3 EAR, NOSE, AND THROAT

EARS

Hearing Loss

The most common cause is aging (**presbycusis**). Treatment options include hearing aids and cochlear implants. The history may suggest other causes:

- Exposure to prolonged or intense loud noise
- **Bacterial meningitis** is the most common cause of acquired hearing loss in children. Follow all children with hearing testing after a bout of meningitis.
- **Congenital TORCH** (**t**oxoplasmosis, **o**ther agents, **r**ubella, **c**ytomegalovirus, **h**erpes simplex virus) **infection**
- **Diabetes mellitus**
- **Drugs** (aminoglycosides, aspirin, quinine, loop diuretics, cisplatin)
- Hypothyroidism
- Labyrinthitis (may be viral or can follow or extend from meningitis or otitis media)
- Ménière disease: accompanied by severe vertigo, tinnitus, nausea and vomiting; treated with anticholinergics, antihistamines (meclizine), or surgery (if refractory)
- Multiple sclerosis
- **Otosclerosis** is the most common cause of progressive **conductive** hearing loss in adults, and **presbycusis** is the most common cause of **sensorineural** hearing loss in adults. Otosclerosis can be differentiated from presbycusis by audiometry. If the patient is found to have conductive hearing loss, the next step is tympanometry. In otosclerosis, the otic bones become fixed together and impede hearing. Otosclerosis can be treated with a hearing aid or a prosthetic stapes implant.
- Pseudotumor cerebri
- Sarcoidosis
- **Tumor** (usually acoustic neuroma; Fig. 3-1)

Sudden Deafness

Sudden deafness develops over a few hours. It is most often caused by a virus (endolymphatic labyrinthitis from mumps, measles, influenza, chickenpox, adenovirus). Hearing usually returns within 2 weeks, but loss may be permanent. No treatment has proved effective; empiric steroids often are used. Trauma with temporal bone fracture is another cause of sudden hearing loss.

Vertigo

Vertigo may be caused by the same eighth cranial nerve lesions that cause hearing loss (Ménière disease, tumor, vestibular neuronitis, multiple sclerosis). Another common cause is benign positional paroxysmal vertigo (BPPV), which is induced by certain head positions and may be accompanied by nystagmus without associated hearing loss. The condition often resolves spontaneously; treatment is not necessary. Whereas BPPV only lasts seconds, the duration of vertigo in Ménière disease is minutes to an hour or so. In addition to vertigo, Ménière disease also includes tinnitus, hearing loss, aural fullness, and occasionally "drop attacks." Whereas vestibular neuronitis classically occurs after an upper respiratory tract infection, a tumor may involve other cranial nerves in addition to the eighth cranial nerve.

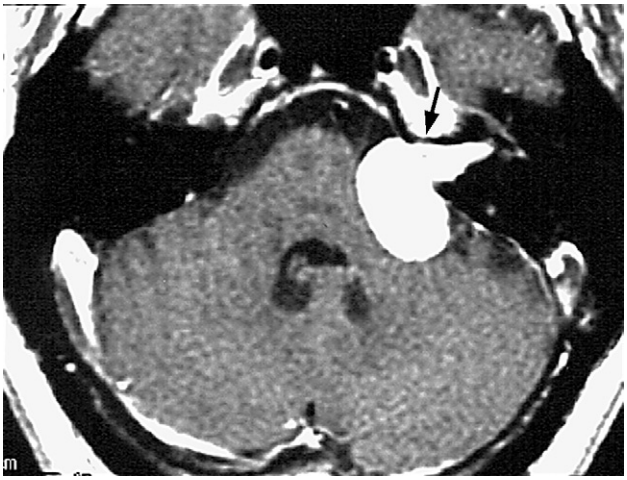

FIGURE 3-1 Magnetic resonance image revealing an acoustic neuroma *(arrow)*.

Otitis Externa (Swimmer's Ear)

Otitis externa is most commonly caused by infection with *Pseudomonas aeruginosa.* Manipulation of the auricle produces pain; the skin of the auditory canal is erythematous and swollen. Patients might have foul-smelling discharge and conductive hearing loss. Treat with topical antibiotics (e.g., fluoroquinolone drops). Topical steroids can reduce swelling.

