

Clinical Spectrum of Rheumatic Fever in Balochistan

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ABSTRACT

Objective: To describe the clinical spectrum of Rheumatic fever patients in Baluchistan.

Patients and Methods: This study was carried out in the Department of Paediatric Medicine Bolan Medical Complex Hospital from September 2010 to December 2011. 52 children between 4-14 years of age with positive modified Jones criteria for Rheumatic fever were included in this study. Patients with other rheumatic conditions and without supporting evidence of antecedent infection were excluded. Data was collected using a proforma which included detailed history, examination and lab tests. Auscultation findings and Doppler echocardiography were used to diagnose carditis.

Results: Thirty patients out of total 52 i.e., 56.769% patients presented with initial presentation whereas 22(42.305%) with complaint of recurrent episode. 37 (71.51%) presented with carditis. 18 (60%) and 19(86.36%) had carditis in initial presenting group and recurrent presentation respectively with (RR 0.6947 (95% CI 0.4964-0.9722) P 0.038112. Overall 23.08% had pericarditis. 48.08%, 19.23% and 5.77% had Mitral regurgitation, combination of Mitral regurgitation with aortic regurgitation and aortic regurgitation respectively. Mitral regurgitation was statistically significant in the initial presenting group RR 3.85 (1.5391-9.6306) P=0.00022. rthritis (65.38%) and chorea (9.62%) was seen slightly higher in the initial presenting group. Subcutaneous nodules and erythema marginatum was present in 7.69% and 3.85% respectively. Minor manifestation's i.e. fever (86.54%) arthralgia (21.15%), prolongs PR interval (5.77%) and sore throat (51.92%) all were higher in initial presenting group.

Conclusion: Rheumatic heart disease remains a main cause of morbidity in the patients diagnosed in recurrent and initial episodes Rheumatic fever.

Key words: Rheumatic fever, mitral regurgitation

INTRODUCTION

Incidence and prevalence of acute rheumatic fever (ARF) and rheumatic heart disease (RHD) shows very significant global variation. The greatest burden has been found in sub-Saharan Africa, the lowest in North America.¹ While the incidence and mortality of ARF and RHD have decreased drastically in the affluent industrialized countries of Europe, North America, and in Japan, the disease is a major health problem in the less affluent, 'developing' countries of Latin America, the Middle East, Africa, India and Southeast Asia.^{2,3} In the developing countries of the world, rheumatic fever and rheumatic heart disease remain significant medical and public health problems⁴. Over the past 20 years, there is no significant decline in the percentage of rheumatic fever and rheumatic heart disease cases being admitted to a major government hospitals in India^{5,6}. This high frequency can be linked to lack of early detection of the disease at primary level, poor management of throat infections and poor rheumatic fever prophylaxis at community level. High morbidity

and mortality due to RHD associated with females is mainly because of late diagnosis on one hand and socioeconomic reasons on the other hand. Poor referral to tertiary care centers leads to delayed diagnosis which results in complications.⁷ Climate and geography appear to bear little relationship to the incidence and severity of ARF.⁸ The application of Jones criteria for diagnosis remains relevant, though echocardiography is increasingly called upon to 'confirm' clinical diagnosis and help manage these patients in an appropriate manner^{9,10}. The most effective approach for control of ARF and RHD is secondary prophylaxis, which is best delivered as part of a coordinated control programme¹¹. This study outlines the clinical profile of patients with Rheumatic fever in Baluchistan.

PATIENTS AND METHODS

This cross sectional descriptive study was done at Pediatric Department Bolan Medical Complex Hospital and it lasted for 14 months. Total of 52 children with acute rheumatic fever were included who fulfilled the following criteria: children diagnosed as suffering from rheumatic fever based on Revised Jones criteria, children of both genders and children

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between ages 4-14 years. Children with the following features were excluded from this study: children with evidence of other rheumatic conditions, children without supporting evidence of antecedent group-A streptococcal infection, age greater than 14 years and less than four years. After informed consent from the patients data was collected using a proforma designed for this study. Detailed history of all the patients was taken to determine antecedent history of sore throat and socio-economic conditions. Thorough examination was then carried out with special attention towards the cardiac auscultation findings. Revised Jones criteria with no previous history of acute rheumatic fever was taken as the criteria for the initial episode of acute rheumatic fever while recurrent episode was diagnosed if reappearance of 2 major or 1 major and 2 minor manifestations of rheumatic fever was present along with evidence of streptococcal infection. Every patient's complete blood count, erythrocyte sedimentation rate (ESR), urine analysis, C reactive protein, chest X-ray, ECG, echocardiography, throat culture and Antistreptolysin O titer tests were performed to support the physical findings. Auscultation findings and Doppler (2 D Doppler and color Doppler) echocardiography were used to diagnose carditis as per revised Jones criteria. Carditis was labeled as mild if only precordial murmurs were present and it was considered severe if signs and symptoms of heart failure and/or cardiomegaly were seen on chest X-ray. The socioeconomic standard was set arbitrarily depending upon the monthly income of the family. If income was <Rs.5000/month it was labeled as lower, between Rs.5000 to Rs.15000/month as lower middle, Rs.15000 to Rs.50000/month as upper middle and >Rs.50000/month was labeled as higher socioeconomic class. Bed rest was advised to all the patients until the ESR was near normal. Benzathine penicillin (0.6 million units for children weighing <27Kg and 1.2 million units for those weighing >27Kg) was administered to all the patients after a test dose. First dose of Benzathine penicillin was administered following admission in ward and was repeated at the intervals of 2 and 4 weeks as a secondary prophylaxis. Aspirin was used for inflammation (100mg/kg/day in 4 divided doses initially and 75mg/kg/day after 2 weeks until ESR returned to normal). Steroids (2mg/Kg/day) were administered in conditions of severe carditis. Digoxin (10µg/Kg/ day) was given to all the patients with carditis. Haloperidol (0.25-0.5mg/Kg/ day) was administered for 3 months in patients with chorea. Data analysis was performed using SPSS for windows version 10 and percentages, relative risk, confidence interval and p values were calculated for all variables.

