Original Article

Prevalence of Pharyngitis and Tonsilitis among Children

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ABSTRACT

Objective: Tonsillitis and pharyngitis are very common medical problems especially among the children. Tonsillitis affects mostly children between the age of 3-5 years because this is when their tonsils are in their most active stage, fighting infectious. When the child grown older, the tonsils will shrink and infection will become less common. Tonsillopharyngitis is one of the most common infections worldwide especially in children and young adults. Viruses are often involved in children younger than 5 years of age and a bacterial etiology is more usual after this age.

Study Design: Cross Sectional Study.

Place and Duration of Study: This Study was conducted at the Department of Microbiology, Basic Medical Sciences Institute, Jinnah Postgraduate Medical Centre, Karachi from Dec. 2008 to June 2009.

Materials and Methods: A total of 300 subjects (250 suspected children and 50 healthy children as control) of age ≤5-15 years, were included and this age group was again divided into three groups: ≤5-8 years, 9-12 years and 13-15 years respectively.

The throat swab was taken in duplicate, for that the care was done, not to touch the tongue of sides of the mouth cavity, the swab was taken from the posterior pharyngeal wall. The first swab was for the performance of Rapid Strep Test according to the principle and procedure mentioned and the 2nd swab for the culture and further processing in the microbiological laboratory.

Result: The percentage of isolated cases positive for GABHS. Out of 250 suspected cases 24 (9.6%) were positive for GABHS while 226 (90.4%) were negative for GABHS. The age wise distribution of the infection among ≥5-8 years, it was 13 (13.7%), among the age of 9-12 years it was 6 (6.2%) and among the age group of 13-15 years it was 5 (8.6%). Distribution of tonsillitis and pharyngitis among 166 male children, 4 (2.4%) were positive for tonsillitis, while 11 (6.6%) were positive for pharyngitis, while in female children, which 84 in total, 3 (3.6%) were positive for tonsillitis and 6 (7.1%) were positive for pharyngitis.

Conclusion: Group A beta hemolytic Streptococcal infection of throat constitute one of the major public health problems due to its post infectious complications. The data obtained provides information about the commonly prevalent bacteriological agent in pharyngitis and tonsillitis. Furthermore, it helps to outline the strategy towards appropriate therapy. It has also been concluded from this study that pharyngitis is more prevalenct than tonsillitis.

Key Words: Pharyngitis and tonsillitis, Streptococcus pyogenes.

INTRODUCTION

Pharyngitis and tonsillitis are inflammations in the throat that are caused by infection. If the tonsils get affected first, will be called tonsillitis, if the pharynx is primarily affected, it is called pharyngitis, these infections are spread by close contact with other individuals. These types of infections are more common during the late winter and early spring seasons, while viral infections are more common during summer and fall[1].

Pharyngitis and tonsillitis are acute inflammations involving the posterior pharynx and the tonsillar pillars. The most common bacterial cause of pharyngitis and tonsillitis is Group A beta hemolytic streptococci[2]. Tonsillitis is the term for an infection of the tonsils. Pharyngitis is an infection of the surrounding throat (called the pharynx). These two infections often occur at the same time[3]. Although children infected with GABHS will recover clinically, without antibiotics, treatment is recommended in order to prevent acute rheumatic fever and probably suppurative complications[4].

Group A streptococcal pharyngitis is more common during winter and rainy seasons and occurs frequently in school age children. Physical examination reveals an erythmatous pharynx, exudative tonsillitis, and tender cervical adenopathy. Palatal petechiae may be present and papillae of the tongue may be prominent and erythmatous, giving the appearance of a “Straw berry tongue”. Occasionally, a fine red rash is present, with a sand paper like feel. Other features are circumoval paller and erythematous accentuation in the body increases, called pastia’s lines[5].

The bacteria are present in the nose and throat, so normal activities such as sneezing, coughing and shaking hands can spread the infection to other people[6]. The infection could also be gained by touching objects such as books, tables, other hard surfaces that were handled by an infected person[6]. Most cases of sore throat are caused by viruses and are not strep throat. Viral sore throat does not need treatment. Symptoms of

viral sore throat include a running nose, cough, hoarseness, red or running eyes and diarrhea. Viral sore throat improves on its own without any treatment[6].