Otitis Media

Otitis media is most commonly caused by infection with *Streptococcus pneumoniae*, *Haemophilus influenzae*, and *Moraxella catarrhalis*. Manipulation of the auricle produces no pain. Patients have earache, fever, an erythematous and bulging tympanic membrane (light reflex and landmarks are difficult to see), and nausea and vomiting. Complications include tympanic membrane perforation (bloody or purulent discharge), mastoiditis (fluctuance and inflammation over the mastoid process 2 weeks after otitis), labyrinthitis, palsies of cranial nerves VII and VIII, meningitis, cerebral abscess, lateral sinus thrombosis, and chronic otitis media (permanent perforation of the tympanic membrane). Patients can get cholesteatomas (a destructive, expanding growth consisting of desquamated keratin) with marginal perforations.

Treat cholesteatomas with surgical excision. Treat otitis with antibiotics to avoid complications (e.g., amoxicillin, second-generation cephalosporins such as cefuroxime, or a macrolide).

Recurrent otitis media is a common pediatric clinical problem (as well as prolonged secretory otitis, a result of incompletely resolved otitis) and can cause hearing loss with resultant developmental problems (speech, cognitive functions). Treatment consists of prophylactic antibiotics or tympanostomy tubes. Adenoidectomy is controversial but is thought to help in some cases by preventing blockage of the eustachian tubes.

Infectious myringitis (also known as bullous myringitis) is tympanic membrane inflammation caused by *Mycoplasma* spp., *S. pneumoniae*, or viruses. Otoscopy reveals vesicles on the tympanic membrane. The treatment for infectious myringitis is the same as that for acute otitis media.

NOSE AND SINUSES

Nosebleed

The most common cause of nosebleed in children is nose picking (trauma), but watch out for local tumor, leukemia, and other causes of thrombocytopenia (idiopathic thrombocytopenic purpura, hemolytic uremic syndrome). **Nasopharyngeal angiofibroma** should be suspected in adolescent boys with recurrent nosebleeds or obstruction but no history of trauma or blood dyscrasias. Leukemia can result in pancytopenia; look for associated fever and anemia.

Rhinitis

Rhinitis is edematous, vasodilated nasal mucosa and turbinates with clear nasal discharge. Causes:

Allergic (Hay Fever)

Associated with seasonal flare-ups, boggy and bluish turbinates, early onset (before 20 years old), nasal polyps, sneezing, pruritus, conjunctivitis, wheezing, asthma, eczema, a positive family history, eosinophils in nasal mucus, and elevated immunoglobulin E (IgE). Skin tests might identify an allergen. Treat with avoidance when the antigen (e.g., pollen) is known; treat with antihistamines, nasal steroids or cromolyn. Desensitization is also an option.

Bacterial Infection

These are caused by infection with group A streptococcus *Pneumococcus* spp., or *Staphylococcus* spp. Do a streptococcal throat culture and treat with antibiotics if appropriate (sore throat, fever, tonsillar exudate).

Viral (Common Cold)

These are caused by infection with rhinovirus (most common), influenza, parainfluenza, coxsackie virus, adenovirus, respiratory syncytial virus, coronavirus, or echovirus. Treatment is symptomatic; vasoconstrictors such as phenylephrine are used for short-term treatment but can cause rebound congestion.

Sinusitis

Sinusitis is often caused by *S. pneumoniae*, *H. influenzae*, and other streptococci or staphylococci. Look for tenderness over the affected sinus, headache, and purulent nasal discharge (yellow or green). Radiography or computed tomography (CT) shows opacification of the sinus (Fig. 3-2); CT is preferred to evaluate chronic sinusitis or suspected extension of infection outside the sinus (suggested by high fever and chills).

Treat with antibiotics (amoxicillin, cephalosporin, macrolide, or amoxicillin clavulanate for 2 weeks or up to 6 weeks for chronic cases). Operative intervention may be used for resistant cases (drainage procedure, sinus obliteration) or recurrent sinusitis from a congenital defect (e.g., deviated nasal septum). Remember that the frontal sinuses are not well developed until after the age of 10 years.

After significant nasal bone fracture (which can be seen on radiography or CT), watch for a septal hematoma, which must be removed to prevent pressure-induced septal necrosis.