RESULTS

Form the total of 52 children included in our study 30 (57.69%) children came to us with first episode and 22 (42.31%) came with complaint of recurrent episode. 55.8% of the study population fell in the age group of 7 to 11 years and the mean age was 9 years. The male to female ratio was 1.17:1 with 28 (53.8%) male and 24 (46.2%) female participants. Thirty two (61.54%) patients belonged to lower, 16 (30.77%) from lower middle and 4 (7.69%) patients were from upper middle class. None of the patients were from the upper class (Table 1).

Among the major manifestations carditis was present in total of 37(71.15%) patients 18 (60%) presenting as the initial presentation and 19 (86.36%) presenting in recurrent presentation (RR 0.6947 (95%CI 0.4964-0.9722) P 0.038112. 12 (23.08%) patients had congestive cardiac failure (CCF) during the course of the study, 5(16.67%) in initial presentation and 7 (31.82) patients in recurrent episode (RR 0.5238 (95%CI 0.1913-1.4341) P 0.200325). Total of 5 (9.62%) patients had pericarditis, out of which 2(6.67%) belonged to the initial episode group whereas 3 (13.64%) belonged to the recurrence group (RR 0.4889 (95% CI 0.0891-2.683) P 0.6391). Mitral regurgitation (MR) was common finding with 25 (48.08%) patients affected in total. The initial episode group had significantly high number of 21 (70.00%) cases while the recurrent presenting group had only 4 (18.18%) cases (RR 3.85 (95% CI 1.5391-9.6306) P 0.00022). Mitral regurgitation along with aortic regurgitation (AR) was found in 10 (19.23%) patients, 4 (13.33%) of them from the initial episode group and 6 (27.27%) of them from the recurrent episode group (RR 0.4889 (95% CI 0.1565-1.5276) P 0.29). Aortic regurgitation alone was found in only 3 (5.77%) patients, 2 (6.67%) cases in initial episode group and just 1 (4.55%) case in the recurrent group (RR1.4667, 95% CI 0.1418-15.1742, P 1). Mitral stenosis (MS) was present in only 2 (3.85%) patients in total all of which reported from the recurrent episode group (9.09%). Migratory polyarthritis was present in total of 34 (65.38%) patients. 22 (73.30%) of them reported from the initial episode group of children and 12 (54.40%) from the recurrent episode group (RR 1.3444 95% CI 0.8674-0.8674) P 0.15939. Total of 5 (9.62%) patients suffered from the chorea. Initial episode group of children had just 4 (13.30%) chorea whereas among the recurrent episode group only 1 (4.50%) reported it (RR 2.9333 95% CI 0.3517-24.4664) P 0.381383. Skin lesions found were 4 (7.69%) cases of subcutaneous nodules and 2 (3.85%) cases of erythema marginatum. The minor manifestations which were seen in this study were the fever in 45

(86.54%), arthralgia 11 (21.15%), increases PR interval in ECG in 3 (5.77%). Out of the total children suffering from fever 25 (83.30%) reported from the initial episode group and rest of the 20 (91%) reported from the recurrent group (RR 0.9167 95% CI 0.7449-1.1281) P 0.68453. Arthralgia was seen in 5 (16.70%) patients in the initial episode group and 6 (27.30%) from the recurrent group (RR 0.6111 95% CI 0.2135-1.7492) P 0.49459. Only 3 patients had PR interval prolongation in ECG, 1 (3.30%) from the initial episode group whereas 2 (9.10%) presenting from the recurrent group (RR 0.3667 95% CI 0.0354-3.7936) P 0.566968 (Table 2). Throat swab culture for β Hemolytic streptococci was positive in 14 out of 52 patients (26.92%). Anti-streptolysin O titer was more than 320 Todd units in 48 (92.308%) children. All the patients had Erythrocyte sedimentation rate more than 12mm in first hour but among them only

46 children had erythrocyte sedimentation rate more than 90mm in the first hour.

