Original article

Clinical profile of rheumatic fever (RF) and rheumatic heart disease in 5-15 years old school children: a school survey report

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Abstract

Objective : To find out the presentation of `RF and RHD, in 5-15 years school children

Method : Total twenty seven (n=27) cases of rheumatic fever (RF) and rheumatic heart disease diagnosed in 5-15 years aged school children in Metropolitan Dhaka city during a school survey program from 1990 to 1991.

Result : Twenty five children (n=25) had acute rheumatic fever of which thirteen girls (n=13) and twelve boys (n=12). Rheumatic fever (RF) was diagnosed by revised Jon's criteria (1982). Major Manifestations of the rheumatic fever were carditis in 9 cases (36%), Polyarthritis in 20 cases (80%), Chorea in 1 case (4%) (n=1) and subcutaneous nodule in 2 cases 8% (n=2). Erythema marginatum was not observed in this series. Minor manifestations of fever in this series were 92% and raised erythrocyte sedimentation rate 88%. Previous history of rheumatic fever and or presence of rheumatic heart disease 24% and arthralgia 8%.Two cases were diagnosed as rheumatic heart disease, among them one was girl (n=1) and the other was a boy (n=1). Rheumatic heart disease diagnosed clinically and confirmed by echocardiographic study. Eight cases were diagnosed as rheumatic heart disease, six of these presented with rheumatic fever. Two cases had no previous history of rheumatic fever. Among the eight rheumatic heart diseases, seven were mitral regurgitation and one mitral stenosis.

Conclusion : Arthritis is the commonest manifestation of RF followed by carditis, subcutaneous nodule and chorea. Murmur due to carditis of first attack of RH may disappear by immediate treatment and secondary prophylaxis.

Key words : RF= Rheumatic fever, RHD= Rheumatic heart disease, Streptococcus group A, Rheumatogenic Strain, M type 1, 3, 5, 14, 18, 19, 24, 27 & 29.

Introduction

Rheumatic fever is a acute inflammatory disease which may follow beta-haemolytic, group A streptococcal infection of the throat but no other infection of other sites, such as skin. Characteristically it tends to recur[1].

"Rheumatic heart disease" denotes cardiac sequels of rheumatic carditis1. Clinical manifestations of the rheumatic fever were arthritis, carditis, chorea, subcutaneous nodule and erythema marginatum. Most common manifestations of rheumatic fever (RF) was arthritis which leaves no joint deformity. Most serious manifestation was carditis. Chorea was the most curious manifestation and most rare and inconsequential[1] manifestations were subcutaneous nodule and erythema marginatum. Major changes in the epidemiology of acute RF had occurred during the twentieth century[2]. The illness was no longer seen mainly in temperate climates but occurs predominantly in developing tropical countries[3,4].

With rapid industrialization in this subcontinent together with urbanization and development of slums, there were more cross infections and favorable conditions exist for the spread of RF and RHD[3].

Jones criteria (revised) for guidance in the diagnosis of rheumatic fever (1984)

Major manifestations	Minor manifestations
Carditis	Clinical Fever
Polyarthritis	Arthralgia
Chorea	Previous RF or RHD
Erythema	Laboratory :
marginatum	Acute phase reactions
Subcutaneous	ESR, Leukocytosis
nodules	C-reactive protein
	Prolonged P-R interval

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Supporting evidence of proceeding streptococcal infection :

1. Increased ASO or other streptococcal antibodies
2. positive throat culture for group A Streptococcus
3. Recent scarlet fever.

RHD is an eminently preventable disease[5]. The cost of treating repeatedly a larger number of patients is already overcrowded hospitals and the high cost of cardiac surgery including valve replacement and commissurotomy provide strong argument for prevention. Secondary prophylaxis remains the most practical solution[5,6].

Clinical profile of rheumatic fever & RHD was studied, so that we can have a good knowledge of RF & RHD in Bangladesh.

Materials and Methods

Study population :

5-15 year old school children from 15 selected school of metropolitan Dhaka city examined to findout RF and RHD cases. The schools were selected by stratified random sampling method.

Selection criteria :

RF was diagnosed by using Jones criteria (Revised)[7] and further supported by investigations such as echocardiography, chest X-ray and electrocardiogram. RHD was diagnosed in cases which presenting with mitral or aortic murmurs due to established valvular lesions with or without past history of RF[8].

Exclusion criteria :

1. All collagen vascular diseases were excluded.
2. All other murmur due to congenital heart disease was excluded from study.
3. Venous hum and innocent systolic murmurs were ruled out by dynamic auscultation.

Investigations :

Blood samples for ASO titer and ESR were drawn and throat swabs were taken from the patients by the author herself from the field. Sterile disposable swab (Becton Dikinson Company USA) with transport media used to collect throat swab. ASO titer was estimated by latex agglutination method. Normal values for the kit was 50-200 international unit. ESR estimation done by Westergren method. Normal values in our streptococcal reference laboratory were:

Adult male : 0-10 mm at first hour

Adult female : 5-15 mm at first hour

Children (1-12 yrs) : 5-20 mm at first hour

ECG, Chest X-ray done in NICVD and echocardiographic (both 2-DE and M-mode) study was carried out in RF/RHD project. One year follow up done with standard medical management of RF and RHD and those twenty seven children put on rigid secondary prophylaxis.

