

Original article:

Clinical and echocardiographic characteristics of adults with Rheumatic Heart Disease

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Abstract:

Introduction: Rheumatic valvular heart disease (RVHD) is a chronic consequence of rheumatic fever when left untreated. Rheumatic fever follows an episode of pharyngeal infection with group A beta-hemolytic streptococci (GAS). Approximately 60% of all acute rheumatic fever patients develop rheumatic heart disease (RHD) each year

Material and methods: The total period of study was spread over 2 year 2 months from August 2018 to September 2020. After collection of data, the data entry forms were checked for their completeness and missing and incomprehensible data was rechecked from the respective participant profile. Data entry was done in Microsoft Excel data sheet. Data cleaning and the retrieval of the missing data was done and the collected data was analyzed and the report writing completed.

Results: It was observed that 13 (26%) patients had mitral regurgitation, 5 (10.0%) patients had mitral stenosis. 7 (14.0%) patients had mitral regurgitation along with mitral stenosis. 2 (4.0%) patients had aortic regurgitation; 6 (12.0%) patients had mitral regurgitation with aortic regurgitation. 6 (12.0%) patients had mitral regurgitation, mitral stenosis & aortic regurgitation in combination. Only 1 (2.0%) patient in this study had aortic regurgitation, aortic stenosis & mitral regurgitation combined. 2 (4.0%) patients had mitral regurgitation, mitral stenosis and tricuspid regurgitation. 8 (16.0%) patients had mitral regurgitation, mitral stenosis, aortic regurgitation, aortic stenosis and tricuspid regurgitation in combination.

Conclusion: Based on the results of our study, we conclude that , mitral valve is the most common valve involved, with mitral regurgitation being the most common valvular lesion involved in rheumatic valvular heart disease followed by mitral stenosis.

Keywords: Rheumatic valvular heart disease , mitral regurgitation

Introduction:

Rheumatic valvular heart disease (RVHD) is a chronic consequence of rheumatic fever when left untreated. Rheumatic fever follows an episode of pharyngeal infection with group A beta-hemolytic streptococci (GAS). Approximately 60% of all acute rheumatic fever patients develop rheumatic heart disease (RHD) each year.¹ Valvular damage is the hallmark of rheumatic carditis. The most common valvular lesion in rheumatic carditis is mitral regurgitation which causes an apical pansystolic murmur. Stenotic lesions are uncommon in the early stages of the disease, but a transient apical mid-diastolic murmur (Carey-Coombs) may occur in association with the murmur of mitral regurgitation. As a result of recurrent episodes, leaflet thickening, scarring, calcification and valvular stenosis develop. The mitral valve is almost always affected, sometimes along with the aortic valve. Isolated aortic valve involvement is relatively rare.²

Material and methods:

The present study was conducted in the Department of Medicine, Dr. D. Y. Patil Medical College, Hospital and Research Centre, Pimpri, Pune.

The total period of study was spread over 2 year 2 months from August 2018 to September 2020. After collection of data, the data entry forms were checked for their completeness and missing and incomprehensible data was rechecked from the respective participant profile. Data entry was done in Microsoft Excel data sheet. Data cleaning and the retrieval of the missing data was done and the collected data was analyzed and the report writing completed.

50 consecutive hospitalized patients presenting with various complaints having echocardiographic evidence of rheumatic valvular heart disease were selected as sample for the study.

Inclusion criteria

1. All patients above 12 years of age with evidence of rheumatic valvular heart disease.

Exclusion criteria

1. Those not fitting into echocardiographic criteria for diagnosis of rheumatic valvular heart disease
2. Other valvular heart diseases which are non-rheumatic in origin
3. All other valvular heart diseases of congenital origin.
4. Patients who are on digoxin therapy
5. Those who do not give consent for the study.

Data management and analysis was done using Microsoft Excel and Epi-info software.

Results:

It was observed that 2 (4%) patients were less than 20 years of age, 8 (16.0%) patients were between 20 – 29 years, 9 (18.0%) patients were between 30 – 39 years, 9 (18.0%) patients were between 40 – 49 years, 11 (22.0%) patients were between 50 – 59 years, 8 (16.0%) patients were between 60 – 69 years and 3 (6.0%) patients were between 70 – 79 years.

It was observed that 34 (68%) patients out of 50 were female while 16 (32.0%) patients were male. In the present analysis, the male to female ratio is 1:2.1.

Table 1: Distribution of cases according to presenting symptoms

Presentation	Frequency	Percent
Breathlessness	38	76.0
Chest Pain	17	34.0
Palpitation	35	70.0
Fatigue	31	62.0
Lower limb swelling	6	12.0
Syncope	4	8.0
Asymptomatic	12	24.0

Table 8 shows distribution of cases according to presenting symptoms. It was observed that 38 (76%) patients presented with the initial complaint of breathlessness, 17 (34.0%) patients were having chest pain, 35 (70.0%) patients reported having palpitations, 31 (62.0%) patients complained of fatigue, 6 (12.0%) patients were having lower limb swelling, 4 (8.0%) patients had a history of syncopal attack and 12 (24.0%) patients were asymptomatic at presentation.

