



“Acute Tonsillitis”—if Left Untreated Could Cause Severe Fatal Complications

A Clinical Presentation and Review of the Literature

Abstract

A case of acute tonsillitis is reported where proper antibiotic treatment was not given because of a negative throat culture, and the patient presented with complications. Review of the literature regarding acute tonsillitis, its presentation, treatment and various complications are discussed.

Keywords: *acute tonsillitis, throat swab, peritonsillar abscess, retropharyngeal abscess, parapharyngeal abscess, GABHS, MRSA, PANDAS, Lemierre’s syndrome*



A Case Report

A twenty-two-year-old male was attending an emergency room with a sore throat that had lasted for the past three weeks. He had been treated with an analgesic but was not getting better. He was not given any antibiotics because a throat swab did not show any bacteria. He was admitted with fever, severe sore throat, odynophagia and mild trismus.

The patient had enlarged congested tonsils and the follicles were covered with whitish debris (Figure 1), and there was no peritonsillar swelling. A throat swab was taken and sent for culture and sensitivity. CBC showed leukocytosis predominantly neutrophils. The patient was toxic and had mild trismus so intravenous antibiotics ceftriaxone (Rocephin) 2gm once daily and clindamycin 600mgm four times daily were started and a throat swab

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report was awaited.

The patient's trismus had improved after forty-eight hours and the throat culture report was negative. He still had difficulty swallowing so a CT scan of his neck (Figure 2) was done and showed an early retropharyngeal abscess. As the patient was febrile Flagyl (metronidazole) 500mg was started eight hourly. There was improvement in the patient's condition after forty-eight hours so the patient was discharged on oral antibiotics cefixime (Suprax) 400mg daily once and clindamycin 600mg every eight hours and Flagyl (metronidazole) 500mg eight hourly for a week. The patient was seen in ambulatory care after two weeks, was feeling well and was discharged.

TONSILLITIS IS AN INFLAMMATION OF THE TONSILS, MOST COMMONLY CAUSED BY A VIRAL OR BACTERIAL INFECTION.



Key Point

Tonsillitis is common in the paediatric age group and rare in adults.

Majority of tonsillitis are due to viral infections and very few are due to bacterial infections.

Very rarely due to spirochetes or fungi.

Figure 1: Congested tonsils are covered with whitish exudates



Figure 2: Lateral view of CT scan of neck showing enlarged adenoid and tonsils with a streak of retropharyngeal abscess spreading down to the level of the C7 vertebra



Discussion

Tonsillitis is an inflammation of the tonsils most commonly caused by a viral or bacterial infection. Symptoms of tonsillitis include sore throat and fever. No antibiotic treatment has been shown to shorten the duration of a viral infection. In bacterial tonsillitis, antibiotic treatment can lead to improvement provided appropriate antibiotics are given. Usually antibiotics are given

after a culture sensitivity report. In tonsillitis if repeated throat cultures show negative and a patient has

severe and persistent symptoms one should not wait for a culture sensitivity report. Absence of a positive culture may be due to any one of several factors: inadequate swab culture, keeping the culture outside for a long period, getting the throat swab from the wrong sur-

face of the tonsils where there was no sign of infection, not mentioning the antibiotic which the patient is already taking on request, or absence of bacteria on the surface of the tonsils where the core of the tonsils are showing bacteria.²

Causes

Most common causes of tonsillitis may be due to viruses such as adenovirus, rhinovirus, Influenza, corona virus and respiratory syncytial virus. It can also be caused by the Epstein-Barr virus, herpes simplex virus, cytomegalovirus or HIV. The most common bacterial cause is Group A beta-haemolytic streptococcus (GABHS) which causes strep throat. Less common bacterial infections include Staphylococcus aureus including MRSA,¹ Streptococcus pneumoniae, Chlamydia