Acute tonsillitis can be caused by both viruses and bacteria. Generally, younger pre-school children tend to get viral tonsillitis and other children and adults get bacterial infections[7].

The tonsils are lymph nodes in the back of the mouth and top of the throat. They normally help to filter out bacteria and other micro-organisms to prevent infection in the body. They may become so over whelmed by bacterial or viral infection that they swell and become inflamed, causing tonsillitis. The infection may also be present in the throat and surrounding areas causing pharyngitis[8].

In the United States GABHS accounts for fever than 25% of all episodes of pharyngitis. Although endemic all year, streptococcal pharyngitis, its peak occurrence during later winter and early spring intermperate climates. Internationally Streptococcus pyogenes has a world wide distribution[9].

Pharyngitis is an inflammatory process of the pharynx, uvula and tonsils that can be caused by viral or bacterial infection and occasionally both. Distinguishing between these infections is important because rheumatic fever, acute glomerulonephritis, peritonsillar abscesses are most serious sequelae[10].

Streptococcus pyogenes (GABHS) is an etiological agent for diverse human diseases, including pharyngitis, pyoderma and severe invasive diseases in addition, the pathogen is associated with potentially life threatening sequelae such as post streptococcal glomerulonrphritis and acute rheumatic fever. In the northern territory of Australia, the incidence of acute rheumatic fever is very high among the indigenous population[11].

Pharyngotonsillitis is one of the most common respiratory disease in the community, particularly during childhood. Approximately 28% to 40% of these infections are estimated to be caused by group A beta hemolytic streptococcus (GABHS), which is considered the most important etiological pathogen in term of sequelae, and complications[12].

The 2000 National Ambulatory Medical Care Survey found that acute pharyngitis accounts for 1.1% of visit in the primary care setting and is ranked in the top 20 reported primary diagnosis resulting in office visits[13].

Group A beta hemolytic streptococcal pharyngitis accounts for 10-20% of sore throats[14].

In australia, sore throat is the second most common reason for which patients see their primary care doctor and 89% of general practitioners report that they routinely prescribe antibiotics for sore throat[15].

Group A streptococcus (GABHS) or Streptococcus phygenes are the most common cause of bacterial pharyngitis in children and adults worldwide. Other less common bacterial causes of pharyngitis include Corynebacterium diphtheriae, Niesseria gonorrhoeae and Arcanobacter hemolyticum. Bacterial agents such as non typable Haemophilus influenzae, Streptococcus pneumoniae, Viridans Streptococci, Staphylococcus aureus, Staphylococcus epidermidis and Morexella catarrhalis are considered normal flora of the pharynx[16].

Colonies of (GABHS) are usually small non pigmented and glistering[17].

Colonies are pinpointed, brittle, translucent, grey that may turn brownish on continued incubation, large and deepzone of β-hemolysis in comparison to colonize[18].

MATERIALS AND METHODS

A total of 300 subjects (250 suspected children and 50 healthy children as control) of age ≤5-15 years, were included and this age group was again divided into three groups: ≤5-8 years, 9-12 years and 13-15 years respectively.

The throat swab was taken in duplicate, for that the care was done, not to touch the tongue of sides of the mouth cavity, the swab was taken from the posterior pharyngeal wall. The first swab was for the performance of Rapid Strep Test according to the principle and procedure mentioned and the 2nd swab for the culture and further processing in the microbiological laboratory.

Culture: The culture was carried out on the Blood agar plates, after inoculation, the incubation of plates was carried out for 24-48 hours at 37°C, a cut on plate was made to observe the hemolytic effect of the organism. After 24 hours (on the next day) the reading of plates were taken, hemolysis was observed and the growth on the plates was also seen. To observe the sensitivity to Bacitracin (0.04U) a bacitracin disc was placed on the inoculated plate and zone of inhibition was observed.

Microscopy: A loop full of the growth from the Blood agar plate was taken and spread on the glass slide, dried and fixed, Gram's staining performed according to the standards mentioned, slide dried, a drop of cedar wood oil put and seen under oil emersion and the organisms identified as gram positive organisms agganed in short chain.

Catalase test: Catalase test was performed to differentiate between staphylococci 9catalase positive) from the streptococci (catalase negative). Test was carried out according to the standards mentioned and found negative. Therefore, the organism isolated was the Group A beta *hemolytic Streptococci*.