Table 2: History of acute rheumatic fever (as elicited from patients and relatives)

History of acute rheumatic fever	Frequency	Percent
Present	12	24.0
Absent	38	76.0
Total	50	100.0

Table 9 shows distribution of cases according to previous history of acute rheumatic fever. It was observed that 12 (24%) patients had positive history of acute rheumatic fever while in 38 (76.0%) patients no history of acute rheumatic fever could be obtained.

Table 3 : Distribution of cases according to valvular lesions

Valvular lesions	Frequency	Percent
Mitral Regurgitation	13	26.0
Mitral Stenosis	5	10.0
Mitral Regurgitation+ Mitral Stenosis	7	14.0
Aortic Regurgitation	2	4.0
Mitral Regurgitation+ Aortic Regurgitation	6	12.0
Mitral Regurgitation+ Mitral Stenosis + Aortic Regurgitation	6	12.0
Aortic Regurgitation+ Aortic Stenosis + Mitral Regurgitation	1	2.0
Mitral Regurgitation+ Mitral Stenosis + + Tricuspid Regurgitation	2	4.0
Mitral Regurgitation+ Mitral Stenosis + Aortic Regurgitation+ Aortic Stenosis + Tricuspid Regurgitation	8	16.0
Total	50	100.0

Table shows distribution of cases according to valvular lesions. It was observed that 13 (26%) patients had mitral regurgitation, 5 (10.0%) patients had mitral stenosis. 7 (14.0%) patients had mitral regurgitation along with mitral stenosis. 2 (4.0%) patients had aortic regurgitation; 6 (12.0%) patients had mitral regurgitation with aortic regurgitation. 6 (12.0%) patients had mitral regurgitation, mitral stenosis & aortic regurgitation in combination. Only 1 (2.0%) patient in this study had aortic regurgitation, aortic stenosis & mitral regurgitation combined. 2 (4.0%) patients had mitral regurgitation, mitral stenosis and tricuspid regurgitation. 8 (16.0%)

patients had mitral regurgitation, mitral stenosis, aortic regurgitation, aortic stenosis and tricuspid regurgitation in combination.

Table 4: Distribution of cases according to the severity of involvement of valve

Valvular lesions	Frequency	Percent	Severity	Frequency	Percent
Mitral Regurgitation	43	86.0	Mild	8	16.0
			Moderate	24	48.0
			Severe	11	22.0
Mitral Stenosis	28	56.0	Mild	7	14.0
			Moderate	12	24.0
			Severe	9	18.0
Aortic Regurgitation	23	46.0	Mild	8	16.0
			Moderate	10	20.0
			Severe	5	10.0
Aortic Stenosis	9	18.0	Mild	2	4.0
			Moderate	5	10.0
			Severe	2	4.0
Tricuspid Regurgitation	10	20.0	Mild	1	2.0
			Moderate	6	12.0
			Severe	3	6.0

The above table shows distribution of cases according to severity of involvement of valve. Among the 43 patients with mitral regurgitation, 8 (16.0%) cases had mild involvement, 24 (48.0%) cases had moderate involvement and 11 (22.0%) cases had severe involvement. In a total of 28 patients with mitral stenosis, 7 (14.0%) cases had mild involvement, 12 (24.0%) cases had moderate involvement and 9 (18.0%) cases had severe involvement. Among the patients with aortic regurgitation, 8 (16.0%) cases had mild involvement, 10 (20.0%) cases had moderate involvement and 5 (10.0%) cases had severe involvement. Among the patients who had aortic stenosis, 2 (4.0%) were having mild involvement, 5 (10.0%) cases had moderate involvement and 2 (4.0%) cases had severe aortic stenosis. Among the patients who had tricuspid regurgitation, 1 (2.0%) had mild involvement, while moderate and severe tricuspid regurgitation was observed in 6 (12.0%) and 3 (6.0%) patients respectively.

Discussion:

In the present study, it was observed that 2 (4.0%) patients were less than 20 years of age, 8 (16.0%) patients were between 20 – 29 years, 9 (18.0%) patients were between 30 – 39 years, 9 (18.0%) patients were between 40 – 49 years, 11 (22.0%) patients were between 50 – 59 years, 8 (16.0%) patients were between 60 – 69 years and 3 (6.0%) patients were between 70 – 79 years.

In the study conducted by S.Laudari et al.,³ it was observed that among the study population, 6.0% cases were less than 15 years, 26.4% cases were between 15 – 29 years, 29.4% cases were between 30 – 44 years, 25.5% cases were between 45 – 59 years and 12.8% cases were more than or equal to 60 years of age.

Most common complaints observed among the study participants were breathlessness (76.0%), chest pain (34.0%), palpitations (70.0%), easy fatigability (62.0%), lower limb swelling (12.0%) and syncopal attacks (8.0%). 24.0% patients were asymptomatic.

