



Group A Beta Hemolytic Streptococcal Sore Throat in Children – A Descriptive Epidemiological Study

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Abstract

Background: Sore throat is one among the common complaints in any pediatric healthcare, viruses being the major causative organism. Nevertheless, Group A streptococcal pharyngitis accounts for up to 37% cases in children above 3 years of age, with risk of short term and long term sequelae, both suppurative and non suppurative. This study outlines the demographic and clinical profiles of children presenting with sore throat in the outpatient department of a tertiary care hospital in Chidambaram, South India.

Methods: An observational study was performed at the pediatric OPD of Rajah Muthiah Medical College Hospital, Annamalai University, Chidambaram, Tamilnadu from January 2017 to June 2017. Children in the age group of 3-12 years, with the history of sore throat were examined for associated signs and symptoms. Throat swabs were collected from all the subjects. Demographic, clinical and laboratory parameters were recorded and analysed.

Results: GABHS were isolated from 5 cases, among the study population of 60 children, reflecting a high prevalence rate of 8.33 %. Gender, immunisation status and malnutrition had no statistical significance to GABHS infection. Overcrowding and socioeconomic status do not pose a statistically significant risk for GABHS infection.

Conclusion: It is imperative to identify and effectively treat GABHS pharyngitis, amongst the cases of sore throat in children in order to prevent the secondary complications of the streptococcal infection.

Keywords: Sore throat, Children, Streptococcal pharyngitis, GABHS.

Introduction

Sore throat is a frequent complaint in any pediatric health care facility. While viruses are the most common etiological agents causing pharyngitis among children and adolescents, group A

Streptococcus (GABHS) accounts for nearly one third of the cases of acute pharyngitis, especially in school going children of 5-15 years age^[1]. GABHS pharyngitis deserves special mention amongst the many causes of pharyngitis because

of the potential risk for both suppurative and non suppurative complications with significant short term and long term morbidity and very rarely, mortality [2].

Materials and Methods

This is an observational hospital based cross sectional study, conducted at the outpatient department of Rajah Muthiah Medical College Hospital, Annamalai University, Chidambaram, Tamilnadu for a period of six months from January 2017 to June 2017. With the approval of the institutional ethical committee and after getting written consent from the parents, 60 children who presented with sore throat to the pediatric OPD were enrolled for the study.

Inclusion Criteria

- Children aged 3-12 years of both genders.
- Children presenting with sore throat.

Exclusion Criteria

- Children with chronic hematological, respiratory and cardiovascular diseases.
- Children on prior antibiotic therapy at the time of presentation.
- Children on Rheumatic fever prophylaxis.

A detailed clinical history comprising the associated symptoms was obtained from the study population. The commonly implicated demographic variables related to group A beta haemolytic streptococcal pharyngitis in children were recorded. A thorough physical examination of the children satisfying the selection criteria was done. A complete blood count analysis was performed on the study population. Throat swabs were obtained from all the children included in the study and cultured by conventional methods and the results were tabulated.

The prevalence of GABHS was calculated and analysed. The association of demographic variables, socio economic factors, clinical symptoms and signs with a positive throat swab culture of GABHS was assessed. Statistical correlation, if any, between the variables studied and GABHS was analysed.

Results

Chart 1 Age Distribution

Children in the age group of 9 – 12 years accounted for the maximum frequency of 43.3 % of the cases.

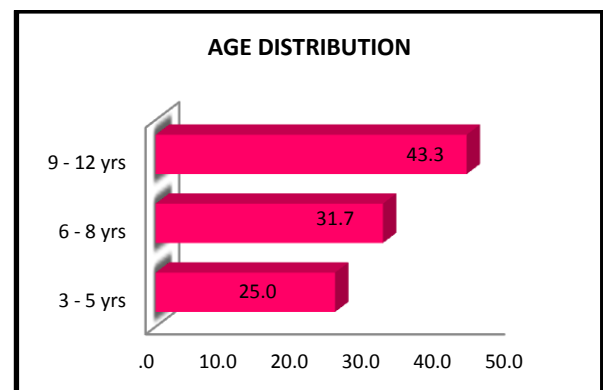


Chart 2 - Nutritional Status

41% of the cases had no malnutrition, 32% of cases had grade I malnutrition, 10% had grade II malnutrition and 12% of cases had grade III malnutrition. 5% of the study population fell under grade IV malnutrition.

