

Acute tonsillitis and its complications: an overview

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Abstract

Acute tonsillitis may be defined as inflammation of the tonsils, predominantly due to infection. It is part of the spectrum of pharyngitis, which ranges from localised tonsillar infection to generalised infection of the pharynx and commonly affects young healthy adults. Simple sore throats secondary to viral or bacterial pharyngitis are very common and generally do not require hospital admission or antimicrobial treatment. Supportive management in the form of analgesia and adequate hydration is often sufficient. However, there is potential for life-threatening complications to develop, highlighting the need for basic knowledge in the management of these conditions.

This article aims to provide an overview of acute tonsillitis and its complications, including peritonsillar and parapharyngeal abscess formation. Specific attention will be given to the pathogenesis, diagnosis, investigation and management of each condition, in particular advising on emergency pre-shore treatment and indications for referral to an Ear, Nose and Throat Department. We will also summarise important guidelines and evidence from the literature to support these management decisions.

Acute tonsillitis

Acute tonsillitis may be defined as inflammation of the tonsils, predominantly due to infection. It is part of the spectrum of pharyngitis that ranges from localised tonsillar infection to generalised infection of the pharynx. This affects both sexes and all age groups, but is more common in younger people, especially in autumn and winter (1). In 50-80% of cases, the causative pathogen is a virus, for example Epstein-Barr virus (EBV), herpes simplex, influenza and rhinovirus (2). Bacteria, the commonest being Group A beta-haemolytic streptococci (GAS), cause 5-36% of cases (2). Other bacteria that can infect the tonsils and pharynx include *Haemophilus influenzae*, *Streptococcus pneumoniae* and *Neisseria gonorrhoeae*. Fungi such as *Candida* species may cause sore throat in immunocompromised patients. There is no evidence to suggest that bacterial tonsillitis is more severe than viral infection, and it can be difficult to differentiate between them clinically (2).

Diagnosis

The principle symptom is acute-onset sore throat, associated with fever and malaise. On examination the tonsils appear enlarged and erythematous and may have a covering layer of exudate (see Figure 1). Petechial haemorrhages may be seen on the soft palate in GAS and EBV infections. There may be palpable cervical lymphadenopathy, particularly

of the jugulodigastric lymph nodes. It is important to remember that sore throat may be the presenting complaint in more severe infections such as supraglottitis and epiglottitis. Therefore, if there is any concern regarding airway compromise (e.g. hoarse voice, stridor, drooling or respiratory distress), emergency hospital admission should be arranged. Although the diagnosis is clinical, blood tests can be helpful in assessing the response to treatment. Whereas a raised lymphocyte count and abnormal liver function tests are suggestive of glandular fever, a raised white cell count (WCC) and C-reactive protein (CRP) would be expected in acute tonsillitis. Throat swabs should not be performed routinely as they cannot differentiate between colonising and pathogenic organisms (2).

Management

Pre-shore (Role 1)

Supportive management in the form of analgesia and adequate hydration may be sufficient. Intravenous rehydration may be required due to sore throat and dysphagia, and should especially be considered in hot climates where higher insensible losses combined with inadequate intake may cause dehydration. Ibuprofen is more effective than paracetamol or aspirin in relieving throat pain, although it does have risks including exacerbation of asthma, renal toxicity (especially with concurrent dehydration) and gastrointestinal complications (especially



Figure 1: Acute tonsillitis.

with poor oral intake) (2). Regular paracetamol should be used if ibuprofen is contra-indicated. There is insufficient evidence to support the use of throat lozenges, sprays or gargles: however, they can provide effective relief of symptoms in some patients (2).

The Centor criteria were developed to identify the likelihood of GAS infection in adults presenting with sore throat and can assist in deciding whether or not to prescribe antimicrobials (but do not aid in diagnosis) (3). One point each is awarded for the presence of any of the following features:

1. Tonsillar exudate,
2. Tender anterior cervical lymph node,
3. History of fever, and
4. Absence of cough.

A higher score is suggestive of GAS infection, in which case antimicrobials should be commenced with a score of 3-4. NICE Guidelines recommend immediate antimicrobials if the patient is systemically unwell, has signs of complications such as peritonsillar abscess, or has co-morbidities putting them at risk of developing complications (4). The antimicrobial of choice is penicillin V, or a macrolide such as clarithromycin if the patient is allergic to penicillin (2). Antimicrobials containing ampicillin (e.g. co-amoxiclav or amoxicillin) should be avoided, as they may cause a rash in EBV infections (5).