Table 1: Frequency and percentage of episode, gender and socioeconomic status (n = 52)

Variable	No.	%
Episode		
Initial	30	57.69
Recurrent	22	42.31
Gender		
Male	28	53.8
Female	24	26.2
Socioeconomic status		
Lower class	32	61.54
Lower middle class	16	30.77
Upper middle class	4	7.69
Upper class	-	-

Table 2: Major manifestations of rheumatic fever

Manifestation	Total episode		Initial episode		Recurrent episode		Risk ratio	95% CI	P value
	No.	%	No.	%	No.	%			
Carditis	37	71.15	18	60.00	19	86.36	0.6947	0.4964-0.9722	0.038112
CCF	12	23.07	5	16.67	7	31.81	0.5238	0.1913-1.4341	0.200325
Pericarditis	5	9.61	2	6.67	3	13.63	0.4889	0.0891-2.683	0.6391
MR	25	48.07	21	70.00	4	18.18	3.85	1.5391-9.6306	0.00022
MR+AR	10	19.23	4	13.33	6	27.27	0.4889	0.1565-1.5276	0.29
AR	3	5.76	2	6.67	1	4.54	1.4667	0.1418-15.1742	1.00
MS	2	3.84	-	-	2	9.091			
Arthritis	34	65.38	22	73.30	12	54.40	1.3444	0.8674-0.8674	0.15939
Chorea	5	9.61	4	13.30	1	4.50	2.9333	0.3517-24.4664	0.381383
S/c nodules	4	7.69							
Erythema marginatum	2	3.84							
<i>Minor Manifestation</i>									
Fever	45	86.53	25	83.30	20	91.00	0.9167	0.7449-1.1281	0.68453
Arthralgia	11	21.15	5	16.70	6	27.30	0.6111	0.2135-1.7492	0.49459
PR prolonged	3	5.769	1	3.30	2	9.10	0.3667	0.0354-3.7936	0.566968
Sore throat	27	51.923	17	56.70	10	45.40	1.2467	0.716-2.1705	0.57514

DISCUSSION

The mean age in our study was 9 years while it was found to be quite old in Africa¹² while in Australia and Pakistan it was found to be closer to us.^{13,14} In our study the male female ratio was 1.7:1 which has been seen in Eastern Europe¹⁵ while most studies show a female preponderance.¹⁶ Most of the patients in this study were poor, and this is consistent with international studies¹⁷⁻¹⁹ and it is agreed that this disease is a function of poverty, low socioeconomic status, and barriers to healthcare access²⁰. Hence it is not unusual that these diseases are found in poor and female gender.¹⁷ Carditis was the main feature present in this study in 71% of the population, Carvalho and workers found it to be 56%²¹, while Caldas found it to be 48%²². Other studies done in

the region confirm our finding showing a higher frequency of carditis^{4,14}. It could be that genetic factors are involved and the frequency of carditis is higher in Asian people. Heart failure was the presentation of carditis in 47% of patients, it is significantly lower than African workers have shown^{12,23}. Again our findings are closer to other studies done in this part of the world^{24,25}, thus implying the interplay of genetic factors. The frequency of pericarditis was 13% and it was similar to other studies done in Asia²⁶. None of our patients went into cardiac tamponade which is documented by other workers²⁷. Mitral regurgitation was the most important finding present in 48% of patients, it is lower than found out by workers in Ivory Coast¹², but again it was closer to a study in Ankara²⁸. This again may signify hirthto unknown genetic factors. Both

Mitral and Aortic valve regurgitation were found in 19% patients, however it was found 23% in an African study²⁹. In another Pakistani study by Masood in Lahore it was shown to be 10%¹⁴. Pure aortic regurgitation was found in only 5% of patients in our study, while in a study in Cameroon it was found to be 15%²⁹ and 40% in on Sudanese study³⁰. Therefore, like combined lesions the frequency of Aortic regurgitation also varied from one geographic location to another. Pure Mitral Stenosis was found to be present in almost 4% of cases, while another Pakistani study found it to be 44%⁷. This is probably due to the fact that this study was in women, while our study group included children and Mitral stenosis is a late complication. In Africa the frequency of Pure Mitral stenosis has been found to be much higher (15%)²⁹ which can again only be attributed to genetic or socioeconomic factors. Arthritis was the predominant feature in the first presentation and our finding is reiterated by numerous studies^{10,31}. Canter suggests that as the frequency of carditis in rheumatic fever is falling, the frequency of Arthritis and Chorea is increasing³². In our study 13% had chorea, which is consistent with international literature^{13,33}. Our frequency of subcutaneous nodules was higher than reported in South America²¹ and Italy³⁴. Further studies are needed to find this association. Fever was the most common minor manifestation and this is consistent with international literature³⁵. Arthralgia was the second most common manifestation although it was less then shown by our Nepali colleagues²⁴. Our study did not find any relation of laboratory tests with the severity of the disease and in this we are supported by international data²⁵.

CONCLUSION

Rheumatic fever is still an important cause of cardiac morbidity and a large proportion of the patients already had complications at diagnosis.

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