Result :

All the children (n=10,538) from the selected schools (n=15) were examined clinically. Seventy seven children were investigated for RF and RHD. Total twenty seven children were diagnosed as cases of RF and RBD. Among them 25 children were diagnosed as RF cases and rest two were RHD.

Table 1 : Distribution of sex by RF/RHD
n=27

Diagnosis	Boy	Girl
RF	12	13
RHD	01	01

Age distribution is shown in table 2.

Table 2 : Distribution of children by age group

Age group	No. previous RF/RHD	Age of first attack
5-6	0	2
7-8	4	5
9-10	9	11
11-12	5	4
13-14	8	5
15	0	0

9 cases of RF were of 9-10 years age group and age of initial attack of RF were the same. Both cases of RHD belong to 9-10 years age group. RF and RHD were prevalent in both sexes almost equally.

Table 3 : Major manifestations of RF (n=25)

Major criteria	Total (%)	Boy	Girl
Carditis	9 (36.0)	5	4
Polyarthritis	20 (80.0)	10	10
Chorea	1 (4.0)	0	1
Subcutaneous nodule	2 (8.0)	2	0
Erythema marginatum	0 (0.0)	0	0

Arthritis was the most common manifestation. Swelling of the joints was migratory in nature lasted 3-7 days each joint in order of preference knees (80%) followed by ankles, elbows and wrists and joint. Duration of polyarthritis was ranged from 7-16 days.

Carditis (36%) was the second commonest manifestation. Both patients with subcutaneous nodule had carditis. Apical systolic murmur was the commonest murmur encountered. One boy had carycomb murmur. Tachycardia, cardiac enlargement in chest X-ray and heart failure were the other findings of the carditis in this series. Basal diastolic murmur was not found in this study group.

Rheumatic chorea was 4% (n=1) and that was a girl. She had no other manifestations of RF. Subcutaneous nodule was found in two cases and both of them were boys. One of them had numerous nodules over occiput, spines, exterior surfaces of hands, elbow and feet. They disappeared after 7-10 days after treatment. Erythema marginatum was not observed in this series. One patient with severe carditis died despite of immediate hospital admission and after all possible treatments.

Table 4 : Minor manifestations of RF n = 25

Minor criteria	Total (%)
Previous history of RF/RHD	6 (24.0)
Arthralgia	2 (8.0)
Fever	23 (92.0)
ESR raised	22 (88.0)
Prolonged P-R interval	1 (4.0)

Fever and raised ESR were the two most common minor manifestations. Previous history of RF/RHD was found in six cases and poly arthralgia in two cases. PR interval was prolonged in only one case.

Table 5 : ASO and ESR report of RF/RHD

Signs	ASO (mean) IU/ml	ESR mean mm at 1st hour
RF with polyarthritis	440.0	44.65
RF with carditis	457.1	79.29
RF with chorea	<200	19
RHD	<200	15

Table 6 : Throat swab culture report of RF/RHD n = 27

Group	A	B	(-ve)
Total	4 (14.8)	1 (3.7)	22 (81.5)

Figures in the parenthesis illustrate percent

Group B was found incidentally in the throat of a case of RHD. Two cases of chronic mitral regurgitation of rheumatic origin (diagnosis confirmed by echo-cardiographic study) were diagnosed and followed up. Among the nine acute rheumatic carditis, seven cases had chronic cardiac lessions. Rheumatic process involved mitral valve in this series. After one year follow up with rigid secondary prophylaxis eight cases had found to have RHD.

Table 7: Frequency of RHD in 5-15 years

Diagnosis	Total (%)	MR	MS
RF followed by no. of heart disease	19 (70.0)	00	RHD
8 (29.6)	7 (87.5)	1(12.5)	

Discussion :

It was said that RF in tropics was manifested somewhat different from that of temperature climate. But several studies[9-13] showed that definite major manifestations such as arthritis, carditis and chorea were not different from these reported elsewhere[14] (eg. arthritis 70-80% & carditis 50% of initial attack).

MAJOR MANIFESTATIONS OF JONES CRITERIA

Country	Poly-arthritis	Carditis	Chorea	Subcutaneous nodule	Erythema marginatum
Saudi Arabia9	36-63%	44-74%	14-22%	-	-
Kuwait10	75.8%	38.3%	10%	-	3.3%
USA11	61%	53.7%	26.8%	9.7%	-
USA(Ohio)12	78%	30%	8.7%	-	13%
Bangladesh13	80%	60%	10%	15%	5%
Bangladesh15	51%	64%	6%	7%	-
Thailand16	24%	90%	8%	8%	5%

Erythema marginatum was absent in this series may be due to the fact that (in fact that) it lasts transiently. Moreover we had small number (n=25) of acute RF cases. So, absence of these rare manifestations was not unlikely. In one study[15] did not find erythema marginatum in any case of RF but in another study[16] observed erythema marginatum. Both the studies were hospital based.

Six cases were of recurrent RF followed by RHD. In one case of RHD which had moderately severe MR the mumur disappear after regular penicillin prophylaxis. By secondary prophylaxis no recurrence of RF occurred.

Conclusion :

Arthritis is the commonest manifestation of RF followed by carditis, subcutaneous nodule and chorea. School

survey is needed to find out RF and RHD cases. Rheumatic recurrences caused more damage to the heart valves. Murmur due to carditis of first attack of RH may disappear by immediate treatment and secondary prophylaxis.

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