Hospital (Role 3)

The absolute indication for emergency hospital admission is airway compromise. Relative indications include severe dysphagia and dehydration, or suspicion of complicated tonsillitis (see below) (1). Hospital treatment would include intravenous administration of antimicrobials, analgesia and fluids, plus assessment by an Ear, Nose and Throat (ENT) specialist to rule out complications. Recurrent tonsillitis can be a significant clinical issue, and may be an indication for tonsillectomy (Box 1) (2).

1. Sore throats are due to acute tonsillitis.
2. Episodes of sore throat are disabling and prevent normal functioning.
3. Seven or more well documented, clinically significant, adequately treated sore throats in the preceding year or;
4. Five or more such episodes in each of the preceding two years or;
5. Three or more such episodes in each of the preceding three years.

Box 1: Indications for tonsillectomy in recurrent, acute sore throat as recommended by the Scottish Intercollegiate Guidelines Network in 2010 (1).

Complications

Most cases of tonsillitis resolve within five to seven days. However, there is potential for serious complications to occur, even in previously healthy individuals. These complications can be suppurative, including the formation of a peritonsillar or parapharyngeal abscess, or non-suppurative, such as rheumatic fever or post-streptococcal glomerulonephritis.

Infectious mononucleosis (glandular fever)

Caused by EBV, infectious mononucleosis is a systemic viral illness characterised by sore throat and generalised lymphadenopathy. It is common in teenagers and young adults, and is transmitted in saliva (hence its colloquial name – ‘the kissing disease’). The typical presentation is with a four to five day prodrome of malaise and fever, followed by sore throat and tender cervical lymphadenopathy. On examination, the tonsils are enlarged with a membranous slough and there may be soft palate petechiae. As well as enlarged cervical lymph nodes, there may be hepatosplenomegaly. Classically, the WCC differential shows a lymphocytosis and an increased proportion of atypical lymphocytes (6). The heterophile antibody test (e.g. monospot test) is very specific, but has a high false negative rate especially early in the course of the illness (6). In patients with a negative monospot test but high clinical suspicion of infectious mononucleosis, EBV serology is useful to confirm the diagnosis, but this should not delay treatment.

