

PHARYNGITIS AND OTITIS

Pharyngitis, a “sore throat,” can occur in someone of any age, but more commonly occurs in children up through their teen years. Most sore throats are little more than a nuisance; many, however, can be much more serious. The patient’s age, general health, and the organism causing the infection are important factors relating to how serious the disease may be.

The nasopharynx

The nasal cavity is shown in Figure 1. Immediately past the nostrils is a chamber, the nasal cavity or internal nose, into which air flows during inspiration. The nasal cavity is therefore continually exposed to bacteria and viruses, making it a prime area for infections.

The surface area of the chamber is increased by fold-like structures, the turbinates. There are also several cavities off the nasal cavity, and which open into it, called sinuses; they also increase the surface area. The turbinates and sinuses humidify and warm incoming air, preparing it for passage into the lungs. Mucus on the moist mucous membrane lining the nasal cavity traps particles, dust and microorganisms, preventing them from passing into the lower airways and lungs.

[Insert Figure 1]

The floor of the nasal cavity consists of a bony plate, the palate, which also forms the roof of the mouth.

As air flows through the nasal cavity during inspiration, it emerges from the nasal cavity, warmed and humidified, into the back of the throat, called the pharynx. The pharynx contains several accumulations of lymphoid tissues, which help protect the area against infection. Two such organs are the tonsils, which are located in the pharynx at the back of the mouth, one on either side, where they can be seen when other tissues of the pharynx retract (when you say, “AHHH”).

After passing through the pharynx, air flows down the airways into the trachea and then into the lower respiratory tract. Below the level of the palate, the pharynx also transports food from the mouth. When food is swallowed, a fold of mucous membrane, the epiglottis, moves down and covers the entrance to the lower airway. This directs food into the esophagus and prevents food from entering the airway.

PHARYNGITIS

Pharyngitis is an infection of the pharynx, caused by viruses or bacteria. Patients have a scratchy or sore throat, and may have a cough, coryza (runny nose), fever, and myalgias (generalized aches and pains). The throat is usually inflamed, edematous (swollen), and may have an exudate (a whitish or yellowish coating over the surface). Sore throats are more common in the cold months of the year.

Viruses cause most cases of pharyngitis. No treatment currently exists, except for general symptomatic relief. Cases of viral pharyngitis are self-limited, lasting a few days to a week or two. Bacteria may infect tissues damaged by viruses. Such secondary infections can be treated, whereas the underlying viral infection cannot.

Group A streptococcus (*Streptococcus pyogenes*) is the most important cause of bacterial pharyngitis, accounting for about 15% of all cases.¹ This form of pharyngitis is called streptococcal sore throat, or “strep throat.” Fever, severe sore throat, cervical adenopathy (swollen lymph nodes in the neck), and inflammation of the pharynx and tonsils, which are covered with exudate, are classic findings. Many cases of streptococcal pharyngitis are mild, with minimal erythema (inflammation) and no exudate, and are easily mistaken for the pharyngitis that accompanies a common cold.

Streptococcal pharyngitis mainly affects school-age children and young adults, becoming uncommon after the teen years. Infection by this organism can result in serious complications. Some complications occur in the pharynx and tonsils. These include retropharyngeal and peritonsillar abscesses, which may require surgical drainage. Other complications are more general,¹ including:

- scarlet fever
- streptococcal toxic shock syndrome, which can be fatal
- rheumatic fever, which can result in severe heart damage
- acute glomerulonephritis, which can result in severe kidney damage

Other species of streptococci and other bacteria can also cause pharyngitis.

Rapid diagnostic tests that identify streptococcal infections have helped the physician distinguish between viral and bacterial infections. If there is any doubt, however, physicians commonly treat pharyngitis with an antibiotic because of the potentially serious consequences of not treating a strep throat. If a culture is made of the pharyngeal exudate, treatment may be started until the culture results are known, usually in 24 to 48 hours. If the culture is negative, indicating a viral cause, treatment can be stopped.

Some form of penicillin is the preferred antibiotic for streptococcal pharyngitis. This is based on studies done many years ago showing that penicillin not only killed the bacteria, but also prevented the serious complications, especially rheumatic fever. Other antibacterial agents in use at that time did not prevent the complications. Amoxicillin is the form of penicillin commonly used currently to treat bacterial pharyngitis.

Other agents can be used for patients who are allergic to penicillin, or who have not responded to penicillin, suggesting the presence of an organism that is resistant to penicillin.² The other agents include tetracyclines and cephalosporins, which have not been shown in controlled clinical trials to prevent the complications, however.¹

OTITIS

Otitis media is another disease of the nasal region that sometimes occurs as a result of pharyngitis, and may occur independently.

The middle ear

Although the ear is not part of the respiratory tract, part of the ear connects to the pharynx, as shown in Figure 2. This occurs by way of the eustachian tube, which starts in the upper area of the back of the pharynx. From there it progresses about 1.5 inches to end in the middle ear. The middle ear is a chamber, separated from the external ear canal by the tympanic membrane, commonly called the eardrum. The eustachian tube opens whenever a person swallows or yawns, and the air pressure in the middle ear equalizes with that in the pharynx, keeping the pressure the same on both sides of the eardrum.

[Insert Figure 2]

The mucous membrane of the pharynx is continuous with that in the eustachian tube and middle ear. Infectious organisms can find their way from the pharynx into the middle ear, in any of several ways:^{1,3}

- Blowing one's nose can force bacteria, or mucus that contains bacteria, into the middle ear.
- The opening of the eustachian tube into the pharynx can swell due to inflammation from an allergy or during an upper respiratory infection. The swelling may block drainage, and bacteria are not flushed out.
- Bacteria or viruses can multiply in the mucus membrane of the eustachian tube, progressing into the middle ear.

A child's eustachian tube is shorter than an adult's, because of the child's smaller size. The tube is also less vertical and curves more. For these reasons, and because a child's immune system may not be fully mature, children are much more susceptible to middle ear infections than are adults.