In the study conducted by Changrashekhar VG et al.,⁴ it was observed that 41 (82.0%) cases had breathlessness, 18 (36.0%) cases had chest pain, 39 (78.0%) cases had palpitations, 33 (66.0%) cases had pedal edema, and 2 (4.0%) cases were had syncopal attacks. In the present study, it was observed that 25 (50.0%) cases had isolated mitral valve involvement and is the most common valve involved. 2 (4.0%) cases had isolated aortic valve involvement, 13 (26.0%) cases had mitral + aortic valve involvement, 2 (4.0%) cases had mitral + tricuspid valve involvement and 8 (16.0%) cases had mitral + aortic + tricuspid valve involvement. Overall, it was observed that mitral valve was involved in 48 patients (96.0%), aortic valve was involved in 23 (46.0%) cases, tricuspid valve was involved in 10 (20.0%) cases. Involvement of tricuspid valve was mostly secondary to left sided valvular disease.

In the study conducted by S.Laudari et al.,³ it was observed that out of 235 patients, 110 (46.8%) cases had isolated mitral valve involvement, 22 (9.4%) cases had isolated aortic valve involvement, 79 (33.6%) cases had mitral + aortic valve involvement, 18 (7.7%) cases had mitral + aortic + tricuspid valve involvement and 6 (2.6%) cases had mitral + aortic + pulmonary valve involvement. In the study conducted by Sanja Sameer Behra et al,⁵ it was observed that 243 (90.6%) cases had mitral valve involvement overall, 48 (18.0%) cases had aortic valve involvement overall. The total cases having involvement of tricuspid valve and pulmonary valve was 14 (5.2%) and 2 (0.7%) respectively, but the data from this study included patients with non-rheumatic valvular heart disease as well.

In the study by C.N.Manjunath et al.,⁶ it was observed that overall involvement of mitral valve in patients with rheumatic heart disease was 84.7% and that of aortic valve was 29.1%. Tricuspid valve involvement was observed in 10.7% cases. Pulmonary valve was the least commonly affected valve amounting to only 0.04% cases.

In the present study, it was observed that 13 (26.0%) cases had mitral regurgitation, 5 (10.0%) cases had mitral stenosis, 7 (14.0%) cases had mitral regurgitation+ mitral stenosis, 2 (4.0%) cases had aortic regurgitation, 6 (12.0%) cases had mitral regurgitation+ aortic regurgitation, 6 (12.0%) cases had mitral regurgitation+ mitral stenosis + aortic regurgitation, 1 (2.0%) case had aortic regurgitation + aortic stenosis + mitral regurgitation, 2 (4.0%) cases had mitral regurgitation+ mitral stenosis + tricuspid regurgitation and 8 (16.0%) cases had mitral regurgitation + mitral stenosis + aortic regurgitation+ aortic stenosis + tricuspid regurgitation (TR). Mitral regurgitation was the most common lesion in the study group with 26.0% patients having isolated MR and 86.0% patients having MR in combination with other lesions.

In the study conducted by S.Laudari et al.,³ it was observed that 58 (24.7%) cases had mitral regurgitation, 32 (13.6%) cases had mitral stenosis, 36 (15.3%) cases had mitral regurgitation + mitral stenosis, 12 (5.1%) cases had aortic regurgitation, 23 (9.8%) cases had mitral regurgitation + aortic regurgitation, 33 (14.0%) cases had mitral regurgitation+ mitral stenosis + aortic regurgitation, 8 (3.4%) cases had aortic regurgitation + aortic stenosis + mitral regurgitation and 15 (6.4%) cases had mitral regurgitation + mitral stenosis + aortic regurgitation + aortic stenosis. It was observed that mitral regurgitation was the major lesion occurring either as isolated MR, or in combination with other lesions accounting to 73.6% of the cases.

In the study conducted by Sanja Sameer Behra et al,⁵ it was observed that 48 (17.9%) cases had mitral regurgitation, 98 (36.5%) cases had mitral stenosis, 64 (24.0%) cases had mitral regurgitation + mitral Stenosis, 10 (3.73%) cases had aortic regurgitation, 10 (3.73%) cases had aortic stenosis, 9 (3.36%) cases had mitral regurgitation + mitral stenosis + aortic regurgitation + aortic stenosis, 7 (2.61%) cases had mitral regurgitation + mitral stenosis + aortic stenosis. Overall, 155 (57.8%) cases had mitral regurgitation, 181 (67.5%) cases had mitral stenosis, 43 (16%) cases had aortic stenosis, 45 (17%) cases had aortic regurgitation (total isolated as well as in combination).⁷⁻⁹

In the study conducted by Changrashekhar VG et al.,⁴ it was observed that among 25 patients with rheumatic heart disease and atrial fibrillation, 2 (8.0%) patients had isolated mitral regurgitation, 14 (56.0%) patients had mitral stenosis, 5 (20.0%) patients had mitral regurgitation + mitral stenosis, 1 (4.0%) patient had mitral regurgitation + aortic regurgitation, 1 (4.0%) patient had mitral regurgitation+ mitral stenosis + aortic regurgitation, 1 (4.0%) patient had aortic regurgitation+ aortic stenosis and 1 (4.0%) patient had aortic regurgitation.

Conclusion:

Based on the results of our study, we conclude that , mitral valve is the most common valve involved, with mitral regurgitation being the most common valvular lesion involved in rheumatic valvular heart disease followed by mitral stenosis.

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