

## ORIGINAL ARTICLE

**Rheumatic Fever and Rheumatic Heart Disease  
at the Department of Child Health,  
School of Medicine  
University of North Sumatera/  
Dr. Pirngadi Hospital, Medan (1983 - 1985)**

by

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**Abstract**

*A retrospective study on rheumatic fever and rheumatic heart disease in children was conducted at the Department of Child Health, Dr. Pirngadi Hospital Medan, during 1983 - 1985. The patients consisted of 43 females and 30 males. Most of the patients were over 12 years of age. Of the 73 patients there were 60 patients (82.19%) accompanied by valvular disorders. The most frequent major criteria of Jones found in this study were carditis and polyarthritis. Thirty one patients (42.46%) had functional status (NYHA) of grade II - IV, and 43 patients (58.90%) had cardiomegaly. The major ECG findings were enlargement of the atria or ventricles and first degree AV block. Compliance was only achieved in 25 (34.24%) cases. Rheumatic fever and rheumatic heart disease are still remain a challenge for the medical professionals in the region to cope with.*

**Introduction**

Rheumatic fever (RF) is a multi-system disease: The acute manifestation of which may include arthritis and fever, carditis, emotional lability and choreiform movements, and less frequently, a characteristic rash and subcutaneous nodules (Markowitz, 1983). In developed countries, the incidence rates of this disease have been significantly low, but in the developing countries as Indonesia, the incidence remains high. It is known that this disease is influenced by many factors, such as low socio-eco-

nomie status, crowded areas, genetics, ethnic group and seasonal fluctuation. The most predominant age group in this disease is 5 - 15 years (Affandi, 1986).

This article is designated to present the clinical manifestations of rheumatic fever (RF) and rheumatic heart disease (RHD) at the Division of Pediatric Cardiology, Department of Child Health School of Medicine, University of North Sumatera/ Dr. Pirngadi Hospital, Medan, during 1983 - 1985.

**Materials and Methods**

This study was conducted retrospectively by collecting the records of patients who were admitted to the Division of Pediatric Cardiology, Department of Child Health School of Medicine, University of North Sumatera, Medan, from 1<sup>st</sup> January, 1983 to 31<sup>st</sup> December 1985.

The diagnosis of rheumatic fever was based on modified Jones' criteria. From these

records relevant data were compiled, including patients' age, sex, major and minor signs of modified Jones' criteria, abnormalities of heart examination, functional status based on the New York Heart Association (NYHA) on the first admission, chest X-rays, electrocardiogram, and final conditions of the patients.

**Results**

For a period of 3 years, there were 73 new patients with rheumatic fever, consisted of 43 (58.90%) females and 30 (41.10%) males. Most of the patients were

12 years old, and females outnumbered males (Fig. 1). The youngest patient was 3 years and 6 months old.

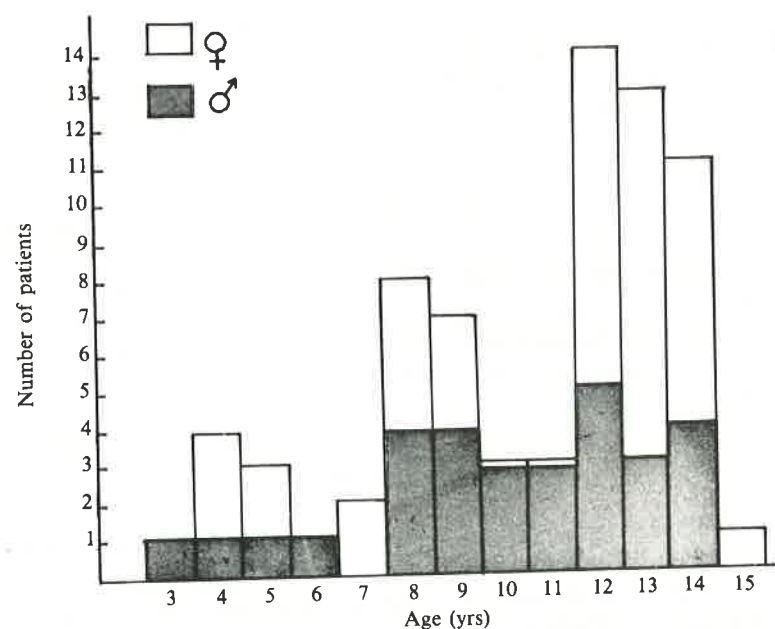


Fig. 1 : Distribution of patients according to age and sex

Of the 73 patients with rheumatic fever (RHD). Most of the valvular disorders there were 60 patients (82.19%) who had been accompanied by valvular disorders and developed rheumatic heart disease (table 1). Most of the valvular disorders were mitral regurgitation and mitral stenosis as seen in 40 patients (54.80%) (table 1).

