

Balance disorders

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Vertigo is the hallucination of movement. Benign paroxysmal positional vertigo (BPPV) is the most common form of vertigo. It is caused by otoliths (calcium carbonate crystals) most commonly within the posterior semi-circular canal abnormally triggering the ampullary hair cells. Typically, the vertigo is triggered by turning, only lasts for a few seconds and is not associated with other otological symptoms. A positive Hallpike test confirms the diagnosis. The condition is usually self-limiting but recovery may be expedited by an Epley manoeuvre. Vestibular neuronitis Infection or inflammation of the superior vestibular nerve results in persistent vertigo lasting a few days. If the hearing is also affected, this is known as labyrinthitis. Treatment is supportive with vestibular sedatives, such as prochlorperazine, in the first few days, early mobilisation and consideration of systemic steroids. Menière's disease It has been said that clinicians not only disagree on the cause of Menière's disease, but they also disagree on the spelling. There is certainly evidence of endolymphatic hydrops (longstanding high-pressure changes within the inner ear) in pathological specimens of patients who have had the condition. The condition is characterised by a triad of symptoms: intermittent attacks of vertigo, a unilateral fluctuating sensorineural hearing loss and tinnitus. The patient often has a sensation of pressure in the affected ear before an attack. The hearing loss typically affects the lower frequencies. The vertigo characteristically lasts between 30 minutes and 6 hours and is often accompanied by nausea and vomiting. The investigations include pure tone audiometry and an MRI scan (to exclude an acoustic neuroma). The only evidence-based medical treatment is intratympanic injections of dexamethasone or gentamicin into the middle ear. Vestibular migraine Often confused with Menière's disease, this condition is five times more prevalent, presenting with similar symptoms but without the hearing loss or tinnitus. The migrainous process Prosper Menière, 1799–1862, physician, The Institute of Deaf Mutes, Paris, France, described this condition in 1861. Sir Charles Bell, 1774–1842, surgeon, The Middlesex Hospital, London UK, and from 1835 until his death, Professor of Surgery, The University of Edinburgh, Edinburgh, UK, affects the labyrinth in up to 40% of migraineurs. Treatment includes addressing the risk factors, such as lifestyle and dietary triggers, with prophylactic medication such as propranolol, tricyclic antidepressants and antiepileptic medication for those with ongoing symptoms. Facial paralysis Seventy-five per cent of all facial palsies are due to Bell's palsy. This probably results from a herpes simplex viral infection of the facial nerve. The nerve swells and is compressed within the temporal bone. Early treatment with high-dose steroids and eye protection is mandatory. Not all facial nerve palsies are due to viral infection and a thorough otoneurological examination is required. The facial nerve can be damaged at the cerebellopontine angle, within the internal auditory meatus, within the middle ear, at the skull base and within the parotid gland. It is essential to consider these potential sites of facial nerve damage in any patient with CN VII paralysis and perform an MRI scan if appropriate. - Summary box 51.7 Facial paralysis /uni25CF /uni25CF /uni25CF /uni25CF

-20 -10 0 10 20 30 40 50 60 70 Hearing level (dB ISO) 80 90 100 110 120 125 250 500 1000 2000 4000 6000 Frequency (Hz) Figure 51.30 A typical audiogram of noise damage: (a) right ear; -20 -10 0 X 10 X X 20 30 X 40 X 50 60 70 Hearing level (dB ISO) 80 X 90 100 110 120 125 250 500 1000 2000 4000 6000 Frequency (Hz) (b) left ear. The facial nerve passes through the middle ear and mastoid When considering a paralysis, think 'complete' or 'partial' Protect the eye: carry out a full otoneurological examination to find the cause If acute, consider steroids

Ramsay Hunt syndrome This is caused by herpes zoster virus and is characterised by facial paralysis, pain and the appearance of vesicles on the tympanic membrane, ear canal, pinna or inside of the cheek (Figure 51.31). It may be accompanied by vertigo and sensorineural hearing loss (CN VIII). Treatment with aciclovir is effective if given early . Neoplasms These are uncommon but can present with sensorineural hearing loss, tinnitus and vertigo. Acoustic neuromas, which are actually schwannomas of the vestibular division of CN VIII, are the most common, followed by meningiomas. Acoustic neuromas grow slowly and somewhat unpredictably and as they expand can cause CN palsies, brainstem compression Summary box 51.8 Conditions of the inner ear /uni25CF /uni25CF /uni25CF /uni25CF James Ramsay Hunt , 1874-1937, Professor of Neurology , Columbia College of Physicians and Surgeons, New York, USA. and raised intracranial pressure. The early symptoms are a unilateral sensorineural hearing loss or unilateral tinnitus, or both. Therefore, it is essential to perform MRI on all patients with persistent unilateral sensorineural hearing loss or tinnitus. Relatively asymptomatic acoustic neuromas that are less than 2 cm in diameter and growing less than 2 mm/year (70%) are generally treated with a 'watch, wait and rescan' policy or occasionally stereotactic radiotherapy . Tumour volumes greater than 2 cm in diameter are often best treated by skull base surgery in the form of a translabyrinthine, retrolabyrinthine or middle fossa approach. -

Figure 51.31 Herpes zoster infection of right cranial nerve (CN) VII Presbycusis is the bilateral high-frequency loss associated with ageing Unilateral tinnitus or sensorineural hearing loss needs to be investigated to exclude acoustic neuroma Sudden sensorineural hearing loss needs immediate treatment with steroids and routine MRI to exclude acoustic neuroma Menière's disease presents with the triad of sensorineural hearing loss, tinnitus and vertigo (a) and right CN VIII (b) with vesicles on the pinna.

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