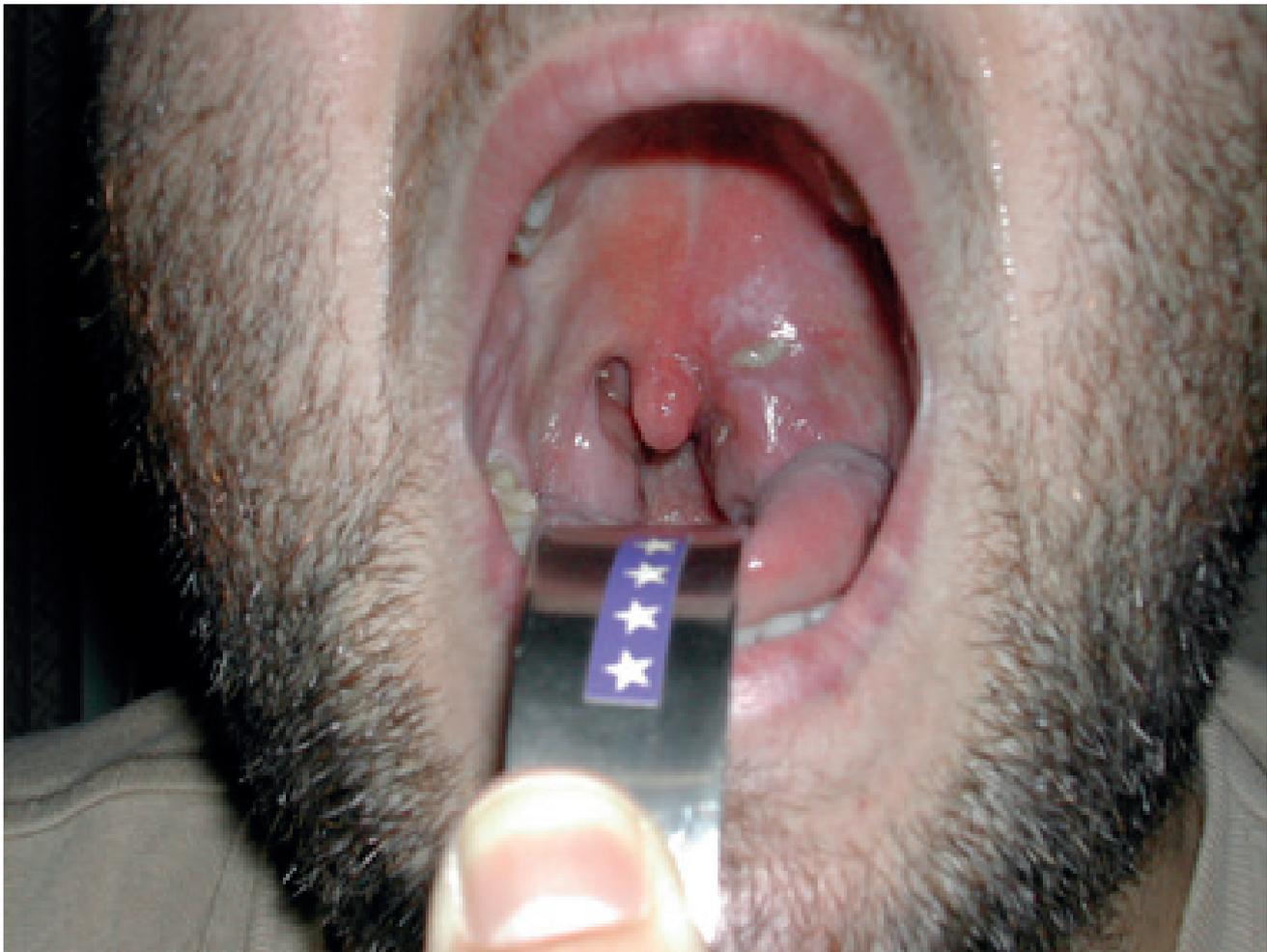


Figure 2: Left peritonsillar abscess.

Risk of splenic rupture

Management of infectious mononucleosis is supportive; however, due to splenomegaly there is a risk of spontaneous splenic rupture, the incidence of which is quoted at 0.1% in the literature (7). Lymphocytic infiltration causes splenic enlargement leading to increased fragility and reduced protection by the rib cage (8,9). Unfortunately, splenomegaly cannot always be detected by clinical examination, and no correlation has been found between severity of infectious mononucleosis and risk of splenic rupture (7). Abdominal pain, especially in the left upper quadrant radiating to the left shoulder tip (Kehr's sign), associated with shock, is highly suggestive of splenic rupture, and emergency hospital admission should be arranged. Although rupture can occur with minimal or no trauma, it is common practice to advise avoiding vigorous physical activity for four to six weeks (7,9). This is not based on controlled trials or national guidelines, but case series have suggested that rupture is most likely within the first four weeks of illness (7,10). Some authors recommend splenic ultrasound four weeks after discharge from hospital, especially in athletes involved in high-risk contact sports, but this is not common practice in the UK (9).

Peritonsillar abscess

A peritonsillar abscess (PTA), also known as a quinsy, is a collection of pus between the capsule of the palatine tonsil and the superior pharyngeal constrictor muscle. It usually occurs as a complication of suppurative tonsillitis, but may also occur spontaneously (11). In studies of PTA aspirates, GAS and *Fusobacterium necrophorum* have been the most commonly isolated organisms, although most infections are polymicrobial, with a mix of aerobic and anaerobic growth (11). PTA most commonly occurs in young adults aged 20 to 39 years (1). It has been suggested that the incidence is increasing in the UK, possibly as a result of reductions in both the number of tonsillectomies being performed and in antimicrobial prescribing by general practitioners (5).

Diagnosis

Diagnosis is clinical or by attempted needle aspiration in which pus is obtained. Although a computerised tomography (CT) scan will demonstrate the presence of a PTA, it is not usually required and should be reserved for patients where it is suspected that the infection has spread beyond the peritonsillar space (5). Typically patients present with unilateral sore throat associated with fever

and dysphagia. On examination there is trismus (restricted mouth opening) and unilateral palatal swelling anterior to the tonsil, often (but not necessarily) with inflamed tonsils (see Figure 2). The uvula may be deviated to the opposite side and the patient may have a muffled or 'hot potato' voice. There is often tender cervical lymphadenopathy that may be unilateral, although the presence of a discrete neck mass is more suggestive of a parapharyngeal abscess.

