

smoking and alcohol increase the risk substantially. Other factors that may contribute to increased risk include nutritional factors, exposure to asbestos, irradiation, and infection with HPV.

MORPHOLOGY

About 95% of laryngeal carcinomas are typical squamous cell tumors. The tumor usually develops on the vocal cords, but it may also arise above or below the cords, on the epiglottis or aryepiglottic folds, or in the pyriform sinuses. Those confined within the larynx proper are termed **intrinsic**, whereas those that arise or extend outside the larynx are called **extrinsic**. Squamous cell carcinomas of the larynx follow the growth pattern of other squamous cell carcinomas. They begin as in situ lesions that later appear as pearly gray, wrinkled plaques on the mucosal surface, ultimately ulcerating and fungating (Fig. 16-12). The degree of anaplasia of the laryngeal tumors is highly variable. Sometimes massive tumor giant cells and multiple bizarre mitotic figures are seen. As expected with lesions arising from recurrent exposure to environmental carcinogens, adjacent mucosa may demonstrate squamous cell hyperplasia with foci of dysplasia or even carcinoma in situ.

Carcinoma of the larynx is most commonly seen in men in the sixth decade of life and often manifests clinically as

persistent hoarseness, dysphagia, and dysphonia. Prognosis is highly dependent on clinical staging. Organ preservation techniques (laser surgery, microsurgery, and radiation therapy) are being used with greater frequency, particularly with early disease. Combined chemotherapy and radiation therapy, with or without salvage laryngectomy, may be required for more advanced or recurrent disease.

KEY CONCEPTS

Upper Airways

- **Rhinitis** can be infectious or allergic in nature. When recurrent it can lead to chronic rhinitis, sinusitis, and the development of nasal polyps.
- **Pharyngitis** and **tonsillitis** are common upper respiratory tract viral infections typically caused by rhinoviruses, echoviruses, and adenoviruses.
- **Nasopharyngeal carcinoma** is most often caused by the EBV and is common among children in Africa and Asian adults.
- **Laryngitis** can be caused by a host of etiologies, including allergic, viral, bacterial, and chemical insults.
- **Vocal cord nodules** and **polyps** are reactive lesions seen in smokers or individuals who strain their vocal cords.
- **Laryngeal squamous cell carcinoma** is a disease of older males, related to smoking and alcohol use.

EARS

Although disorders of the ear rarely shorten life, many impair its quality. The most common aural disorders, in descending order of frequency, are (1) acute and chronic otitis (most often involving the middle ear and mastoid), sometimes leading to a cholesteatoma; (2) symptomatic otosclerosis; (3) aural polyps; (4) labyrinthitis; (5) carcinomas, largely of the external ear; and (6) paragangliomas, found mostly in the middle ear. Only those conditions that have distinctive morphologic features (save for labyrinthitis) are described. Paragangliomas are discussed later.

Inflammatory Lesions

Inflammations of the ear—*otitis media, acute or chronic*—occur mostly in infants and children. These lesions are typically viral in nature and produce a serous exudate but may become suppurative with superimposed bacterial infection. The most common bacteria in the acute infection are *Streptococcus pneumoniae*, non-typeable *H. influenzae*, and *Moraxella catarrhalis*.

Repeated bouts of acute otitis media with failure of resolution lead to chronic disease. The causative agents of chronic disease are usually *Pseudomonas aeruginosa*, *Staphylococcus aureus*, or a fungus; sometimes a mixed flora is the cause. Chronic infection has the potential to perforate the eardrum, encroach on the ossicles or labyrinth, spread into the mastoid spaces, and even penetrate into the cranial vault to produce a temporal cerebritis or abscess. Otitis media in the diabetic person, when caused by *P. aeruginosa*, is especially aggressive and spreads widely, causing destructive necrotizing otitis media.

Cholesteatomas, associated with chronic otitis media, are non-neoplastic, cystic lesions 1 to 4 cm in diameter, lined by keratinizing squamous epithelium or metaplastic mucus-secreting epithelium, and filled with amorphous debris (derived largely from desquamated epithelium). Sometimes they contain spicules of cholesterol. Their pathogenesis is not clear, but it is proposed that chronic inflammation and perforation of the eardrum with ingrowth of the squamous epithelium or metaplasia of the secretory epithelial lining of the middle ear are responsible for the formation of a squamous cell nest that becomes cystic. A chronic inflammatory reaction surrounds the keratinous cyst. Sometimes, the cyst ruptures, increasing the inflammatory reaction and inducing the formation of giant cells that enclose partially necrotic squames and other particulate debris. These lesions, by progressive enlargement, can erode into the ossicles, the labyrinth, the adjacent bone, or the surrounding soft tissue and sometimes produce visible neck masses.

Otosclerosis

As the name implies, **otosclerosis refers to abnormal bone deposition in the middle ear about the rim of the oval window into which the footplate of the stapes fits**. Both ears are usually affected. At first there is fibrous ankylosis of the footplate, followed in time by bony overgrowth anchoring it into the oval window. The degree of immobilization governs the severity of the hearing loss. This condition usually begins in the early decades of life; minimal degrees of this derangement are exceedingly common