



## Original Article

# Clinical Profile of Patients with Mitral Stenosis: A Study of 100 Cases in Rajshahi Medical College Hospital

A K M Monwarul Islam<sup>1</sup>, M Zahirul Haque<sup>2</sup>, M Azizul Hoque<sup>3</sup>,  
Iftekhhar Mahmood<sup>3</sup>, M Fakrul Islam<sup>4</sup>, M A Azhar<sup>5</sup>

### Abstract

The main objective of the study were to determine the common symptoms and signs, pattern of valve lesion and complications of mitral valvular disease in our population. Fifty patients of mitral valvular disease of rheumatic origin were evaluated in the Departments of Medicine and Cardiology of Rajshahi Medical college Hospital, Rajshahi. Breathlessness was the commonest symptom followed by palpitation, cough and fatigue. Commonly encountered signs of mitral valvular disease were tapping apex beat, loud first heart sound and diastolic murmur at mitral area. The signs of pulmonary hypertension were present in the majority of the patients at presentation. Atrial fibrillation was also quite common, though only a few having thromboembolic manifestations. Majority of the patients suffering from mitral valvular disease are poor. A number of patients receive the treatment of bronchial asthma and pulmonary tuberculosis for dyspnoea and haemoptysis respectively before the diagnosis of valvular heart disease is made.

TAJ 2009; 22(1): 101-105

### Introduction

Rheumatic heart disease is still a major cause of cardiovascular morbidity and mortality in Bangladesh<sup>1</sup>. Active research in this field started from 1988 in this country, though some sporadic attempts were made by some enthusiastic researchers. In developed countries the disease is very rare in affluent suburban populations<sup>2</sup> but persists among disadvantaged families dwelling in the crowded inner cities<sup>2,3</sup>. In Bangladesh, rheumatic heart disease was found commoner in poor people of younger age<sup>1</sup>. In western world, mitral stenosis takes many years to develop and is mostly a disease of adult life<sup>4</sup>. This is in striking

contrast in our country, where the disease often follows a malignant course<sup>1</sup>. Manifestations of chronic rheumatic heart disease include mitral and aortic valve disease, congestive heart failure and atrial fibrillation<sup>5</sup>. Islam et al (1987) found pure mitral stenosis in 45 percent, combined mitral stenosis and regurgitation in 10 percent and multiple valvular diseases in 22 percent of subjects with rheumatic valvular disease. The loss of productivity and expenses of medical and surgical treatment impose a heavy burden on the family, as well as, on the economy of the developing countries<sup>6</sup>. Many patients of valvular heart disease in our country are diagnosed late, get mal-treated,

<sup>1</sup> Registrar, Medicine, National Institute of Cardiovascular Diseases, Dhaka.

<sup>2</sup> Assistant Professor, Department of Medicine, Rajshahi Medical College, Rajshahi.

<sup>3</sup> Associate Professor, Department of Medicine, Rajshahi Medical College, Rajshahi.

<sup>4</sup> Senior Consultant, Lab-Aid Cardiac Hospital, Dhaka.

<sup>5</sup> Professor & Principal, Sir Salimullah Medical College, Dhaka

and develop complications. Timely application of due clinical skills and judicious utilization of available investigations may reduce this problem. The study was carried out to determine the common symptoms and signs of mitral valvular disease in our population, to find out the incidence and pattern of complications and to find out the causes of delay in diagnosis.

## Material and Methods

**Clinical Materials:** The study was a hospital-based prospective study carried out in the Departments of Medicine and Cardiology, Rajshahi Medical college Hospital, Rajshahi, Bangladesh. Fifty consecutive cases of mitral valvular disease confirmed by echocardiogram (2D and Doppler) admitted in different medical units and cardiology department during the period from 30.06.2002 to 30.03.2003, were included in this study. Informed consent was taken from each patient before inclusion. A detailed history was taken and meticulous clinical examination was performed. Patients were interviewed and available papers were scrutinized regarding delay in the diagnosis and management.

**Inclusion Criteria:** Patients with isolated mitral valvular disease of rheumatic origin diagnosed clinically and later confirmed by echocardiography.

**Exclusion Criteria:** Patients with any other organic valvular disease; Patients with congenital heart disease, hypertensive heart disease; Patients with bronchial asthma, COPD, chest deformity; Dropped out cases.

