


Tonsillitis

Tonsillitis is inflammation of the tonsils, typically of rapid onset.^[1] It is a type of pharyngitis.^[7] Symptoms may include sore throat, fever, enlargement of the tonsils, trouble swallowing, and large lymph nodes around the neck.^[1] Complications include peritonsillar abscess.^[2]

Tonsillitis is most commonly caused by a viral infection, with about 5% to 40% of cases caused by a bacterial infection.^{[4][5]} When caused by the bacterium group A streptococcus, it is referred to as strep throat.^[8] Rarely bacteria such as *Neisseria gonorrhoeae*, *Corynebacterium diphtheriae*, or *Haemophilus influenzae* may be the cause.^[4] Typically the infection is spread between people through the air.^[5] A scoring system, such as the Centor score, may help separate possible causes.^[4] Confirmation may be by a throat swab or rapid strep test.^[4]

Treatment efforts involve improving symptoms and decreasing complications.^[4] Paracetamol (acetaminophen) and ibuprofen may be used to help with pain.^[4] If strep throat is present the antibiotic penicillin by mouth is generally recommended.^[4] In those who are allergic to penicillin, cephalosporins or macrolides may be used.^[4] In children with frequent episodes of tonsillitis, tonsillectomy modestly decreases the risk of future episodes.^[9]

About 7.5% of people have a sore throat in any three-month period and 2% of people visit a doctor for tonsillitis each year.^[6] It is most common in school aged children and typically occurs in the fall and winter months.^{[4][5]} The majority of people recover with or without medication.^[4] In 40% of people, symptoms resolve within three days, and in 80% symptoms resolve within one week, regardless of whether streptococcus is present or not.^[3] Antibiotics decrease symptom duration by approximately 16 hours.^[3]

Tonsillitis	
	
A culture positive case of <i>Streptococcal pharyngitis</i> with typical tonsillar exudate	
Pronunciation	/ˈtɒnsɪˈlaɪtɪs/ <i>TON-si-LY-tis</i>
Specialty	Infectious disease
Symptoms	Sore throat, fever, enlargement of the tonsils, trouble swallowing, large lymph nodes around the neck ^[1]
Complications	Peritonsillar abscess ^[2]
Duration	~ 1 week ^[3]
Causes	Viral infection, bacterial infection ^{[4][5]}
Diagnostic method	Based on symptoms, throat swab, rapid strep test ^[4]
Medication	Paracetamol (acetaminophen), ibuprofen, penicillin ^[4]
Frequency	7.5% (in any given 3 months) ^[6]

Contents

Signs and symptoms

Causes

Diagnosis

Treatment

- Antibiotics
- Pain medication
- Corticosteroids
- Surgery

Prognosis

References

External links

Signs and symptoms

Common signs and symptoms include:^{[10][11][12][13]}

- sore throat^[14]
- red, swollen tonsils
- pain when swallowing^[14]
- high temperature (fever)
- headache
- tiredness
- chills
- a general sense of feeling unwell (malaise)
- white pus-filled spots on the tonsils^[14]
- swollen lymph nodes (glands) in the neck^[14]
- pain in the ears or neck
- weight loss
- difficulty ingesting and swallowing meal/liquid intake
- difficulty sleeping

Less common symptoms include:

- nausea
- fatigue
- stomach ache
- vomiting
- furry tongue
- bad breath (halitosis)
- voice changes
- difficulty opening the mouth (trismus)
- loss of appetite

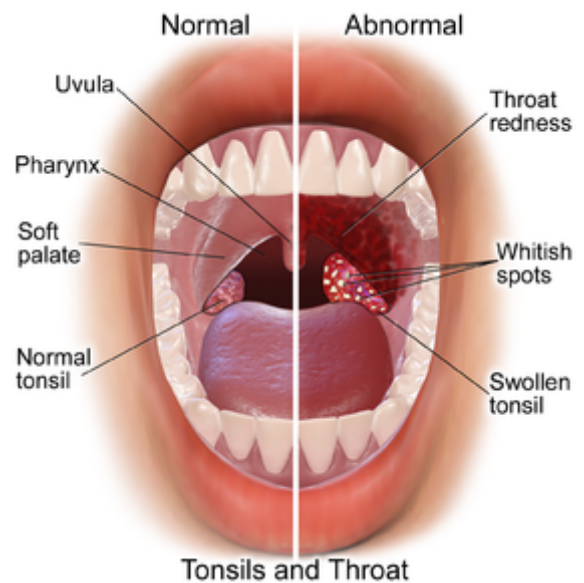


Illustration comparing normal tonsil anatomy and tonsillitis

- anxiety/fear of choking

In cases of acute tonsillitis, the surface of the tonsil may be bright red and with visible white areas or streaks of pus.^[15]

Tonsilloliths occur in up to 10% of the population frequently due to episodes of tonsillitis.^[16]

Causes

The most common cause is viral infection. It accounts for 50 to 80% of tonsillitis cases.^[14] It most often includes adenovirus, rhinovirus, influenza, parainfluenza, coronavirus, and respiratory syncytial virus.^{[10][11][12][13]} It is occasionally caused by Epstein-Barr virus, herpes simplex virus, cytomegalovirus, or HIV.^{[10][11][12][13]} About 1 to 10% of the cases are caused by Epstein-Barr virus.^[14]



Bacteria or viruses can cause tonsillitis.

