

Common throat infections: a review

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Patients, especially in the pediatric population, are frequently seen in the otolaryngology practice with complaints related to the tonsils and adenoids. Infections that involve the pharynx or the tonsils are common among these. Tonsillectomy and adenoidectomy are the most common major surgical procedures performed in children.¹ This article highlights the recent advances in the understanding of the pathophysiology and immunology of this

condition and its variations: acute pharyngitis, acute tonsillitis, recurrent tonsillitis, and chronic tonsillitis and peritonsillar abscess (PTA), and summarizes the current management of pharyngitis and tonsillitis.

Key words: tonsillitis, pharyngitis, adenoid, infection, GABHS

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Definitions

Tonsillitis refers to the inflammation of the pharyngeal tonsils. The phrase acute tonsillitis is used to describe infection in which most of the signs are seen in the tonsil with the likelihood that the pharyngeal lymphoid tissue, too, is involved.² Pharyngotonsillitis and adenotonsillitis are considered equivalent terms for the purposes of this article. Lingual tonsillitis refers to isolated inflammation of the lymphoid tissue at the base of the tongue. Acute pharyngitis is most often considered to be an acute viral infection involving lymphoid tissue including the tonsil.² Peritonsillar abscess is a collection of pus between the fibrous capsule of the tonsil, usually at its upper pole, and the superior constrictor muscle of the pharynx.²

Etiology

Many pathogens cause infection of the tonsils and adenoids. These include both organisms of the normal oropharyngeal flora, which become pathogenic, and external pathogens. It is now known that a large number of pathogens is responsible for inflammation in the tonsils and adenoids, and that many infections are polymicrobial.¹

Group A beta-hemolytic streptococcus is the most frequently recognized pathogen, which is also associated with a risk of rheumatic fever and glomerulonephritis.²

Table 1 shows a list of organisms that are commonly cultured from the tonsils and adenoids, as listed in *Bailey's Head and Neck Surgery - Otolaryngology*.³

Acute tonsillitis is usually a self-limiting infection of one or both tonsils. The most prevalent bacterial organisms to be cultured are beta-hemolytic streptococcus, although staphylococcus, pneumococci, *Hemophilus influenzae*, and anaerobes may also be found. Viral pathogens are the causative agents in 50% to 90% of patients with acute tonsillitis.² Viral causes predominate in infections in pre-school children.

Acute tonsillitis usually affects adolescents and young adults. Fatigue, extremes of temperature, viral URI's (particularly adenovirus) and metabolic and immune disorders act as predisposing factors for the condition to set in.³

Tonsillar sarcoidosis may present in isolation or as a feature of generalized sarcoidosis. Biopsy of the lesion shows typical non-caseating granulomas.⁴

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Table 1. Organisms commonly cultured from tonsils and adenoids³**I. Bacteria**

- Aerobic
 - Group A beta-hemolytic streptococci
 - Groups B, C, G streptococci
 - Hemophilus influenzae (type B and non-typeable)
 - Streptococcus pneumoniae
 - Moraxella catarrhalis
 - Staphylococcus aureus
 - Hemophilus parainfluenzae
 - Neisseria species
 - Mycobacteria species
- Anaerobic
 - Bacteroides species
 - Peptococcus species
 - Peptostreptococcus species
 - Actinomyces species

II. Viruses

- Epstein-Barr
- Adenovirus
- Influenza A and B
- Herpes simplex
- Respiratory syncytial
- Parainfluenza

History and Physical Examination

The categorization of type of tonsillitis into acute, recurrent or chronic is determined by the patient's history.

ACUTE TONSILLITIS

Individuals with acute tonsillitis present with fever, sore throat, foul breath, dysphagia (difficulty in swallowing) and odynophagia (painful swallowing). Physical examination would reveal that children with acute pharyngotonsillitis have symptoms that can be attributed to infection with a respiratory virus, such as adenovirus, influenza virus, parainfluenza virus, rhinovirus or respiratory syncytial virus. However, in approximately 30% to 40% of patients, acute pharyngotonsillitis is of bacterial etiology.

Antibiotic therapy can shorten the clinical course of GABHS pharyngotonsillitis, reducing the rate of transmission and preventing suppurative and nonsuppurative complications such as peritonsillar abscess and acute rheumatic fever.⁵

In case of obstructive tonsillar enlargement airway obstruction may manifest as mouth breathing, snoring, nocturnal breathing pauses, or sleep apnea.²

RECURRENT TONSILLITIS

A diagnosis of recurrent tonsillitis is made when an individual has more than four episodes in 1 calendar year or seven episodes in one year or five episodes per year for two years or three episodes per year for 3 years.⁶

The patient having an episode of infection has a clinical presentation similar to that seen with acute tonsillitis. The findings on physical examination of the tonsil include peritonsillar erythema on the anterior tonsillar pillar, increased debris on the tonsillar crypts, multiple dilated surface blood vessels, and loss of normal tonsil architecture.⁶

