Changing pattern of rheumatic fever in a paediatric ward : then and now

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Abstract

Objectives: To describe the socio-demographic and clinical features of children with primary episode of rheumatic fever (RF) during two periods of time and to attempt a comparison of the clinical features with previously published data from the same ward at Lady Ridgeway Hospital (LRH), Colombo.

Method: Children admitted to University Paediatric Unit with the primary episode of RF based on the revised Jones criteria, were studied. Socio-demographic and clinical features were recorded prospectively from August 1994 to August 1999 and compared with data collected retrospectively from January 2004 to December 2008. Respecting the limitations, an attempt was made to compare this data with previously published data from the same ward during a period of ten years from 1966, when the primary episode of RF was diagnosed based on the modified Jones criteria.

Results: There were 91 children from 1994 to 1999 and 52 (57%) were boys. Majority were >5 years and from families with a monthly income <Rs.10,000.00 but 56 (62%) of their mothers were educated up to Grade 10. Migratory polyarthritis was seen in 56 (62%) and 58 (64%) had a significant murmur on admission. Echocardiography was done on 87 and 24 (28%) had evidence of rheumatic heart disease (RHD). There were 29 (17 boys) during the 4 years from January 2004. Echocardiography was done on all the patients and 8 (28%) had RHD. During 1966 - 1976, RHD diagnosed on clinical features, was reported in 42% of 158 children (92 girls). Chorea has progressively increased through the years, with girls being more commonly affected.

Conclusions: Childhood RF has declined in Sri Lanka. Disease pattern has also changed with more boys being affected but chorea continues to manifest more commonly in girls. RHD continues to be an important manifestation.

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Introduction

Rheumatic fever (RF) has been an important cause of morbidity in Sri Lankan children. Stanley de Silva reported a series of 107 patients admitted to a ward at the Lady Ridgeway Hospital (LRH) during 1953 – 1957[1] and Priyani Soysa et al in their report[2] had 328 children admitted to the University Paediatric Unit in the same hospital over 10 years from 1966. In the recent past, the number of children admitted with rheumatic fever has declined.

Objectives

This study was done to describe the socio-demographic and clinical features of children with the primary episode of rheumatic fever (RF) admitted to a ward at LRH during two periods of time, and to attempt a comparison between the disease manifestations of the recent study with previously published data regarding the primary episode of RF, from the same ward.

Method

Children admitted to the University Paediatric Unit with RF conforming to the revised Jones criteria[3] from August 1994 to August 1999 were prospectively studied. The socio-demographic and clinical features were recorded and the children were examined by the investigator. Throat swabs were obtained on the day of admission and were cultured on blood agar. Beta haemolytic streptococci were isolated and subsequently identified as group A by using the Bacitracin test and Lancefield grouping[4,5,6]. Echocardiography was done at the Cardiology Unit of the National Hospital, Colombo as LRH did not have a cardiology unit at that time, and thus the investigation was done by different cardiologists over the years.

Hospital records of children admitted to the same ward with RF from January 2004 to December 2008, diagnosed according to the revised Jones criteria, were perused retrospectively and the data during these two periods of study were compared. A comparison was attempted with data published from the same ward from 1966 to 1976 subject to the limitations that the diagnosis of the primary episode of RF was based on the modified Jones

criteria and RHD was a clinical diagnosis based on the presence of a cardiac murmur or evidence of cardiac failure or presence of pericarditis[2]. The modified (1956) and revised Jones criteria (1965/1984) are similar except that evidence of a recent streptococcal infection is an essential criterion in the latter definition whereas it was a minor criterion in the former[7]. The Ethical Review Committee of the Faculty of Medicine, Colombo approved the study.

Results

There were 96 children with various manifestations of RF admitted during the 5 years from 1994 to 1999. A significant seasonal variation in the admissions was not observed. Majority (91, 95%) were admitted with the primary episode, while 4 children had been previously diagnosed as having rheumatic heart disease (RHD) and one as having chorea. Twelve children gave a previous history of joint symptoms which had not been investigated.

Following is a description of the 91 children with the primary episode of RF. Fifty two (57%) were boys. Eighty four (92%) were more than 5 years of age. Seventy eight children (86%) came from families with a monthly income less than Rs.10,000.00 but 56 (62%) of their mothers were educated up to Grade 10 (Table 1).

Table 1
Socio-demographic features of the study populations

		1994 – 1999 n = 91	2004 – 2008 n = 29
Sex	Boys	52	17
	Girls	39	12
Age (years)	<5	07	02
	5-10	57	18
	>10	27	09
Monthly family income: (Rs)			NA
<5000.00		43	-
5-10,000.00		35	-
10-20,000.00		13	-
>20,000.00		00	-
Mothers' education (Grade)			NA
No formal education		05	-
<5		15	-
5-10		41	-
O'Level		18	-
A'Level and higher		12	-

NA – Data not available

Fifty six (62%) presented with migratory polyarthritis while 58 (64%) had a significant murmur at presentation. Two children were in heart failure while 6 had clinical and echocardiographic evidence of infective endocarditis. Thirteen (08 girls) presented with chorea (Table 2). One child with RHD and infective endocarditis subsequently died after several admissions, 3 years after initial presentation.

Table 2
Clinical features of the primary episode of RF during the two periods of study

	1994 – 1999 n = 91	2004 – 2008 n = 29
Migratory polyarthritis	56	20
Migratory polyarthralgia	16	06
Presence of a murmur	48	08
Chorea	03	05
Chorea + murmur	10	05
Infective endocarditis	06	00
Heart failure	02	02
Subcutaneous nodules	01	00
Total number with a murmur	**58**	**13**

Investigations performed are given in Table 3. An ESR more than 50mm in the first hour was seen in 75 children (82%) while a significantly elevated ASOT ≥ 400 Todd units/ml was observed in 74 (81%). Throat swabs were obtained from 84 children and group A β haemolytic streptococci were isolated from 18 (21%) swabs.