Table 1 : Abnormalities of valve following rheumatic fever

Type of abnormalities	Number	%
- No abnormality	13	17.81
- Valvular abnormalities :		
= mitral regurgitation	15	20.54
= mitral stenosis	4	5.48
= mitral valvular stenosis and regurgitation	40	54.80
= mitral and aortic valvular stenosis and regurgitation	1	1.37
<b>Total</b>	<b>73</b>	<b>100.00</b>

The most predominant signs of modified Jones' major criteria were carditis in 57 cases (78.08%), followed by polyarthritides in 31 cases (42.47%), subcutaneous nodule in 1 case (01.36%), and Sydenham chorea in 1 case (1.36%); while erythema marginatum was not present (table 2).

Table 2 : Frequency of clinical and laboratory findings (modified Jones criteria) in 73 patients

Modified Jones criteria	1983	1984	1985	Number
- Major :				
- Carditis	15	28	14	57
- Polyarthritides	9	13	9	31
- Chorea Sydenham	-	1	-	1
- Subcutaneous nodule	-	1	-	1
- Erythema marginatum	-	-	-	-
- Minor :				
- History of rheumatic fever	11	26	11	48
- Arthralgia	14	22	8	44
- Increased BSR	6	15	12	33
- Fever	8	12	12	32
- ASTO > 160 Todd Units	3	11	4	18
- 1 <sup>st</sup> degree AV Block	5	6	3	14

The functional status of grade II-IV was found in 31 patients (42.46%). Generally the patients admitted to the hospital were in heart failure associated with valvular disorders (table 3).

Table 3 : Functional status of patients according to NYHA

Functional status	Number	%
Without cardiac abnormality	7	9.59
With cardiac abnormalities :		
- grade I	35	47.95
- grade II	19	26.02
- grade III	10	13.70
- grade IV	2	2.74
<b>Total</b>	<b>73</b>	<b>100.00</b>

Of the 73 patients, chest X-rays were obtained in only 53 cases, in which 43 patients showed cardiomegaly (58.90%) (table 4).

Table 4 : *Cardiac analysis of the chest X-ray*

Year	Cardiomegaly	Normal heart size	Without x-ray
1983	12	—	8
1984	18	8	8
1985	13	2	4
Total	43	10	20

On ECG examination 1<sup>st</sup> degree AV block was found in 14 cases, left atrial hypertrophy in 23 cases, left ventricular hypertrophy in 21 cases, right ventricular hypertrophy in 21 cases, and myocarditis/carditis in 57 cases (table 5).

Table 5 : *Electrocardiographic manifestation*

Electrocardiographic manifestation	Number
- Normal	16
- 1 <sup>st</sup> degree AV block	14
- Left atrial hypertrophy	23
- Left ventricular hypertrophy	21
- Right ventricular hypertrophy	21
- Myocarditis/Carditis	57

Of the 73 patients, 25 patients got regular treatment and 17 of them are living in Medan city and 8 are living out of Medan city and 45 patients were treated irregularly. Three patients (4.11%) died at the end of the study (table 6).

Table 6 : *Compliance and living area*

Compliance and mortality	Urban population	Rural population	Number
- Regular treatment	17	8	25
- Irregular treatment	18	27	45
- Death	1	2	3
Total	36	37	73

## Discussion

Result from the collaborative study by Soeroso et al. (1986) from 8 teaching hospital showed that the incidence of rheumatic fever and prevalency of rheumatic heart disease in Indonesia is still high (prevalency 0.3 – 0.8 %) especially in the school age group and the study by Ha-

nafiah (1976) found the highest incidence in the age group of 10 years.

In this study, the incidence of RF was 24 patients per-year, and the highest incidence was in the age group of 12 years and females more than males (figure 1).

Table 7 : *Comparison of the percentage of cardiac and joint involvement in RF and its sequelae*

	This study	Soeroso et al. (1986)
- valvular abnormalities	82.19%	74.70% – 90.00%
mitral regurgitation	20.54%	20.00% – 62.80%
mitral stenosis	5.48%	1.40% – 6.40%
mitral stenosis and regurgitation	54.80%	14.10% – 52.70%
mitral and aortic stenosis and regurgitation	1.37%	—
- cardiac failure	42.46%	37.00% – 70.00%
- cardiomegaly	58.90%	36.80% – 86.00%
- carditis	78.08%	72.70% – 94.10%
- polyarthritis	42.47%	30.00% – 65.00%

Most of the patients (82.19%) who came on the first admission had cardiac valvular abnormalities with their complication which indicating that they had recently or previously suffered from RF/RHD without adequate treatment.