Antimicrobial sensitivity testing: The sensitivity was performed according to the standards mentioned for this purpose. Two drugs were used, penicillin (10 U) and Erythromycin (15µg), organism was found 100% sensitive to penicillin[19].

RESULTS

Table 1 shows the percentage of isolated cases positive for GABHS. Out of 250 suspected cases 24 (9.6%) were positive for GABHS while 226 (90.4%) were negative for GABHS.

Table No.1: Distribution of β-hemolytic Streptococci in Pharyngitis and Tonsillitis

Bacterial pathogens	Number	Percent
Positive for GABHS	24	9.60
Negative for GABHS	226	90.4

Table 2 shows the age wise distribution of the infection among ≥5-8 years, it was 13 (13.7%), among the age of 9-12 years it was 6 (6.2%) and among the age group of 13-15 years it was 5 (8.6%).

Table No.2: Distribution of B-Hemolytic Streptococci in Different Age Groups

Age group (Years)	Number	Percent
≥5-8 (n=95)	13	13.7
9-12 (n=97)	06	6.20
13-15 (n=58)	05	8.60

Table 3 shows distribution of tonsillitis and pharyngitis among 166 male children, 4 (2.4%) were positive for tonsillitis, while 11 (6.6%) were positive for pharyngitis, while in female children, which 84 in total, 3 (3.6%) were positive for tonsillitis and 6 (7.1%) were positive for pharyngitis.

Table No.3: Distribution of Positive cases for Tonsillitis and Pharyngitis Among Children

Gender	Tonsillitis		Pharyngitis	
	Number	Percent	Number	Percent
Male (n=166)	04	2.4	11	6.6
Female (n=84)	03	3.6	06	7.1

DISCUSSION

Pharyngitis and tonsillitis occupy a prominent place among the young children from 5-15 years of age, and also a most important cause of morbidity due to the post infectious complications produced by the *Streptococcus pyogenes* i.e. acute rheumatic fever and post streptococcal glomerulonephritis.

This study was planned to see the prevalence of the bacterial infection in the children of school going age, as a result among the bacterial causes and especially in this age group the *group A beta hemolytic Streptococci* was responsible for these types of infections.

Out of 250 clinically suspected children, 24 (9.6%) had the bacterial pathogens. The other remaining patients were suffering from the viral, fungal, allergy and atypical infections, which constitute (70-80%) and is responsible for the major portion of the illness. The other bacterias which can cause this type of infection are, Corynebacterium diphtheria, Streptococcus pneumoniae, Haemophilus influenzae, Morexella catarrhalis, Mycoplasma etc. also some fungi and Candida albicans can cause the same type of infection.

In this study, the cases isolated and which were positive for GABHS were 24 (9.6%) while the remaining 226 (90.4%) were negative for GABHS, while in 50 control cases the organisms isolated from the carrier children were 4 (8%). This number of isolation is less than other developed countries. This does not mean that in our population, the number of infected children is less, but the fact of matter is the advancement in the diagnostic procedures, the rate of education, especially the health education, general awareness, which these countries possess, is not available to our common man, and the customs of our society. A low percentage of these patients are attending public hospitals, the preference is given to the nearest Medical practitioner and even quakes to treat children. The child is not allowed to attend the school till he or she gets curved.

If this study is compared with the study done in Eskischir, Turkey, the organisms isolated were 13.16%, which is more than this study[20]. In this study, the comparison has been carried out between the male and female children suffering from pharyngitis and tonsillitis. The prevalence of pharyngitis was observed more among male as well as female patients which was 11 (6.6%) and 3 (3.6%) among male and female patients. The reason for this can be that the tonsillitis is more common among the age group 3-7 years after which the tonsils get shrunken and also due to the immunity function of tonsils.

CONCLUSION

- Group A beta hemolytic Streptococcal infection of throat constitute one of the major public health problems due to its post infectious complications.
- The data obtained provides information about the commonly prevalent bacteriological agent in pharyngitis and tonsillitis. Furthermore, it helps to outline the strategy towards appropriate therapy.
- It has also been concluded from this study that pharyngitis is more prevalenct than tonsillitis.

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