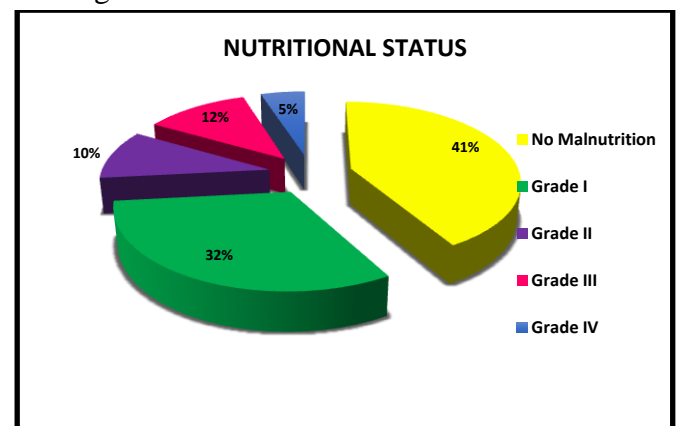


Chart 3 Immunisation Status

90 % of the study populace were immunised age appropriately, as per the national immunisation schedule.

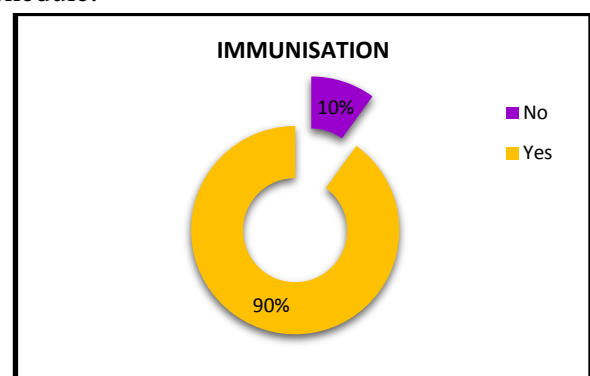


Chart 4 - Overcrowding

30 % of the cases resided in an overcrowded home environment.

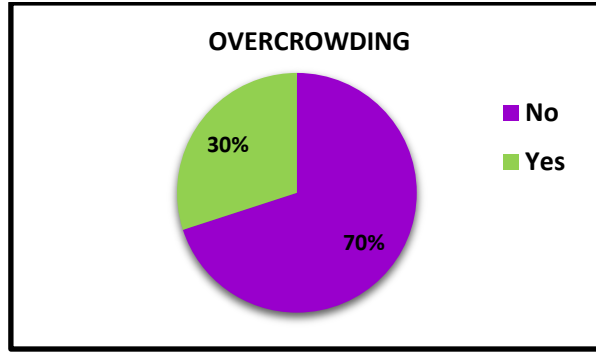


Chart 5 - Socio Economic Class

As per the revised Kuppusamy classification, majority of the study population fell under class III and class IV socio economic classes, accounting for 30 % each. 3.3 % of the cases

belonged to socio economic class I, 23.3 % of the cases were class II and the remaining 13.3 % of the cases belonged to class V socio economic class.