pneumoniae, Mycoplasma pneumoniae, pertussis, Fusobacterium, diphtheria, syphilis and gonorrhea. Combinations of GABHS and influenza-A can occur where ASO and anti-DNase B titre is positive in one third of patients. Anaerobic bacteria have also been detected, such as anaerobic streptococcus,⁴ pigmented Prevotella and Porphyromonas, Fusobacterium, Citrobacter mutans¹² and Actinomyces spp. Sometimes spirochaeta and treponema can cause tonsillitis (Vincent's angina). Anaerobic bacteria and group A streptococcus³ (Streptococcus pyogenes) can cause peritonsillar abscess, retropharyngeal abscess, parapharyngeal abscess^{11,13} and thyroid abscess.¹²

Symptoms

Patients can present with sore throat, fever, malaise, swollen

Figure 3: Lateral view of Xray neck showing enlarged adenoid and tonsils during acute tonsillitis



MOST COMMON CAUSES OF TONSILLITIS MAY BE DUE TO ADENOVIRUS, RHINOVIRUS, INFLUENZA, CORONA VIRUS AND RESPIRATORY SYNCYTIAL VIRUS.



Key Point

Majority of tonsillitis do not need antibiotics as they are viral.

If tonsillitis does not improve a throat swab is taken and appropriate antibiotics are given.

Penicillin is an antibiotic of choice.

lymph nodes in the neck and red or swollen tonsils sometimes with whitish debris. Some patients may have pain radiating to the ears. If tonsillitis is not treated promptly or adequately it could lead to complications where patients will have severe odynophagia, trismus, neck stiffness or muffled (hot potato voice) or nasal voice. If patients have complications they can present with unilateral swelling of tonsil and soft palate (peritonsillar abscess) or neck swelling secondary to parapharyngeal abscess with hoarseness if a vocal cord is oedematous. Rarely, infection may spread into the internal jugular vein giving rise to a spreading septicaemia infection (Lemierre's syndrome).^{14,15} In rare cases severe strep throat can cause rheumatic fever and glomerulonephritis.¹⁰ In the paediatric age group autoimmune neuropsychiatric disorder (PANDAS) is associated with streptococcal infections.



Key Points

If not improved need synthetic penicillin or second or third generation cephalosporin or combinations of antibiotics.

Investigations

Throat swab for culture reports take 24 to 48 hours. Sometime they could be negative due to an inappropriate specimen, such as where a throat swab was not taken from the exact site, if antibiotic was not mentioned in the request, if the throat swab was kept for a long period outside before being sent to the laboratory, or the absence of bacteria on the surface.² If there is a peritonsillar abscess (Figure

Figure 4: Left peritonsillar abscess



4) it should be drained using needle aspiration and sent for culture and sensitivity. Monospot tests for infectious mononucleosis or viral culture are available as well as rapid tests for respiratory syncyt-

Figure 5: CT scan showing left parapharyngeal abscess



ial virus. Blood test CBC can show leucocytosis. Sometimes blood culture could be positive if the patient is still febrile. Raised ASO titre will

GOOD HYDRATION, ANALGESIC, ANTIINFLAMMATORY IS THE FIRST LINE OF TREATMENT FOR TONSILLITIS.

take place after two to three weeks of acute infections.

Influenza A can show positive anti-DNase B titre in one third of patients.^{3,5}

Radiological investigations like lateral view of neck (Figure 3) could

show tonsil and adenoid shadows. CT scan or MRI of neck is done in Lemierre's syndrome if thrombi are recent, not seen in ultrasound as they have low echogenicity.¹⁴ If the patient is not responding to antibiotics and complications like retropharyngeal abscess (Figure 2) and parapharyngeal abscess (Figure 5) are suspected, a CT scan of neck is performed.



Key Points

If antibiotics are not started promptly complications can follow such as peritonsillar abscess or retropharyngeal abscess or parapharyngeal abscess or very rarely Lemierre's syndrome.

Treatment

Good hydration, analgesic and an anti-inflammatory is the first line of treatment. If the throat swab is not showing positive one could wait for another throat swab result if symptoms persist as tonsillitis, as it may be due to viral infection. If symptoms become worse and the throat swab is still negative one should start on antibiotics.