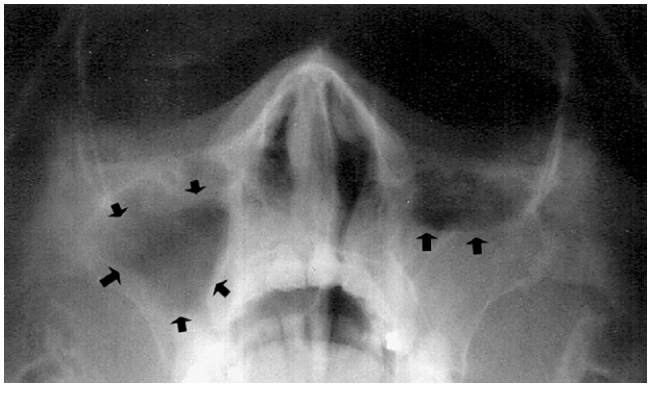

FIGURE 3-2 Radiograph of sinusitis with mucosal thickening of the right maxillary sinus and an air-fluid level in the left maxillary sinus *(arrows)*.

FACE, NECK, AND THROAT

Bell Palsy

Bell palsy is the most common cause of facial paralysis. It has a sudden unilateral onset, usually after an upper respiratory infection. The most common identifiable cause is reactivation of a latent **herpes simplex I** virus infection. Nerve inflammation results in symptoms and signs of a *lower* motor neuron nerve lesion. (Remember how to differentiate stroke from Bell palsy. With an upper motor neuron lesion such as a stroke or tumor, the forehead is spared on the affected side. With a lower motor neuron lesion such as Bell palsy, the forehead is involved on the affected side.) Patients might have hyperacusis; everything sounds loud because the stapedius muscle in the ear is paralyzed. In severe cases, patients may be unable to close the affected eye; use saline drops to protect the eye.

Roughly 75% of patients recover completely without treatment, typically within 3 to 12 weeks. However, some patients have permanent symptoms, so oral steroids and antiviral agents (e.g., valacyclovir, acyclovir) can be given to reduce the risk. Other causes of unilateral facial paralysis:

- **Fracture** (temporal bone): Patients might have Battle sign or bleeding from the ear.
- **Herpes zoster** (Ramsay Hunt syndrome): The eighth cranial nerve is also commonly involved. Look for vesicles on the pinna and inside the ear; encephalitis and meningitis may be present.
- **Lyme disease:** Can cause unilateral or bilateral facial nerve palsy
- **Meningitis**
- **Middle ear and mastoid infections**
- **Tumor:** Especially in the cerebellopontine angle (acoustic neuroma [see Fig. 3-1]; consider neurofibromatosis) or glomus jugulare

Get magnetic resonance imaging (MRI) scan (or CT scan as second choice) of the head to evaluate if the cause is not apparent or seems suspicious (especially if additional neurologic signs are present) after history and physical examination.

Neck Mass

In children, 75% of neck masses are benign. In patients older than 40 years of age, 75% are malignant. MRI or CT with contrast helps evaluate. Causes seen typically in children:

- **Branchial cleft cysts:** Lateral; often become infected
- **Cystic hygroma:** A type of lymphangioma classically seen in the setting of Turner syndrome; treat with surgical resection
- **Cervical lymphadenitis:** From streptococcal pharyngitis, Epstein-Barr virus (common in adolescents and adults in their 20s), cat-scratch disease, or infection with *Mycobacterium* spp. (scrofula). Can progress to an abscess (typically caused by a streptococcal infection; Fig. 3-3), which often requires surgical drainage.
- **Thyroglossal duct cysts:** Midline; elevates with tongue protrusion

In adults, think malignancy first when presented with a neck mass. It can be metastatic adenopathy from a mucosa-based malignancy (e.g., oral cavity, pharynx, or larynx), a lymphoma, or the tumor itself (e.g., thyroid malignancy). In children, if the mass is malignant, the cause is likely leukemia or lymphoma or sometimes a sarcoma.

Workup of an unknown cancer in the neck in adults includes *random* biopsy of the nasopharynx, palatine tonsils, and base of the tongue as well as laryngoscopy, bronchoscopy, and esophagoscopy (with biopsies of any suspicious lesions)—the so-called triple endoscopy with triple biopsy. Positron emission tomography scan can also help identify primary malignancy in some cases.

