



FIGURE 91-3 Eustachian tube. (From Drake RL: Gray's basic anatomy, Philadelphia, 2012, Elsevier, pp 413–592.)

Pathogenesis

While the disease in adults mimics that in children, children are more susceptible because their Eustachian tubes are shorter and more horizontal (Fig. 91-3). Disease typically results from Eustachian tube blockage and dysfunction that occurs during viral infection. Bacteria colonize the middle ear and cannot be eliminated. The most common causative bacteria are *S. pneumoniae*, nontypable *H. influenzae*, and *Moraxella catarrhalis*.

Clinical Presentation

Acute bacterial otitis media presents with ear pain in over two thirds of patients. The diagnosis can be difficult in young children because the history may be absent or inaccurate. Physical diagnosis typically shows middle ear effusion and an abnormal tympanic membrane that is red and bulging or retracted. Movement of the membrane is limited on application of positive or negative pressure. Perforation, drainage, fever and decreased hearing may occur. Patients may also have vertigo, tinnitus, and nystagmus. The course of otitis media is usually self-limited with most cases resolving within one week.

Treatment

Treatment has been controversial because for most patients otitis media is a self-limited disease. Studies suffer from the difficulty in making an accurate diagnosis and lack of placebo controls. Overuse of antibiotics has resulted in the development of resistant organisms in the United States, complicating treatment of respiratory infections. Antibiotics shorten the course of the disease and may prevent complications such as mastoiditis, facial palsy, brain abscess, epidural abscess and cholesteatoma, although convincing data are lacking because the incidence of these complications has decreased in all patient populations.

Guidelines recommend the use of antibiotics in otitis media, particularly for patients at high risk, for patients in whom there is complicated disease, or when pain relief is important. The failure rate with antibiotics is less. The concerns about antibiotic resistance, however, have made withholding antibiotics and closely observing the patient a reasonable option. A Cochrane review of antibiotics for sore throat, acute otitis media, bronchitis, and the common cold concluded that antibiotics could be delayed if clinicians felt it safe. If symptoms worsen or persist over 48 to 72 hours, then antibiotics should be initiated.

S. pneumoniae, *H. influenzae*, and *M. catarrhalis* have each shown significant resistance to penicillin in resistant years. Despite these increased rates, amoxicillin or amoxicillin/clavulanic acid continue to be the drugs of choice. Alternative choices include cephalosporins or macrolide antibiotics. If there is no improvement after three days, switching antibiotics should be considered.

Serous otitis media refers to fluid in the ear in the absence of signs or symptoms of infection. This is usually self-limited and resolves in 2 to 4 weeks. Persistent fluid for greater than 3 months associated with hearing loss, however, is an indication for tube placement.

SUGGESTED READINGS

- Carfrae MJ, Kesser BM: Malignant otitis externa, *Otolaryngol Clin North Am* 41:537–549, 2008.
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- Shulman ST, Bisno AL, Clegg HW, et al: Clinical practice guideline for the diagnosis and management of group A streptococcal pharyngitis: 2012 update by the Infectious Diseases Society of America, *Clin Infect Dis* 55:1279–1282, 2012.
- Spurling GK, Del Mar CB, Dooley L, et al: Delayed antibiotics for respiratory infections, *Cochrane Database Syst Rev* (4):CD004417, 2013.