## Results

**Table- 1:** Age and sex distribution of patients with mitral valvular disease.

Age (years)	Male		Female		Total	
	No.	Percentage	No.	Percentage	No.	Percentage
11-20	7	14	7	14	14	28
21-30	8	16	9	18	17	34
31-40	5	10	4	8	9	18
41-50	3	6	4	8	7	14
51-60	1	2	1	2	2	4
61-70	0	0	1	2	1	2
71-80	0	0	0	0	0	0

**Table- 2:** Occupation of patients with mitral valvular disease.

Occupation	Male		Female		Total	
	No.	%	No.	%	No.	%
Farmer	10	20	0	0	10	20
Day labourer	4	8	1	2	5	10
Businessman	5	10	0	0	5	10
Serviceman	1	2	0	0	1	2
Student	2	4	2	4	4	8
Housewife	—	—	23	46	23	46
Others	2	4	0	0	2	4

**Table- 3:** Socioeconomic condition of patients with mitral valvular disease.

Socioeconomic status	No. of Patients	Percentage
Poor	32	64
Middle class	16	32
Rich	2	4

**Table- 4:** Previous history of rheumatic fever in patients with mitral valvular disease.

Previous history of rheumatic fever	Number of patients	Percentage
Positive history present:	28	56
Single attack	15	30
Recurrent attacks	13	26

**Table- 5:** History of previous treatment in patients with mitral valvular disease.

Pattern of previous treatment	Number of patients	Percentage
No treatment received	7	14
Treated by quacks only	11	22
Treated by registered medical practitioners and/or in hospitals	26	52
Treated by quacks, as well as, by registered medical practitioners and/or in hospitals.	5	10

**Table- 6:** Cause(s) of delay, if any, in diagnosis and treatment in patients with mitral valvular disease.

Cause of delay	Number of patients	Percentage
Illiteracy and ignorance	14	28
Difficult access to health care facilities	0	0
Poverty	12	24
Adoption of indigenous treatment	6	12
Treated as a case of some other disease, hence delay:		
Bronchial asthma	6	12
Pulmonary tuberculosis	3	6
No obvious delay.	22	44

**Table-7:** Analysis of symptoms in patients with mitral valvular disease.

Symptoms	Number of patients	Percentage
Dyspnoea:		
- NYHA class I	4	8
- NYHA class II	11	22
- NYHA class III	29	58
- NYHA class IV	6	12
Paroxysmal nocturnal dyspnoea	9	18
Cough	42	84
Haemoptysis	19	38
Palpitation	49	98
Chest pain	26	52
Leg swelling	13	26
Abdominal swelling	10	20
Dysphagia	15	30
Fatigue	45	90
Limb weakness	3	6

**Table- 8:** Analysis of signs in patients with mitral valvular disease.

Signs	Number of patients	Percentage
Pulse:		
Regular	33	66
Irregularly irregular	14	28
Occasional drop beats	3	6
Jugular venous pressure:		
Normal	39	78
Raised	17	34
Apex beat:		
Normally situated	32	64
Shifted	16	32
Tapping	41	82
Thrusting	7	14
Left parasternal heave	42	84
Palpable P2	41	82
Thrill:		
Systolic	8	16
Diastolic	28	56
First heart sound:		
Normal intensity	1	2
Loud	34	68
Soft	8	16
Variable intensity	14	28
Loud P2	43	86
Murmur:		
Mid-diastolic murmur of mitral stenosis	46	92
Pansystolic murmur of mitral regurgitation	19	38
Pansystolic murmur of tricuspid regurgitation	10	20
Opening snap	30	60
Presystolic accentuation	27	56
Pericardial rub	0	0
Congestive cardiac failure:		
Dependent oedema	16	32
Engorged neck veins	17	34
Hepatomegaly	13	26
Signs of CVD	3	6
Breath sound:		
Vesicular	42	84
With prolonged expiration	8	16
Rhonchi	8	16
Crepitations	18	36

## Discussion

In the present study peak incidence of mitral valvular disease was found in the third decade (34%). Fourteen (28%) out of 50 patients were in below-20 age group which is supporting the finding of Roy et al (1968)<sup>7</sup>, who reported a high incidences (23%) of symptomatic and severe rheumatic heart disease in patients below 19 years of age. High incidences of juvenile mitral stenosis were also found by Islam and colleagues (1987)<sup>1</sup>, Mohibullah et al (1992)<sup>8</sup> and Sen and coworkers (1966)<sup>9</sup>. However, data from western countries contradict with these findings, where juvenile mitral stenosis ranges from 0.5 to 13 % (Baily and Bolton, 1956<sup>10</sup>; Seltzer, and Cohen, 1972<sup>11</sup>). Out of 50 patients 24 (48%) were male and 26 (52%) were female. The male to female ratio was almost equal, 1:1.08. The study reveals that 32 (64%) patients had poor socio-economic condition and 16 (32%) were having average status. Only 2(4%) out of 50 patients belonged to the higher socio-economic class. These observations support the views that rheumatic heart disease is prevalent amount the economically disadvantageous group. However there may be some biasness as the present study was done in a public hospital where the low-income people tend to dominate the service-receiving population.