CHRONIC TONSILLITIS

Individuals with chronic tonsillitis may present with chronic sore throat of more than 4 weeks' duration, halitosis, persistent tonsillitis, and persistent tender cervical nodes.¹

Recurrent febrile pharyngotonsillitis is usually due to chronic inflammation of the tonsils and/or adenoids. These episodes are often associated with other clinical manifestations such as respiratory obstruction of nasopharyngeal origin, auricular inflammation, especially effusive otitis media and acute otitis media, streptococcal beta-haemolytic Group A (SBECA) infection causing a distant disorder of varying severity. They may give rise to serious pathological conditions.⁷

The Actinomyces spp. are common saprophytic microorganisms which are found in the oral cavity, pharynx and palatine tonsils. Infections caused by them may result in recurrent chronic tonsillitis.⁸

F. necrophorum subsp. *funduliforme* is present in small numbers as part of the normal human throat flora. The presence of *F. necrophorum* in large quantities may cause tonsillitis, especially recurrent tonsillitis.⁹

PERITONSILLAR ABSCESS

PTA (peritonsillar abscess) occurs most commonly in patients with recurrent tonsillitis or in those with chronic tonsillitis who have been inadequately treated.¹

The condition usually occurs unilaterally, and the patient presents with severe pain, referred otalgia to the ipsilateral ear, drooling caused by odynophagia and dysphagia, and trismus.¹

Physical examination reveals gross unilateral swelling of the palate and anterior

pillar, displacement of the tonsil downward and medially with reflection of uvula towards the opposite side, and tender cervical lymph nodes.¹

INFECTIOUS MONONUCLEOSIS

Infectious mononucleosis (MN) due to EBV should be considered in the diagnosis in an adolescent or young child who presents with acute tonsillitis. The clinical features of infectious mononucleosis include malaise, fatigue, headache, sore throat and enlarged, tender lymph nodes.¹

Physical examination of the patient would reveal acute follicular tonsillitis, a limited membrane on the oropharynx, petechiae on the soft palate, pyrexia, splenomegaly (50% of patients) and hepatomegaly (10% of patients).¹

Investigations

Tonsillitis and PTA are clinically diagnosed. The time honored method for confirmation of diagnosis is throat culture.¹ However, the swab cultures taken from the tonsillar surface may not always reveal the real pathogen of the tonsils. In addition, the estimated probability of identifying the causative agent through tonsillar surface swabs varies with the type of the pathogen. If medical therapy is planned on the basis of the tonsillar surface culture, then antibiotics that are effective against *H. influenzae* in addition to the target microorganisms may be chosen.¹⁰

A rapid antigen detection test (RADT), also known as the Rapid Streptococcal Test, relies on swabbed material for the detection of the presence of GABHS cell wall carbohydrate. The most accurate and cost effective method to diagnose GABHS infection is the Rapid Strep Test.¹

Monospot serum test, CBC count, and serum electrolyte level tests are other investigations that may be indicated.

Monospot test is indicated in case infectious mononucleosis is suspected and the peripheral blood picture shows mononucleosis.²

When there is extension of infection of PTA, a Computed Tomography (CT scan) with contrast enhancement may be indicated.¹

Complications

Local complications of peritonsillar abscess are parapharyngeal abscess, retropharyngeal

abscess,² and thrombophlebitis of the internal jugular vein (Lemierre syndrome). The usual cause of Lemierre syndrome is infection with *Fusobacterium necrophorum*.⁸

General complications of peritonsillar abscess include acute glomerulonephritis, rheumatic fever and septicemia.²

Medical Care

ACUTE TONSILLITIS

Acute tonsillopharyngitis is one of the situations for which antibiotics are most commonly used, although the condition itself is mostly viral in origin. There seems to be a wide variation among physicians in prescribing antibiotics.¹¹

Antibiotics should be reserved for managing secondary bacterial pharyngitis, with penicillin being the therapeutic agent of choice.¹ Intramuscular penicillin (i.e. benzathine penicillin G) is required for persons who may not be compliant with a 10-day course of oral therapy. Penicillin is optimal for most patients (barring those with allergic reactions) because of its proven safety, efficacy, narrow spectrum and low cost. Because of the risk of a generalized papular rash, ampicillin and related compounds should be avoided when infectious mononucleosis is suspected.² Alternatives available for use in these patients include clindamycin or erythromycin with metronidazole.¹

A meta-analysis of randomized controlled trials published between 1979 and 2003 compared the efficacy, safety and compliance of Cefaclor in the treatment of pediatric acute bacterial tonsillopharyngitis with those of other antibiotics.¹² The study showed that in the treatment of pediatric acute bacterial tonsillopharyngitis Cefaclor exhibits a clinical efficacy and compliance similar to other antibiotics usually employed in this setting, but is superior as regards safety.¹²