Management

Pre-shore (Role 1)

Generally, patients with PTA require admission to hospital until they are able to eat and drink normally. However, medical treatment in the form of antimicrobials, analgesia, intravenous fluids and steroids may be initiated prior to this. A combination of benzylpenicillin and metronidazole given intravenously will be effective against aerobic and anaerobic bacteria in the majority of cases (5). In patients with a penicillin allergy, clindamycin may be used as an alternative. A single dose of high dose steroid (e.g. hydrocortisone 100mg intravenously or prednisolone 40mg orally) has been shown to improve pain, fever and trismus (1).

Hospital (Role 3)

Hospital management will include administration of intravenous antimicrobials and analgesia as specified above, and also assessment by an ENT specialist. This will involve ensuring correct diagnosis, followed by drainage of the abscess. Although there are no national guidelines on the management of this condition, surveys have demonstrated that most ENT departments perform either incision and drainage, or needle aspiration plus antimicrobial therapy (12). These procedures should ideally be performed by a clinician with the appropriate experience and skills.

Complications

There is always potential for a PTA to reform or spread to the deep neck spaces. Infection may also track inferiorly into the mediastinum. An untreated PTA may rupture causing aspiration of pus.

Parapharyngeal abscess

The parapharyngeal space is a cone-shaped area on either side of the nasopharynx and oropharynx, with its base at the skull base and its apex at the hyoid bone. It contains the common carotid artery, the internal jugular vein, and cranial nerves nine through twelve. Although the incidence of this condition has been reduced by the early use of antimicrobials, a collection of pus in this region has potential to cause life-threatening complications. Infection can spread through the fascial planes leading to mediastinitis, which is associated with a significant mortality (13). It is usually polymicrobial with organisms originating from the oropharynx. Infection may originate in various head and neck regions, including the nasal cavity,

paranasal sinuses, teeth, salivary glands and pharynx (13). The commonest sources are dental and upper respiratory tract infections (e.g. pharyngitis, tonsillitis). However, the primary infection can begin several weeks before abscess formation and therefore the cause may be unclear (13).

Diagnosis

Typically patients with this condition will be unwell with a fever. They may have sore throat, dysphagia and neck pain. Important features to look for on examination include reduced neck movements, torticollis, trismus and a tender, firm (but fluctuant) swelling in the neck with associated cervical lymphadenopathy. Examination of the oropharynx may reveal a parapharyngeal swelling, which is seen behind the tonsil. There is less oedema of the palate in comparison with a PTA. Blood tests may show a raised WCC and CRP. A flexible nasal endoscopy allows the ENT specialist to view the extent of the pharyngeal wall swelling and the patency of the airway. A CT scan with contrast is required to confirm the diagnosis: however, this should only be performed in a stable patient with no concerns about airway compromise.

Management

Pre-hospital (Role 1)

Whenever a deep neck space infection is suspected, emergency hospital admission and review by an ENT specialist should be sought at the nearest opportunity. Immediate casualty evacuation planning should be initiated in the deployed setting. However, medical treatment should be commenced as soon as possible. This includes adequate analgesia, high dose steroids and intravenous broad-spectrum antimicrobials such as co-amoxiclav, or clindamycin in patients with penicillin allergy. The patient should be kept nil by mouth in preparation for theatre as soon as possible.

Hospital (Role 3)

On arrival at hospital, the patient should be assessed by an ENT specialist urgently, with early involvement of an anaesthetist if indicated. Surgical management involves abscess drainage via an incision in the neck performed under general anaesthetic. Antimicrobials will then be continued post-operatively and altered as per culture and sensitivity testing.

Complications

Due to the proximity of the abscess to important vascular structures, there is potential for internal jugular vein thrombosis and carotid artery aneurysm formation to occur. Inferior spread may also lead to mediastinitis. Such complications tend to be diagnosed radiologically when deep neck space infections are suspected. Mediastinitis specifically presents with chest pain and haemodynamic instability.

Summary

Simple sore throats secondary to viral or bacterial pharyngitis are very common and generally do not require hospital admission or antimicrobial treatment. However, there is

potential for life-threatening complications to develop in young adults, highlighting the need for basic knowledge in the management of these conditions.

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