A previous history suggestive of rheumatic fever was found in 28 (56%) patients; 13 (26%) cases experienced single attack, whereas 15 (30%) patients suffered from recurrent attacks. These findings are close to those of Islam et al (1987)<sup>1</sup>, Sen and co-workers (1966)<sup>9</sup> and Bayana et al (1974)<sup>12</sup>.

Out of 50 cases 26 (56%) patients received treatment from the registered medical practitioners and/or from the hospitals. Eleven (22%) patients consulted with the quacks only whereas 5 (10%) patients had treatment from both the sources mentioned above. The resting 7 (14%) patients had no treatment at all. So, 23 (46%) patients either received no treatment or were handled by the quacks only.

An important aim of this study was to look for the causes of delay, if any, in the diagnosis and

treatment of the disease. Out of 50 cases studied there was significant delay in 28 (56%) patients. Illiteracy and ignorance was found to be the principal cause in 14 (28%) cases; this group failed to realize the importance of seeking medical care for their illness in time, or they waited for spontaneous remission. Twelve (24%) patients pointed out poverty as the culpable factor for the undue delay. In case of 7 (14%) patients misdiagnosis was responsible; 6 of them were treated as a case of bronchial asthma for their breathlessness, whereas another 3 patients had the treatment of pulmonary tuberculosis for haemoptysis. Six (12%) patients adopted indigenous treatment. None complained of difficult access to the health care facilities as a hindrance to the timely treatment of their illness. More than one cause was responsible in 7 cases. Twenty-two (44%) patients denied of any undue delay.

The impact of mitral valvular disease on the productivity showed that 43 (86%) patients experienced moderate to severe limitation of carrying out day-to-day activities including profession. All patients complained of some sort of dyspnoea, which was the principal symptom. Majority (35 out of 50, i.e. 70%) had New York Heart Association class III or IV dyspnoea, another 11 patients (22%) experienced the dyspnoea of NYHA class II severity. These findings were very close to those of Islam et al (1987)<sup>1</sup>, in whose study, majority of the patients were found incapacitated by the disease, and over 60% were in NYHA class III or IV dyspnoea. Paroxysmal nocturnal dyspnoea was found in 9 (18%) patients, which was close to the findings of Islam et al (1987)<sup>1</sup> and Wood (1954)<sup>13</sup>, which were 17% and 20.7% respectively. Palpitation, fatigue and cough were the other commonly encountered symptoms, which were present in 49 (98%), 45 (90%) and 42 (84%) cases respectively. Nineteen (38%) patients had haemoptysis. Islam et al (1987)<sup>1</sup> found this feature only in 17% cases in their study. However Wood (1954)<sup>13</sup> noted this in 44% subjects.

Dysphagia was present in 25 (30%) cases; all of them had the left atrial size more than 40 mm in

echocardiography. The study revealed irregular pulse in 17 (34%) patients, 3 (6%) of which only had occasional drop beats. Raised jugular venous pressure was present in 17 (34%) cases. The apex beat was found normally situated in 32 (64%) cases, but could not be palpated in 2 patients. The remaining 16 (32%) patients had shifted apex beat, presumably those representing the combined stenotic and regurgitant mitral valve lesion. The character of the apex beat was tapping in 39 (78%) patients and thrusting in 9 (18%) cases. Forty-two (84%) patients had left parasternal heave, and palpable P2 was found in 41 (82%) patients, indicating the high prevalence of pulmonary hypertension. These findings are close to those of Mohibullah et al (1992)<sup>8</sup>, Shaha et al (1975)<sup>14</sup> and Cherian and co-workers (1964)<sup>15</sup>. However, Islam et al (1987)<sup>1</sup> found clinical evidence of pulmonary hypertension in 65% of their studying population.

Diastolic thrill was palpable in 28 (56%) cases. Eight (16%) patients had systolic thrill. The first heart sound was loud in 34 (68%) subjects and soft in 8 (16%) cases, the latter could be explained by the presence of significant mitral regurgitation with mitral stenosis. The intensity of the first heart sound was found variable in 14 (28%) patients. Three (6%) persons had occasional drop beats. Clinically mid diastolic murmur of mitral stenosis was audible in 46 (92%) cases. Nineteen (38%) patients had pansystolic murmur of mitral regurgitation, whereas in other 10 (20%) cases, the pansystolic murmur was best heard in the lower left parasternal area in inspiration indicating the origin at the level of tricuspid valve. Opening snap was found in 30 (60%) cases whereas 27 (54%) had presystolic accentuation of the diastolic murmur of mitral stenosis.