The second most common cause is bacterial infection of which the predominant is Group A β -hemolytic streptococcus (GABHS), which causes strep throat.^{[10][11][12][13]} Bacterial infection of the tonsils usually follows the initial viral infection.^[14] Less common bacterial causes include: Staphylococcus aureus (including methicillin resistant Staphylococcus aureus or MRSA),^[17] Streptococcus pneumoniae, Mycoplasma pneumoniae, Chlamydia pneumoniae, Bordetella pertussis, Fusobacterium sp., Corynebacterium diphtheriae, Treponema pallidum, and Neisseria gonorrhoeae.^{[10][11][12][13]}

Anaerobic bacteria have been implicated in tonsillitis and a possible role in the acute inflammatory process is supported by several clinical and scientific observations.^[18]

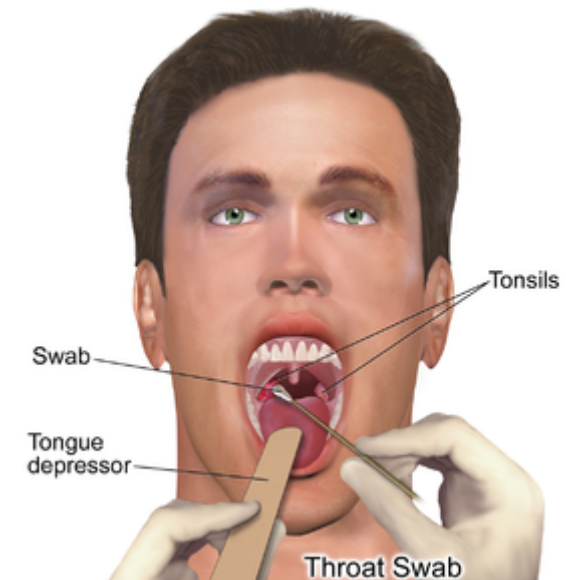
Under normal circumstances, as viruses and bacteria enter the body through the nose and mouth, they are filtered in the tonsils.^{[19][20]} Within the tonsils, white blood cells of the immune system destroy the viruses or bacteria by producing inflammatory cytokines like phospholipase A2,^[21] which also lead to fever.^{[19][20]} The infection may also be present in the throat and surrounding areas, causing inflammation of the pharynx.^[22]

Sometimes, tonsillitis is caused by an infection of spirochaeta and treponema, in this case called Vincent's angina or Plaut-Vincent angina.^[23]

Diagnosis

In primary care settings (health clinics), Centor criteria is used to determine the likelihood of group A beta-hemolytic streptococcus (GABHS) infection in an acute tonsilitis and the need of antibiotics for tonsilitis treatment.^[14] However, Centor criteria has its weaknesses in making precise diagnosis for adults. Besides, it is also ineffective in diagnosis for tonsilitis in children and in secondary care settings (hospitals).^[14] There are four major criteria in Centor score: presence of tonsillar exudate, painful neck lymph nodes, history of fever, age between 5 and 15 years, and the absence of cough. The possibility of GABHS infection increases with increasing score. The probability for getting GABHS is 2 to 23% for the score of 1, and 25 to 85% for the score of 4.^[14]

The diagnosis of GABHS tonsillitis can be confirmed by culture of samples obtained by swabbing the throat and plating them on sheep blood agar medium. The isolation rate can be increased by incubating the cultures under anaerobic conditions and using selective growth media. A single throat culture has a sensitivity of 90–95% for the detection of GABHS (which means that GABHS is actually present 5–10% of the time when the culture result suggests that it is absent). This small percentage of false-negative results are part of the characteristics of the tests used but are also possible if the patient has received antibiotics prior to testing. Identification requires 24 to 48 hours by culture but rapid screening tests (10–60 minutes), which have a sensitivity of 85–90%, are available. True infection with GABHS, rather than colonization, is defined arbitrarily as the presence of >10 colonies of



Throat swab.

GABHS per blood agar plate. However, this method is difficult to implement because of the overlap between carriers and infected patients. In 40% of the people without any symptoms, the throat culture can be positive. Therefore, throat culture is not routinely used in clinical practice for the detection of GABHS.^[14]

Older antigen tests detect the surface Lancefield group A carbohydrate. Newer tests identify GABHS serotypes using nucleic acid (DNA) probes or polymerase chain reaction. Bacterial culture may need to be performed in cases of a negative rapid streptococcal test.^[24] An increase in antistreptolysin O (ASO) streptococcal antibody titer 3–6 weeks following the acute infection can provide retrospective evidence of GABHS infection and is considered definitive proof of GABHS infection.

Epstein Barr virus serology can be tested for those who may have infectious mononucleosis with a typical lymphocyte count in full blood count result.^[14] Blood investigations are only required for those with hospital admission and required intravenous antibiotics.^[14] Increased values of secreted phospholipase A2^[21] and altered fatty acid metabolism^[25] in patients with tonsillitis may have diagnostic utility.

