

BACTERIOLOGICAL STUDY OF THROAT SWAB IN SCHOOL GOING CHILDREN: PREVALENCE OF *S. HAEMOLYTICUS* AND ITS RELATION WITH RHEUMATIC FEVER

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ABSTRACT:

A total of 1208 school going children in the age range 5-15 years were examined over a period of two years (1987-1990) in District Abbottabad. Streptococcal pyogen infection was 16.3%. Among them 0.74 were suffering from Rheumatic fever.

INTRODUCTION

Rheumatic fever and rheumatic heart disease are problems in all parts of the world, especially in the developing countries. The reason for the higher prevalence in developing countries is low socio-economic status, severe malnutrition and over crowding. The prevalence of a large proportion of sub-clinical cases (40-50% in some area) are difficult to detect and these can lead to rheumatic fever. Prevalence of RF/RHD in occupied Kashmir (India) was determined 3.7/1000 in the age group of less than 20 years.¹ Whereas in Western countries the incidence rate is very low. In United States it is 0.002 to 0.006/1000 population.^{2,3}

In Abbottabad, climate is cold, low socio-economic conditions, congested living conditions, higher illiteracy rate are important factors in causation of rheumatic fever. Children between 5 and 15 years are at high risk. Their throats were screened for streptococcal infection with an aim to identify patients at risk of developing rheumatic fever and its correlation with ASOT.

MATERIAL AND METHODS:

A total of 1208 children of various schools of District Abbottabad were studied during 1987-90. The age range was 5 to 15 years. A proforma was designed in which necessary information such as name, age, sex, area, physical examination, throat C/S etc was recorded for each child. Throat swabs were taken for bacteriological examination. The posterior area of pharynx and tonsillar fossa was rubbed with sterile cotton (Fiber covered swab) avoiding contact with tongue and buccal surface.

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Specimens were streaked on blood agar plate and incubated for 24 to 48 hours at 37°C aerobically.

Throat swab smear, was made for direct grams staining. Typical colonies of B-haemolytic streptococci with clear zone of haemolysis were identified by colony counters and their sensitivities the optochin and bacitracin disease.

All the bacterial pathogens isolated were tested invitro for susceptibility to commonly used antimicrobial penicillin, amoxil, ampicillin, erythromycin, cloxacillin, kanamycin, gentamicin, cotrimaxazol etc. Antistreptolysin titre was done only in the cases where infection of streptococcus haemolyticus was identified by using kit of Cambridge Biomedical Ltd. The test was carried out according to instructions described in kit.

RESULTS

Of the total of 1208 children, 707 (58.5%) were male and 501(41.5%) females (Table I). Their age and sex distribution is shown in table-I. 80% of these children were from urban areas and majority of them belonged to low socio-economic group. 210(17.4%) subjects were suffering from sore throat, tonsils and cough etc.

TABLE-I AGEWISE DISTRIBUTION OF CHILDREN

Age Group	Male	Female	Total No	Percentage
5 - 7	192	205	397	32.9
8 - 10	206	161	367	30.4
11 - 13	146	84	230	19.0
14+	163	51	214	17.7
	707	501	1208	100.00

A positive culture of streptococcal (B-type) was found in 197(16.3%) children. Only 4(0.3%) samples had growth of staphylococcus Aureus. While mixed group of normal flora was observed in 944(78.1%) samples. 63(5.3%) subjects were sterile (No growth) Table-II.

TABLE-II: RESULTS OF THROAT SWAB CULTURE

Type of organisms isolated	No.	Percentage
Streptococcus Haemolyticus (B-type)	197	16.3
Staphylococcus Aureus	4	0.3
Mixed growth of normal flora	944	78.1
Sterile (No growth)	63	5.3
Total:	1208	100.0

Out of 197 streptococcal pyogenic cases, the ASO titre was positive only in 9(0.74%) cases. All of them had recent or past streptococcal pyogen infection Table-III.

TABLE-III: ABO TITRE AMONGST 9 FR PATIENTS

Age (Years)	Category*			Percentage
	A	B	C	
5 - 7	1	-	-	11.1
8 - 10	2	-	-	22.2
11 - 13	-	4	-	44.5
14+	-	-	2	22.2

* Category A: 225 to 450 Iu/ml, B: 450 to 600 Iu/ml, C: 600 + Iu/ml

DISCUSSION:

Rheumatic fever is prevalent in many developing countries. Ekmeeki et al (1970) determined prevalence of RHD in a survey of 5,100 labourers in Istanbul to 0.64%.⁴

In Karachi a survey of school going children was conducted, and rheumatic fever was found to 0.18%.⁵ A similar survey was conducted in Peshawar (1979) by Ilyas⁶ who found 0.7% cases of Rheumatic heart diseases. We observed a similar treatment (0.72%) in District Abbottabad. Results of these two studies shown a higher prevalence of RHD as compare to Karachi study. The prevalence of RHD in Kashmir (India) was observed to 0.57% which is similar to our study. This may be due to same demographic conditions. A similar study was conducted in Saudi Arabia.⁷ The incidence rate was 0.022% which is very low as compared to our study or elsewhere. This may be due to hot climate and better living conditions. It could also be due to genetic susceptibility of various races but no definitive pattern has been found.

Streptococcal Bacteria is highly sensitive to penicillin.⁸ The penicillin is the cheapest drug and by its use streptococcal infection can be easy eradicated/controlled. It is concluded from this study that the streptococcal infection and RF is common in our area and preventive measures must be adopted. The education and training of health personnel should be initiated in areas where the prevalence of RF is high.

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