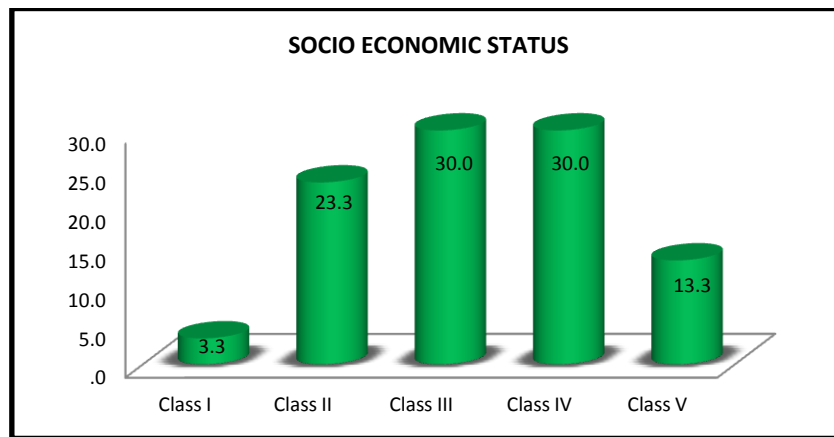
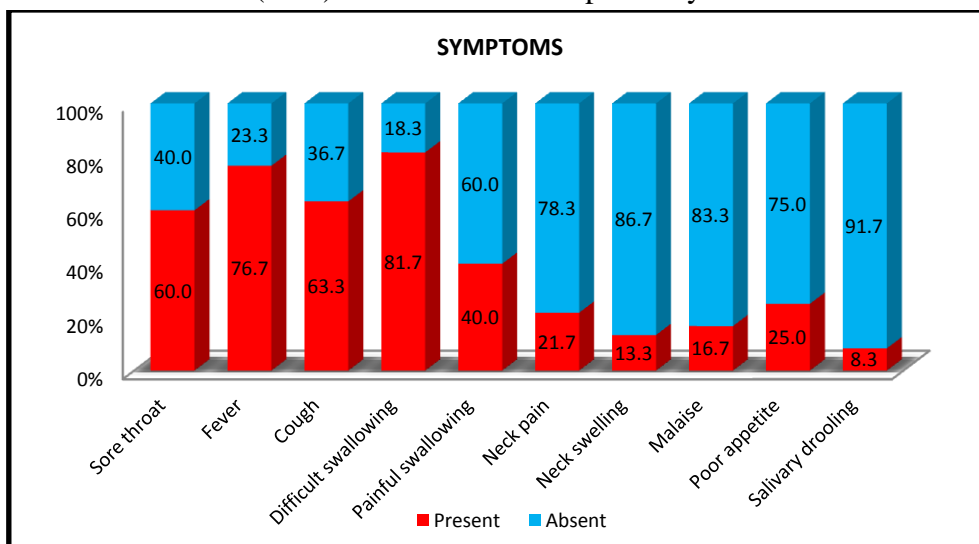


Chart 6 Clinical Symptoms

The most common presenting symptom was difficult swallowing in 81.7 % of the cases, closely followed by fever in 76.7 % of the cases, cough (63.3%) and sore throat (60%). Painful

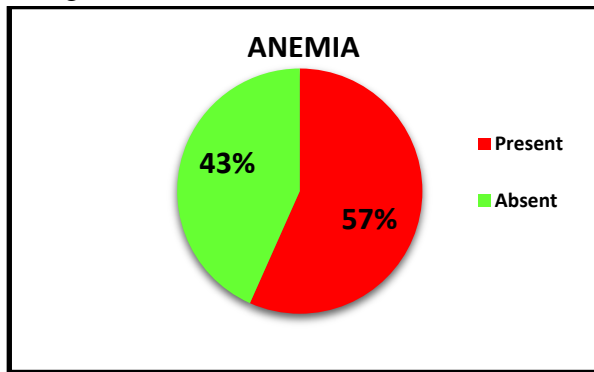
swallowing, poor appetite, neck pain, malaise, neck swelling & salivary drooling were present in less than half of the cases with a frequency of 40 %, 25%, 21.7%, 16.7 %, 13.3% and 8.3% respectively.



Hematological Parameters

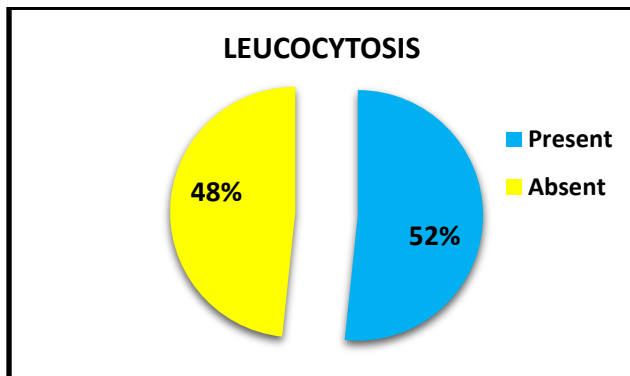
Anemia

57 % of the cases had a haemoglobin value of less than 9 g%.



Leucocytosis

52 % of the cases had a white blood cell count of more than 11000 cells/cu.mm.



Neutrophilia

75% of the cases had elevated neutrophil count.