Nasoendoscopy can be used for those with severe neck pain and inability to swallow any fluids to rule out masked epiglottitis and supraglottitis. Routine nasoendoscopy is not recommended for children.^[14]

Treatment

Treatments to reduce the discomfort from tonsillitis include:^{[10][11][12][13][22][26][27]}

- pain and fever reducing medications such as paracetamol (acetaminophen) and ibuprofen
- warm salt water gargle, lozenges, honey, or warm liquids

When tonsillitis is caused by a virus, the length of illness depends on which virus is involved. Usually, a complete recovery is made within one week; however, symptoms may last for up to two weeks.

Antibiotics

If the tonsillitis is caused by group A streptococcus, then antibiotics are useful, with penicillin^[14] or amoxicillin being primary choices.^[28] Cephalosporins and macrolides are considered good alternatives to penicillin in the acute setting.^[29] A macrolide such as azithromycin or erythromycin is used for people allergic to penicillin. Individuals who fail penicillin therapy may respond to treatment effective against beta-lactamase producing bacteria^[30] such as clindamycin or amoxicillin-clavulanate. Aerobic and anaerobic beta lactamase producing bacteria that reside in the tonsillar tissues can "shield" group A streptococcus from penicillins.^[31] There is no significant differences in efficacy of various groups of antibiotics in the tonsillitis treatment.^[14] Intravenous antibiotics can be for those who are hospitalised with inability to swallow and presented with complications. Oral antibiotics can be resumed immediately if the person is clinically improved and able to swallow orally.^[14]

Pain medication

Paracetamol is recommended for the pain treatment. Although nonsteroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen and opioids such as codeine and tramadol are equally effective, precautions have to be taken because NSAIDs can cause peptic ulcer disease and are bad for kidneys. Opioids can cause respiratory depression for those who are vulnerable.^[14] Similarly, in children, paracetamol and NSAIDs can be used except for codeine need to be used with precautions.^[14] Anaesthetic mouthwash can also be used for symptomatic relief.^[14]

Corticosteroids

Corticosteroids are helpful in the reduction of pain and improvement of symptoms in 24 to 48 hours. Oral corticosteroids are recommended unless the person is unable to swallow medications.^[14]

Surgery

Chronic cases can be treated with tonsillectomy (the surgical removal of tonsils) as a choice for treatment.^[32] Children have had only a modest benefit from tonsillectomy for chronic cases of tonsillitis.^[33]

Prognosis

Since the advent of penicillin in the 1940s, a major preoccupation in the treatment of streptococcal tonsillitis has been the prevention of rheumatic fever, and its major effects on the nervous system (Sydenham's chorea) and heart. Recent evidence would suggest that the rheumatogenic strains of group A beta hemolytic strep have become markedly less prevalent and are now only present in small pockets such as in Salt Lake City, USA.^[34] This brings into question the rationale for treating tonsillitis as a means of preventing rheumatic fever.

Complications may rarely include dehydration and kidney failure due to difficulty swallowing, blocked airways due to inflammation, and pharyngitis due to the spread of infection.^{[10][11][12][13][22]}

An abscess may develop lateral to the tonsil during an infection, typically several days after the onset of tonsillitis. This is termed a peritonsillar abscess (or quinsy).

Rarely, the infection may spread beyond the tonsil resulting in inflammation and infection of the internal jugular vein giving rise to a spreading septicaemia infection (Lemierre's syndrome).

In chronic/recurrent cases (generally defined as seven episodes of tonsillitis in the preceding year, five episodes in each of the preceding two years or three episodes in each of the preceding three years),^{[35][36][37]} or in acute cases where the palatine tonsils become so swollen that swallowing is impaired, a tonsillectomy can be performed to remove the tonsils. Patients whose tonsils have been removed are still protected from infection by the rest of their immune system.

In strep throat, very rarely diseases like rheumatic fever^[3] or glomerulonephritis^[38] can occur. These complications are extremely rare in developed nations but remain a significant problem in poorer nations.^{[39][40]} Tonsillitis associated with strep throat, if untreated, is hypothesized to lead to pediatric autoimmune neuropsychiatric disorders associated with streptococcal infections (PANDAS).^[41]

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External links

	<p>p://apps.who.int/classifications/icd10/browse/2016/en#/J03), J35.0 (http://apps.who.int/classifications/icd10/browse/2016/en#/J35.0) •</p> <p>ICD-9-CM: 463 (http://www.icd9data.com/getICD9Code.aspx?icd9=463) •</p> <p>MeSH: D014069 (https://www.nlm.nih.gov/cgi/mesh/2015/MB_cgi?field=uid&term=D014069) •</p> <p>DiseasesDB: 13165 (http://www.diseasesdatabase.com/ddb13165.htm)</p>
External resources	<p>MedlinePlus: 001043 (https://www.nlm.nih.gov/medlineplus/ency/article/001043.htm) •</p> <p>eMedicine: article/871977 (https://emedicine.medscape.com/article/871977-overview) •</p> <p>Patient UK: Tonsillitis (https://patient.info/doctor/tonsillitis-pro)</p>

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