RECURRENT TONSILLITIS

Recurrent tonsillitis may be managed with the same antibiotics as those used in acute GABHS pharyngitis. If the infection recurs shortly after a course of an oral penicillin agent, then IM benzathine penicillin G, Clindamycin and amoxicillin/clavulanate may be considered as they have been shown to be effective in eradicating GABHS from the pharynx in persons suffering from repeated

bouts of tonsillitis. A 3 to 6 week course of an antibiotic that is effective against beta-lactamase-producing organisms (e.g. amoxicillin/clavulanate) may allow tonsillectomy to be avoided.¹

Surgical Care

ADENOIDECTOMY

The current clinical indications for adenoidectomy (as recommended by the AAO-HNS in 2000) are:

- a) Four or more episodes of recurrent purulent rhinorrhea in the previous 12 months in a child of less than 12 years of age, and one episode documented by intranasal examination or diagnostic imaging;
- b) Persistent symptoms of adenoiditis after two courses of antibiotic therapy (one of which is with a beta-lactamase stable antibiotic of at least of 2 weeks' duration);
- c) Sleep disturbance with nasal airway obstruction persisting for at least 3 months;
- d) Hyponasal or nasal speech;
- e) Otitis media with effusion of over 3 months' duration or a second set of tubes;
- f) Dental malocclusion or orofacial growth disturbance documented by orthodontist;
- g) Cardiopulmonary complications including cor pulmonale, pulmonary hypertension, and right ventricular hypertrophy associated with upper airway obstruction;
- h) Otitis media with effusion in patients over 4 years of age.

TONSILLECTOMY

The current clinical indications for tonsillectomy (as recommended by the AAO-HNS in 2000) are:

- a) 3 or more infections per year despite adequate medical therapy.
- b) Hypertrophy causing dental malocclusion or adversely affecting orofacial growth documented by orthodontist;
- c) Hypertrophy causing upper airway obstruction, severe dysphagia, sleep disorders, or cardiopulmonary complications;
- d) Peritonsillar abscess unresponsive to medical management and drainage

documented by surgeon (except when surgery is performed during acute stage);

- e) Persistent foul taste or breadth due to chronic tonsillitis not responsive to medical therapy;
- f) Chronic or recurrent tonsillitis associated with the streptococcal carrier state and not responding to beta-lactamase resistant antibiotics;
- g) Unilateral tonsil hypertrophy presumed to be neoplastic.

TECHNIQUES

Adenoidectomy is performed with an adenotome, shaver blade or with curettes. Hemostasis is usually achieved with gauze packing, electrocautery or both.

Methods of tonsillectomy include cold dissection and snare, tonsillotome, monopolar electrocautery, bipolar electrocautery and CO₂ or KTP laser. Hemostasis is usually achieved with gauze packing, electrocautery or both. Because of excessive costs, laser tonsillectomy is usually reserved for patients with bleeding disorders. Regardless of the method used proper operative technique is extremely important to avoid complications.¹

Coblation or cold ablation is a technique that utilizes a field of plasma or ionized sodium molecules to ablate tissues.¹³ In this procedure, bipolar radiofrequency energy is transferred to sodium ions, creating a thin layer of plasma. This effect is achieved at temperatures from 40°C to 85°C, in comparison to electrocautery which can reach above 400°C.¹ The reduction in thermal injury to surrounding tissues offers reduced postoperative pain and morbidity.

Procedures that rely on thermal welding technology (TWT) using the TLS (2) thermal ligating shear are among the recent advances in tonsillectomy.¹⁴ TWT is a safe method, and among the several handpieces available for the TWT generator, the TLS (2) is very effective and easy to use, providing sufficient hemostasis and diminished operative time.¹⁴

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CME/CPD Questions

After you have completed reading the article *Common throat infections: a review*, take the test given below. Circle T (True) or F (False) in the Answer Sheet on page 92 to show the correct answer to each question. Questions 11 to 20 are related to the content in this article.

11. Tonsillectomy and adenoidectomy are the most common major surgical procedures performed in children.
12. In peritonsillar abscess, the abscess is usually located between the fibrous capsule of the upper pole of the tonsil and the superior constrictor muscle of the pharynx.
13. Group C beta-hemolytic streptococcus is associated with the risk of rheumatic fever and glomerulonephritis.
14. Airway obstruction due to obstructive tonsillar enlargement may manifest as mouth breathing, snoring, nocturnal breathing pauses, or sleep apnea.
15. PTA (Peritonsillar abscess) occurs most commonly in patients with recurrent tonsillitis or in those with chronic tonsillitis who have been inadequately treated.
16. Infectious mononucleosis (MN) is due to H. influenzae virus in an adolescent or younger child with acute tonsillitis.
17. The most accurate and cost effective method to diagnose GABHS infection is Rapid Strep Test.
18. Ampicillin is optimal for most patients because of its proven safety, efficacy, narrow spectrum, and low cost.
19. Tonsillectomy is performed with an adenotome, shaver blade, or with currettes.
20. Coblation is a technique that utilizes a field of plasma or ionized sodium molecules to ablate tissues.