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Review Article

Aetiology and the use of Antibiotics in the Case of Acute Pharyngitis: A Review

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ABSTRACT
Acute pharyngitis in one of the most common illness reported in high rate in an outpatient setup. The acute pharyngitis is caused due to infection by virus or bacteria. It is no clinical evidence that the bacterial illness and viral illness differ in their severity and duration. Hence the clinicians are put in difficulty in the selection of treatment modality especially the administration of antibiotics. However many research have proved that the adult pharyngitis is mainly due to virus. This review gives the picture of the aetiology and current treatment scenario of the acute pharyngitis.

Keywords: Acute pharyngitis, virus, bacteria, treatment, antibiotics

INTRODUCTION

Acute pharyngitis in one of the most common illness reported in high rate in an outpatient setup[1]. The common symptoms include fever, sore throat and pain on swallowing. It can cause extreme distress of the body and can affect the routine activities of the patient. The illness is of great concern to the clinicians as it can easily spread to others if patient is present in close quarters. Even today the management of acute pharyngitis remains challenging to the clinicians because of its varied aetiology[2]. Further the signs and symptom of the disease varies from patient to patient and thus makes the clinician difficult to ascertain proper aetiology of the illness. Even as the clinical diagnosis fails in many cases, the laboratory diagnosis of the disease also many times not reliable and may be misleading. The acute pharyngitis is the inflammation of soft tissues of the throat and can arise in many upper respiratory tract infections. Thus the symptoms can be presented in various degrees and thus cannot help in clinical diagnosis. Thus acute pharyngitis still remains as a challenge to the clinicians[3].

AETIOLOGY

The acute pharyngitis is caused due to infection by virus or bacteria[4]. It is no clinical evidence that the bacterial illness and viral illness differ in their severity and duration[5].

Viral pharyngitis

The viruses are considered to play a major role in the pathogenesis of pharyngitis[6]. It was found that viral pharyngitis account for around 70% of all pharyngitis, with bacterial causing only 20% to 40% of pharyngitis[7]. The Table 1 gives the possible viruses that are involved in the acute pharyngitis[1].

Those respiratory viruses, such as adenovirus, rhinovirus, respiratory syncytial virus, influenza virus and parainfluenza virus are the main cause of acute pharyngitis. The role of coxsakeivirus, herpesimplex virus and echoviruses in acute pharyngitis is not ruled out. The Epstein – Barr virus is also involved in acute pharyngitis, however is often accompanied with other clinical features such as generalized lymphadenopathy and splenomegaly that are characteristic of infectious mononucleosis. Certain viruses that cause systemic infections like rubella virus, measles and other viruses are also associated with acute pharyngitis. Eventhough viral acute pharyngitis is common in adults, many studies have revealed the role of viruses, especially adenovirus and Respiratory syncicial virus in acute childhood pharyngitis[8-10].

Some viruses produces characteristic clinical symptom along with the pharyngitis. Adenoviruses can produce pharyngoconjunctival fever or an influenza-like syndrome known as the acute respiratory disease of military recruits[11]. Coxsackieviruses are the most frequent causes of handfoot- and-mouth disease and herpangina[12]. Many studies have revealed that the primary human herpesvirus 1 infection as a cause of pharyngitis[13,14]. Human herpesvirus 2 can occasionally cause a similar illness as a consequence of oral–genital sexual contact[15]

Bacterial pharyngitis

Many studies have revealed that Group A streptococcus is by far the most common bacterial cause of acute pharyngitis, accounting for approximately 15 to 30 percent of cases in children and 5 to 10 percent of cases in adults[16,17]. Apart from Group A streptococcus (GAS), some other bacteria are also have been demonstrated to be the aetiological agent of pharyngitis. Next to GAS, it

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Table 1: Viruses that cause acute pharyngitis

Virus	Symptoms/Disorders
Rhinovirus	Common cold
Coronavirus	Common cold
Adenovirus	Pharyngoconjunctival fever and acute respiratory disease.
Herpes simplex virus types 1 and 2	Gingivostomatitis
Parainfluenza virus	Cold and croup
Coxsakievirus A	Herpangina and hand – foot – and – mouth disease
Epstein – Barr virus	Infectious mononucleosis
Cytomegalovirus	Cytomegalovirus mononucleosis
HIV	Primary HIV infection
Influenza A and B viruses	Influenza

has been shown the *Mycoplasma pneumoniae* and *Chlamydia pneumoniae* can also be involved in acute pharyngitis[18]. However, it has not been proved whether these bacteria are co-pathogens or the primary aetiological agents[19,20]. In another study, apart from these bacteria, they have also found that *Legionella pneumophila* also can be the causative agent of pharyngitis[21]. Another important bacterium that has been implicated in the causation of pharyngitis is *Fusobacterium necrophorum*[22]. It occurs in patients aged 15 to 30 years. *F. necrophorum* can cause a severe complication, the Lemierre syndrome[23]. This bacterium has now been emerged as an important bacterium in adolescent pharyngitis[24]. It is considered to be as common as GAS in this age group[25].