Sixteen (32%) patients had dependent oedema, whereas engorged neck veins were found in 17 (34%) cases. Liver was palpable and tender in 13 (26%) patients. These findings were close to the observations of Islam et al (1987)<sup>1</sup> who found clinical evidence of congestive cardiac failure in 33%. Out of the 50 patients studied, breath sound was vesicular with prolonged expiration in 8 (16%) patients. Six of the patients were being treated as cases of bronchial asthma. None had

family history of asthma, but one was smoker. All had clinical and echocardiographic features of pulmonary hypertension. They showed partial improvement of bronchospasm with bronchodilators and diuretics. Probably they were having chronic bronchitis, as the oedematous bronchial mucosa is more likely to be associated with chronic bronchitis (Rahimtoola, 2001)<sup>5</sup>.

In this study, 3 (6%) patients had features of stroke. Two of them were female. The only male patient was smoker. Two had atrial fibrillation, whereas the remaining one was having atrial flutter with 2:1 block. Enlarged left atrium was found in all of them, but none had any thrombus within the left atrium in echocardiography. Further evaluation with CT scan could not be done due to financial handicap. Islam et al (1987)<sup>1</sup> got the incidence of thromboembolism to be 3%, which supports the findings of the present study

### Conclusion

Mitral valvular disease of rheumatic origin is still a common cause of cardiovascular morbidity and mortality in Bangladesh. Younger people of lower socio-economic condition are the common victims. Due to poverty, illiteracy and ignorance, the disease is often diagnosed late in advanced stage with complications. Such a grave outcome can only be prevented by early diagnosis and proper treatment at lower levels of the existing health care system. This study indicates that rheumatic mitral valvular disease and the accompanying complications can be detected with an appreciable degree of accuracy by skilful clinical assessment and judicious use of simple investigations like roentgenography, electrocardiography and echocardiography, which are available in many parts of our country at affordable costs. So every effort should be made to utilize these invaluable resources to tackle this public health problem more efficiently.

### References

1. Islam MN, Khan LA, Mohibullah AKM, Zafar A, Malik A, 1987, Clinical profile of rheumatic heart disease in Bangladesh, *Bangl. Med. J.*, vol. 16, pp. 6-17.
2. Gash AK, Carabello BA, Cepin D, Spann JE, 1983, Left ventricular ejection performance and systolic muscle function in patients with mitral stenosis, *Circulation*, vol. 67, pp. 148-54.
3. Colle JP, Rahal S, Ohayon J, et al, 1984, Global left ventricular function and regional wall motion in pure mitral stenosis, *Clin. Cardiol.*, vol. 7, pp. 573-80.
4. Taranta A, Markowitz M, 1989, *Rheumatic Fever*, 2nd ed, Kluwer Academic Publishers, MA, pp.6-7, 68-9.
5. Rahimtoola SH, 1989, Perspective on valvular heart disease: An update, *J. Am. Coll. Cardiol.*, vol. 14, pp. 1-23.
6. World Health organization, 1992. WHO program for the prevention of rheumatic fever/ rheumatic heart disease in 16 developing countries: Report from phase I (1986-90), *Bull. WHO*, vol. 70, pp. 213-218.
7. Roy SB, Gopinath N, 1968, Mitral stenosis, *Circulation*, vol. 38(Suppl.), p. 68.
8. Mohibullah AKM, Islam N, AH M, et al, 1992, Juvenile mitral stenosis in Bangladesh, *Bd. Heart J.*, vol. 7, pp. 6-13.
9. Sen PK, 1972, Profiles of surgical management of rheumatic valvular hearts diseases in India, *Ann. Ind. Acad. Med. Sc.*, vol.8, p. 87.
10. Baily CP, Bolton HE, 1956, Criteria for and results of surgery for mitral stenosis, *NY Med. J.*, vol. 56, p.825.
11. Selzer A, Cohn KE, 1972, Natural history of mitral stenosis: A review, *Circulation*, vol. 45, p. 878.
12. Bayana JN, Khanna SK, Gupta BK, Sharma SR, Gupta MP, Padmavati S, 1974, Mitral stenosis in the young in developing countries, *J. Thorac. Cardiovasc. Surg.*, vol. 68, p. 126.
13. Wood P, 1954, Clinical features, An appreciation of mitral stenosis: Part 1, *BMJ*, vol.1, pp. 1051-63.
14. Shaha SJ, Goyal BK, Sheth A, Billimoria AR, Joshi SP, 1975, Juvenile mitral stenosis in India, *Ind. Heart J.*, vol. 27, p. 6.
15. Cherian G, Vytilingam KI, Sukumar IP, Gopinath N, 1964, Mitral valvotomy in young patients, *Br. Heart J.*, vol. 26, p.157.

All correspondence to:  
A K M Monwarul Islam  
Registrar, Department of Medicine  
National Institute of Cardiovascular Diseases, Dhaka