is the pathophysiology of Meniere's disease?

Question 4: What is/are the treatment option(s) for Meniere's disease?

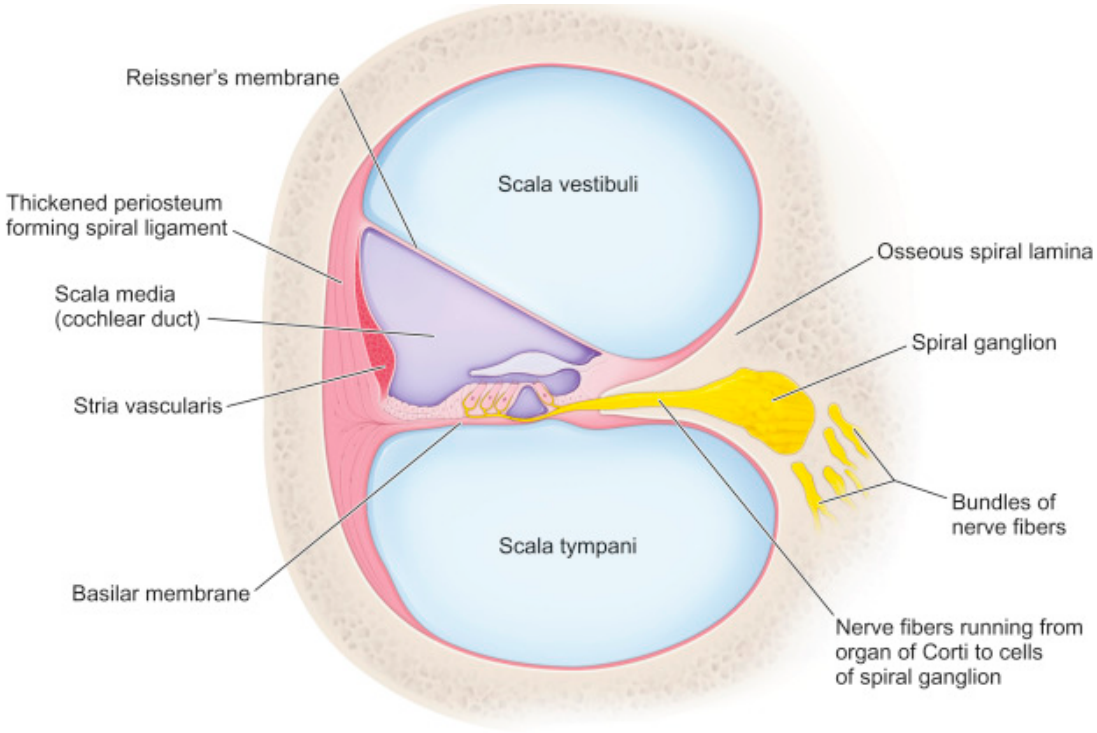
Question 5: What actions must be taken by patients with Meniere's disease?

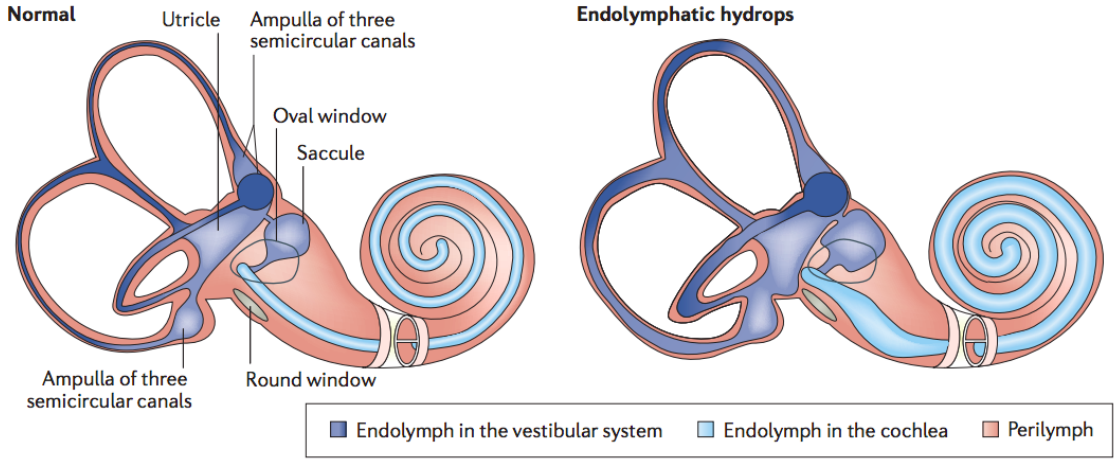
Answers to Q3-5:

Pathophysiology of Meniere's disease:

Over-production or impaired resorption of endolymph results in endolymphatic hydrops. This is a build-up of endolymph, resulting in a distended endolymphatic space. The underlying cause is unknown.

During an attack, the excessive pressure of endolymphatic fluid causes distension & rupture of Reissner's membrane (inside the cochlea, see image below).





This causes release of potassium-rich endolymph into the perilymphatic space, injuring the sensory and neural elements of the inner ear. This manifests as sudden hearing loss, tinnitus and vertigo.

Between attacks, the Reissner's membrane may reattach itself, restoring the chemical balance, meaning symptoms remit.

Examination is often normal between attacks, making diagnosis difficult. Treatment is started before confirming the diagnosis by audiometry.

Treatment of Meniere's disease:

- 1st line:
    - All patients are advised to restrict salt intake to <1500-200mg/day to prevent water retention & redistribution to the endolymphatic system. For the same reason, diuretics are also prescribed.
    - Vestibular suppressants, anti-emetics (e.g. antihistamines) or corticosteroids
- Adjunct:
    - Intratympanic corticosteroid or gentamicin injection
    - Meniett device: handheld device that delivers intermittent pressure pulses through the ear canal and is self-administered 3 times per day. A tympanostomy tube is placed in the tympanic membrane and should be kept patent throughout the treatment. The principles behind its effectiveness are not well understood.
    - Vestibular and balance rehabilitation
- Surgery: endolymphatic sac surgery, vestibular nerve section or labyrinthectomy → used as lass resort if pharmacological management ineffective

Particle repositioning manoeuvres are used in BPPV, NOT Meniere's.

Specific considerations in Meniere's disease:

- Patients must stop driving and inform the DVLA when diagnosed with Meniere's disease
- Patients are advised to limit caffeine and alcohol intake and stop smoking.
- Advice on stress management may be offered

References:

BMJ Best Practice: Meniere's Disease https://bestpractice-bmj-com.ezproxy.is.ed.ac.uk/topics/en-gb/155

Meniere's Society: https://www.menieres.org.uk/

NHS: Meniere's Disease https://www.nhs.uk/conditions/menieres-disease/

NICE guidelines: https://cks.nice.org.uk/topics/menieres-disease/

Images:

https://www.sciencedirect.com/topics/immunology-and-microbiology/scala-vestibuli

https://www-nature-com.ezproxy.is.ed.ac.uk/articles/nrdp201628