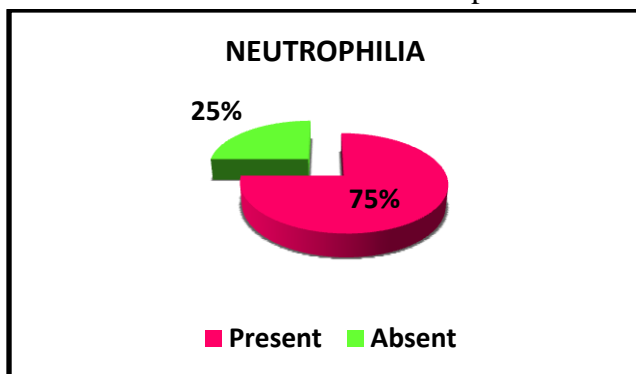


Table 1 – Fever in Sore Throat

		H/O FEVER			
Valid	Absent	Frequency	Percent	Valid Percent	Cumulative Percent
	Present	48	78.7	78.7	100.0
	Total	60	100.0	100.0	

Table 2 Cervical Adenopathy in Sore Throat

		TENDER ADENITIS			
Valid	Absent	Frequency	Percent	Valid Percent	Cumulative Percent
	Present	30	50.0	50.0	100.0
	Total	60	100.0	100.0	

Table 3 Tonsillar Exudates in Sore Throat

		TONSILLAR EXUDATES			
Valid	Absent	Frequency	Percent	Valid Percent	Cumulative Percent
	Present	13	21.7	21.7	100.0
	Total	60	100.0	100.0	

Table 4 Salivary Drooling In Sore Throat

		SALIVARY DROOL			
Valid	Absent	Frequency	Percent	Valid Percent	Cumulative Percent
	Present	5	8.3	8.3	100.0
	Total	60	100.0	100.0	

Among the study population of 60 children, 5 children tested positive for GABHS in throat swab culture. This reflects a high prevalence of 8.33% of GABHS. Fever was present in 76% of the total cases. Tender cervical adenopathy and tonsillar exudates had significant correlation with streptococcal pharyngitis while salivary drooling had no association with GABHS pharyngitis.

Discussion

Our results confirm the higher prevalence of GABHS in children between ages 9 and 12 years with no significant gender predilection^[6,7]. This is in discordance with the study by Anjos et al where there was a clear male preponderance^[5]. There was no significant correlation between GABHS pharyngitis and the commonly implicated demographic variables such as overcrowding and socioeconomic class. Malnutrition and immunisation status do not offer any significant correlation with streptococcal pharyngitis^[6].

Anemia and leucocyte count had no association with streptococcal pharyngitis while absolute neutrophil count had a positive correlation with GABHS sore throat.

Fever was present in all cases of throat culture positive patients and it is significantly high as compared to the study by Devi et al^[8]. 72% of patients had anterior cervical lymphadenopathy in culture positive patients as compared to 76% in the study by Navaneeth et al^[7]. In this study, all patients had tonsillar congestion with exudates in culture positive patients while 60% of the patients had tonsillar enlargement. Anjos et al stated that 62% of the cases had tonsillar enlargement and 39% of the patients had tonsillar exudates^[5].

Bisno *et al*, in the IDSA guidelines, state to identify patients who may have GABHS pharyngitis considering clinical and epidemiological features^[2]. Ebell *et al* suggests in the AHA statement to perform RADT or throat culture in all patients at risk, based on the demographic data^[4].

Snow et al stated in their study that the rate of antibiotic prescription for sore throat by treating physicians far exceeds the maximum expected prevalence of GABHS^[3]. Screening and diagnostic tests for streptococcus reduces the unnecessary antibiotic prescription on an evidence basis.^[3]

Conclusion

Periodic descriptive epidemiological studies of the common illnesses in the community are necessary to aid the treating physician to understand the changing trends in the clinical profile of the diseases. This study brings to light the occurrence of GABHS pharyngitis with a significantly high frequency in the community. Although streptococcal pharyngitis is a self limiting infection in most instances, the sequelae can cause significant systemic complications, both acute and chronic. Cost effective diagnostic methods and clinical prediction rules gain momentum in this modern day of evidence based medicine to effectively treat GABHS positive cases to prevent the sequelae of GABHS pharyngitis.

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