In an interesting finding, the group C streptococcus has been found as the causative agent in acute pharyngitis has been frequently isolated from throat culture. Streptococcus *equi* subsp. *equisimilis* and *S. anginosus* are the two group C streptococci that have been isolate from pharyngitis[26]. However, its role in the causation of pharyngitis is questionable[27,28]. Certain studies have proved that it can cause pharyngitis[29-32].

Arcanobacterium haemolyticum is another bacterium which is rarely diagnosed to cause acute pharyngitis and tonsillitis in adolescents and young adults. The symptoms of infection caused by this organism closely mimic those of acute streptococcal pharyngitis, including a scarlatiniform rash in many patients[33,34]. Normally the colonisation of the pharynx with *Neisseria gonorrhoeae* is asymptomatic, however it can occasionally cause pharyngitis[35].

TREATMENT

The multiple aetiology of acute pharyngitis makes it difficult for the physician to decide and initiate appropriate treatment for the patient. Treatment for acute pharyngitis nowadays more relies on patient satisfaction rather than the aetiology of the disease[36]. However it is important for the physician to decide to initiate antibacterial therapy as in many cases the disease may be of viral aetiology. The physician should prescribe

Table 2a: Determination of patient's total sore throat score by assigning points to the following criteria (step 1)

Criteria	Points
Temperature above $38^{O}C$	1
No cough	1
Tendor anterior cervical adenopathy	1
Tonsillar swelling or exudates	1
Age 3-14 years	1
Age 15-44 years	0
Age ≥ 45 years	-1

Table 2b: Total score calculated according to the above and choose the appropriate management suggested below according to the total sore throat score (Step 2)

Total score	Suggested management
0	No culture or antibiotic is required
1	
2	Culture all. Treat with antibiotics only if
3	culture result is positive
4	Culture all. Treat with penicillin on clinical grounds.

antibiotics in the suspected streptococcal pharyngitis to prevent the post complication sequels like peritonsillar or retropharyngeal abscess, cervical lymphadenitis, mastoiditis, sinusitis, and otitis media rheumatic fever and glomerulonephritis[37,38]. However certain studies have shown that the post complications occur extremely rare even in the absence of antibiotic therapy[39]. Furthermore, no evidence shows that antibiotic therapy for pharyngitis decreases the incidence of this complication[40]. It has been universally accepted that the penicillin is the first choice treatment of streptococcal pharyngitis since GAS remains universally susceptible to penicillin[41,42]. However ampicillin or amoxicillin are equally effective and thus can be given in place of penicillin[43]. The studies have shown that treatment for 10 days with a single daily dose of amoxicillin is as effective as treatment with multiple daily doses of penicillin V[44,45]. Amoxicillin became the antibiotic of choice in the place of penicillin in many countries as the penicillin is not commercially available. The patients who are allergic to beta-lactam antibiotics are administrated with macrolides[46,47]. If the allergic patients, tested to have hypersensitivity to penicillin are not type I, cephalosporins should be considered as the alternative drug. Some studies have shown that cephalosporins has an efficacy higher than penicillin on GAS[48]. Further cephalosporins have been found to be more effective than penicillin in case of recurrent streptococcal pharyngitis[49]. The initiation of antibiotics has showed to be based on the clinical evidence of streptococcal pharyngitis. Patients with streptococcal pharyngitis commonly present with sore throat (generally of sudden onset), severe pain on swallowing, and fever. Headache, nausea, vomiting, and abdominal pain may also be present, especially in children[50]. Thus the clinicians should clearly ascertain the possibility of streptococcal pharyngitis in a patient before initiating the antibiotic therapy. Some clinicians suggest the use of centor score to identify and treat the cases of

pharyngitis[51,52]. The Table 2 shows the calculation of centor score and the treatment approach according to it[53,54]. The rapid antigen tests for identification of beta haemolytic streptococci have been used in certain hospital setups. When compared with the "golden standard" of throat culture, have reported sensitivities of 65% to 91% and specificities of 62% to 97%[55-58]. As these tests have approximately the sensitivity and greater specificity as that of throat culture, it can be used widely in all clinics to ascertain the cause of pharyngitis and thus can initiate the appropriate treatment[59].

CONCLUSION

To conclude, the indiscriminate use of antibiotics especially for adults in not advisable as from the review it is clear that the pharyngitis in adults are mainly due to virus. In a clinics a diagnostic and therapeutic rationale should be created to limit the use of antibiotic treatment to patients.

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