Penicillin is recommended as the first line choice although other antibiotics are effective in

the bacteriologic and clinical cure of GABHS tonsillitis. Lincomycin, Clindamycin and Amoxicillin-clavulanate⁷ are most effective in relapsing GABHS tonsillitis. Cephalosporins are superior to penicillin in both acute and relapsing GABHS tonsillitis, eradicate GABHS better and faster, and preserve alpha haemolytic streptococci that may colonise the tonsils and their efficacy is explained by their activity against beta lactamase producing organisms.⁶

Causes of failure of antibiotic treatment in therapy of GABHS tonsillitis

The presence of beta lactamase producing organisms that protect GABHS from penicillin.

Coaggregation of GABHS and *M. catarrhalis*.⁹

Poor penetration of penicillin into tonsillar cleft.

Absence of oral bacterial flora capable of interfering with growth of GABHS through bacteriocin production and competition for nutrients.

Inappropriate dose, duration of therapy or choice of antibiotics. Resistance to the antibiotics (erythromycin).

Poor compliance.

Reacquisition of GABHS from contact or an object (toothbrush, dental braces).

Carrier state, not disease.⁸

Lack of adequate treatment with proper single or a combination of antibiotics can lead to complications. Complications such as peritonsil-



SUMMARY OF KEY POINTS

Tonsillitis is common in the paediatric age group and **rare in adults.**

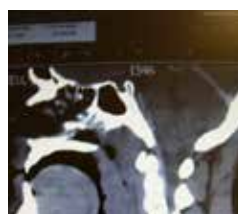
Majority of tonsillitis are **due to viral infections** and very few are due to bacterial infections.

Very **rarely due to spirochetes** or fungi.

Majority of tonsillitis **do not need antibiotics** as they are viral.

If tonsillitis does not improve a **throat swab is taken** and appropriate antibiotics are given.

Penicillin is an antibiotic of choice.



If not improved need synthetic penicillin or **second or third generation** cephalosporin or combinations of antibiotics.

If antibiotics are not started promptly **complications can follow** such as peritonsillar abscess or retropharyngeal abscess or parapharyngeal abscess or very rarely Lemierre's syndrome.

Strep throat can cause glomerulonephritis and **rheumatic fever.**

In the paediatric age group autoimmune neuropsychiatric disorder is associated with **streptococcal infections** (PANDAS).

lar abscess, parapharyngeal abscess and retropharyngeal abscess need to be drained along with administration of intravenous antibiotics.¹¹

In Lemierre's syndrome, which was more commonly seen during the pre-antibiotic era, mortality was 90% but now with proper antibiotics it is 15%.¹⁴ The main bacteria responsible are anaerobic *Fusobacterium necrophorum*. If the internal jugular vein develops septic thrombi the patient will have septicaemia, and suffer from breathlessness due to the pulmonary artery thrombi as emboli travel from the internal jugular vein through the heart to the pulmonary artery. This can be detected by an ultrasound or CT scan or MRI neck and a positive blood culture, and

treated aggressively with appropriate intravenous antibiotics like clindamycin as monotherapy. If resistant to clindamycin, a third generation cephalosporin and metronidazole (Nidazole) is needed as treatment.^{14,15}

Dr. Pradeep Shenoy takes full responsibility for the integrity of the content of this paper.

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Key Points

Strep throat can cause glomerulonephritis and rheumatic fever.



CLINICAL PEARLS

Tonsillitis should be treated promptly and early. Treatment should not be delayed if clinically proven, even if repeated throat swab showed negative for bacterial culture, as bacteria may not be present on the surface but be present in the core of the tonsils. Failure to start prompt treatment can lead to complications which could increase mortality and morbidity.

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Key Points

In the paediatric age group autoimmune neuropsychiatric disorder is associated with streptococcal infections (PANDAS).