Peritonsillar Abscess and Retropharyngeal Abscess

Make sure you are able to differentiate between peritonsillar abscess and retropharyngeal abscess and be aware that these are potential airway emergencies.

Peritonsillar abscess typically presents in patients older than the age of 10 years with a "hot potato" voice, drooling, and trismus. Examination reveals a very swollen and fluctuant tonsil with deviation of the uvula to the opposite side. Group A streptococcus is the most common pathogen, although *S. aureus*, *S. pneumoniae*, and anaerobes are possible. Surgical intervention (needle aspiration, incision

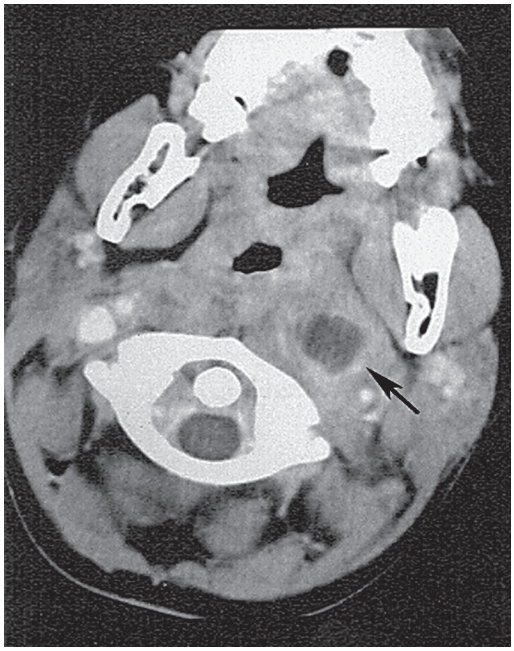

FIGURE 3-3 Computed tomography scan reveals that cervical lymphadenitis has progressed to an abscess *(arrow)*.

and drainage, or tonsillectomy) and broad-spectrum antibiotic therapy (typically ampicillin–sulbactam or clindamycin) are the cornerstones of treatment.

Retropharyngeal abscess typically presents in patients 6 months to 6 years of age who have a fever, odynophagia, a "hot potato" voice, and drooling. Examination typically reveals an ill-appearing child with cervical lymphadenopathy (usually unilateral) and may reveal a mass in the posterior pharyngeal wall (although examination in the operating room may be necessary to permit controlled placement of an airway if needed). Patients with retropharyngeal abscesses demonstrate an unwillingness to move the neck because of pain, and they particularly avoid extension of the neck. Group A streptococcus is the most common pathogen, although *S. aureus* and *Bacteroides* spp. also may cause retropharyngeal abscess. Lateral neck radiographs or contrast-enhanced CT of the neck can be used to help make the diagnosis. Lateral neck radiographs demonstrate a prevertebral space that is increased in depth compared with the anteroposterior measurement of the adjacent vertebral body. Treatment is surgical drainage and broad-spectrum antibiotics.

Parotid Swelling

The classic but now rare cause of parotid swelling is mumps. The best treatment for mumps and the complication of infertility is prevention through immunization. Parotid swelling also may be caused by neoplasm (pleomorphic adenoma is the most common and is benign), alcoholism, Sjögren syndrome, sialolithiasis (a stone in the salivary glands or ducts; more common in the submandibular gland and is associated with significant pain), lymphadenopathy (there are lymph nodes in the parotid gland), and sarcoidosis. The best treatment for pleomorphic adenoma is superficial parotidectomy (not enucleation) to prevent recurrence.

QR CODE

http://coursewareobjects.elsevier.com/objects/elr/ExpertConsult/Oconnell/brochertscrush4e/reviewquestions/chapter03

The QR code includes three USMLE-style questions and answers. For more questions, redeem the PIN code on the inside cover for the Crush Step 2 question bank powered by USMLE Consult.

Please see the Introduction for instructions on how to access content using the QR codes.

Question

Which of the following is the most common cause of new-onset sensorineural hearing loss in adults?

(A) Presbycusis
(B) Viral infection
(C) Otosclerosis
(D) Meningitis
(E) Aminoglycosides