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Otitis media and eustachian tube dysfunction: connection to allergic rhinitis.

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Otitis media and otitis media with effusion are among the most common childhood illnesses and contribute a great deal to health care costs. The cause of otitis media is multifactorial. Eustachian tube dysfunction, bacterial or viral infection of the middle ear, and nasal inflammation resulting from allergic rhinitis or upper respiratory infection are acknowledged contributing factors. Data from epidemiology studies indicate that 25% to 40% of upper respiratory infections in children younger than 3 years are accompanied by an episode of otitis media, 40% to 50% of children older than 3 years with chronic otitis media have confirmed allergic rhinitis. Studies of the pathogenesis of otitis media have identified interactions among infection, allergic reactions, and eustachian tube dysfunction. Nasal inflammation due to allergen challenge results in classic signs and symptoms of allergic rhinitis and eustachian tube dysfunction. Eustachian tube dysfunction leads to increased negative pressure in the middle ear and improper ventilation. Both viral upper respiratory infection and nasal allergic reaction provoke nasal inflammation, eustachian tube dysfunction, and enhanced nasal protein transudation and secretion, which is likely to be sustained and modulated by inflammatory mediators and cytokines. In a study of experimental infection with influenza A virus, histamine release increased from peripheral blood basophils of patients with allergic rhinitis. These data support an interaction between viral infection and nasal allergy in enhancing certain pathophysiologic responses. Viral upper respiratory infections may promote secondary bacterial infections by altering bacterial adherence, modulating host immune and inflammatory responses, and impairing eustachian tube function. In acute otitis media, bacteria are cultured from approximately 70% of middle ear effusions with *Streptococcus pneumoniae* being the most common organism. Initial management of otitis media consists of appropriate antimicrobial therapy. In the presence of allergic rhinitis, antiallergic therapies may be used to augment symptom resolution and therapeutic response. Surgical insertion of tympanostomy or ventilation tubes to promote drainage of unresolved effusions has become common. Further delineation of the pathogenesis of otitis media and otitis media with effusion will guide appropriate medical management and may decrease the need and frequency of surgical procedures.

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