Table 3
Investigations performed during the two periods of study

	1994 – 1999 n = 91	2004 – 2008 n = 29
ESR (mm in the first hour)		
< 30	09	04
31 – 50	07	07
51 – 100	53	14
> 100	22	04
ASOT (Todd units/ml)*		
≤ 200	16	07
≥ 400	74	17
Not done/not available	01	05
Throat swab culture for group A β haemolytic streptococcus		
Group A +ve	18	-
Group A –ve / No growth	54	-
No report	12	-
Not done	07	29

** Initial or subsequent*

Echocardiography was performed during the hospital stay on 87 children. Twenty three of the 58 with a murmur had evidence of RHD and one child without a murmur had similar findings (Table 4). Therefore in this series, 24 out of 87 (28%) with the primary episode of RF had echocardiographic evidence of RHD.

Table 4
Echocardiographic evaluation of patients with primary episode of RF during the two periods of study

	1994 – 1999 n = 91	2004 – 2008 n = 29
Number on whom echocardiography was done	87	29
Number with a murmur	58	13
Rheumatic heart disease	23	06
Mitral valve prolapse	28	06
Normal heart	07	01
Number without a murmur	33	16
Rheumatic heart disease	01	02
Mitral valve prolapse	05	00
Normal heart	23	14
Echocardiography not done	04	00
Percentage with RHD	**28%**	**28%**

There were 31 children admitted to the same ward with RF during the 4 year period of retrospective evaluation, from January 2004 to December 2008. This was the initial presentation in 29 (17 boys). Twenty seven (93%) were >5 years of age. Thirteen (45%) had a significant murmur and 8 (28%), two of whom did not have a murmur, had evidence of RHD on echocardiography. Details of the family income and education level of mothers could not be obtained from the records. Throat swabs had not been done on any of the patients. Tables 1-4 are a comparison of the socio-demographic features, clinical and echocardiography findings of the primary episode of RF during the 2 periods of study.

Discussion

RF is still rampant in developing countries, whereas the incidence is negligible in developed countries[7] apart from the resurgence reported from USA in 1987[8,9]. Improvement of housing and living standards is implicated as the reason for the very low incidence of RF in the more affluent countries

of the world. According to the Demographic and Health Surveys 2000, 1993, 1987 of the Department of Census and Statistics, a survey of 8918 and 8169 houses in 1993 and 2000 respectively, has shown a possible improvement in our living standards. This is reflected by a reduction in the 'Mean household size' of 4.5 in 2000 from 4.7 in 1993. The 'Percent of one member households' has also increased to 3.7 in 2000 from 3.3 in 1993.

Although no definite reason has been implicated, the number of children presenting with the primary episode of RF has decreased over the years. Stanley de Silva, one of the first three paediatricians appointed to the Lady Ridgeway Hospital[10], had reported 107 patients admitted to his ward from 1953 – 1957: approximately 21 patients/year[1], and the University Paediatric Unit had 328 patients admitted with RF from 1966 – 1976: approximately 33 patients/year[2]. At the turn of the century in the same ward, the present report documents a progressive decline in the number of patients presenting with the primary episode of RF from 91 during 1994 – 1999 (~18/year) to 29 for 4 years (~7/year) from January 2004 to December 2008, based on similar diagnostic criteria.

The disease pattern of the primary episode has also changed over the years. During 1953 – 1957 RHD (probably diagnosed clinically) had been seen in 31%[1] in one ward (34 of 107). Although 328 patients had been admitted to the University Paediatric Unit during 10 years from 1966, data was available only on 158 patients. RHD was seen in 42% (66 of 158) during the initial attack[2]. This has fortunately decreased to 28% during both study periods (Table 5).

Table 5
Sex distribution of RHD and chorea in the primary episode of RF♣ observed in the same ward* over time

	1966 – 1976 n = 158●	**1994 – 1999 n = 91**	**2004 – 2008 n = 29**
Boys : Girls	66 : 92 1 : 1.39	52 : 39 1 : 0.75	17 : 12 1 : 0.71
RHD (%)	66 (42)	24 (28) n=87♦	8 (28) n=29♦
Boys : Girls	1 : 1	13 : 11 (1 : 0.85)	7 : 1 (1 : 0.14)
Chorea (%)	15 (9.5)	13 (14)	7 (24)
Boys : Girls	1 : 14	5 : 8 (1 : 1.6)	2 : 5 (1 : 2.5)

♣ *Diagnostic criteria: 1966 – 1976 → modified Jones criteria, 1994 – 1999 and 2004 –2008 → revised Jones criteria*
* *University Paediatric Unit*
● *Number on whom follow up data is available (Total number of admissions = 328)*
♦ *Number on whom echocardiography was performed*

Subcutaneous nodules had been extremely rare in the 1950s and along with erythema marginatum had not been seen during 1966 – 1976. Only one child had subcutaneous nodules associated with carditis in the present series. Chorea was reported as very uncommon in the fifties, but was seen in 15 children (9.5%), more than ten years later[2], while a progressive increase is observed in the present study. The attempted 'comparison' of the clinical manifestations of the initial attack of RF in children admitted to the same unit is given in Table 5. Initially girls had been predominantly affected whereas now RF and RHD appear to be commoner in boys. The female preponderance of chorea has persisted over the years. This present observed trend of a decline in the occurrence of RF augurs well for our country. But RHD is still an important cause of morbidity in Sri Lankan children.

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