The predominant valvular abnormalities were regurgitation and stenosis of the mitral valves (54.80%), followed by mitral regurgitation (20.54%), mitral stenosis (5.48%) and 1 case (1.37%) of mitral and aortic stenosis and regurgitation (table 1). The result of this study confirm with the study done by Soeroso et al. (1986) who found valvular abnormalities ranging from 72.70% to 90.00%, predominantly with regurgitation of the mitral valves (20.00%–

62.80%) and followed by combination of regurgitation and stenosis of mitral valve (14.10%–52.70%).

The most frequent Jones' criteria found in this study were carditis which was found in 57 cases (78.08%) followed by polyarthritis 31 cases (42.46%) (table 2). These figure fall within the range of the study done by Soeroso et al. (1986); he found carditis ranging from 72.70% to 94.10% and polyarthritis 30.00% to 65.00% (table 7). The other major Jones' criteria such as chorea minor, subcutaneous nodules, erythema marginatum are rarely found; these findings also confirm by other studies (Wahab, 1980; Sahat Halim et al., 1984; Soeroso et al., 1986). The scarcity of ery-

thema marginatum perhaps due to the dark coloration of the people in this region which make difficult to identify the lesion. The subcutaneous nodules was rarely found because it appeared and disappeared quickly (Wahab, 1980).

In this study 31 patients (42.46%) had heart failure and 43 had cardiomegaly (58.90%). Soeroso et al. (1986) also found the same result; cardiac failure ranged from 37.00%–70.00% and cardiomegaly ranged from 36.80% to 86.00% (table 7).

Table 8 : *Electrocardiographic manifestation in this study compared with the study done by Affandi, Jakarta 1978, 1981*

	This study	Affandi (1986)
- Myocarditis	57 (78.08%)	129 (94.85%)
- Left ventricular hypertrophy	21 (28.77%)	39 (26.47%)
- Right ventricular hypertrophy	21 (28.77%)	25 (18.38%)
- 1 <sup>st</sup> degree AV block	14 (19.18%)	6 (4.41%)

Most of the abnormalities found in this study and also by Affandi (1986) were myocarditis in 57 cases (78.08%) and in 129 cases (94.85%) respectively. The other abnormalities were left ventricular hypertrophy in 21 cases (28.77%) and in 36 cases (26.47%); right ventricular hypertrophy in 21 cases (28.77%) and in 25 cases (18.38%); 1<sup>st</sup> degree AV block in 14 cases (19.18%) and in 6 cases (4.41%) respectively (table 8).

Heart failure was found in 42.46% of the patients (table 3); this finding showed that the patients had serious acute rheumatic fever attack and developed severe rheumatic heart disease (table 7). The severity of the rheumatic fever can be identified by the number of cardiac involvement. In this study the cardiac involvement is still high (82.19%); there are no tendency of decreasing in comparing to the previous study (Sahat Halim et al., 1984).

Until now, regular secondary prophylaxis is the only best procedure against recurrent

rheumatic attack. Due to the fact that in rural and even in the urban area the medical and transportation facilities are much more available, the compliancy were still low in this study (34.24%) as well as in Affandi's (38%). A further effort to motivate the patient poses a challenge for the medical community in this region.

The mortality rate was 4.11%; this was appropriate with the figure reported by Soeroso et al. (1986) from the survey of 8 teaching hospital in Indonesia 5.50% (1986).

From this study, it was found that rheumatic fever and rheumatic heart disease at the Department of Child Health, School of Medicine, University of North Sumatera/ Dr. Pirngadi Hospital Medan remain being a problem in which the incidence, consequences caused by rheumatic fever and rheumatic heart disease and the compliancy are not significantly different from other hospital/educational centers in Indonesia.

## Conclusions

- \* There were 73 cases of rheumatic fever (1983–1985); female was predominant compared with male; the highest age was 12 years, and the predominance was in the age group of 8–14 years.
- \* Cardiac involvement was found in 60 cases (82.19%); combination of mitral regurgitation and stenosis was predomi-

nant (54.80%), cardiac failure was found in 31 cases (42.46%), and cardiomegaly in 43 cases (58.90%). Carditis was found in 57 cases (78.08%).

- \* The mortality rate was 4.11%.
- \* The compliance for secondary prophylaxis was 34.24%.

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