

Atrial Fibrillation in Mitral Stenosis and its correlation with age, sex & clinical symptoms

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Objective: The objective of the study was to calculate the frequency of atrial fibrillation of MS and its correlation with age, sex and clinical symptoms. **Design:** A prospective descriptive study. **Place:** Mayo Hospital & Punjab Institute of Cardiology, Lahore. **Patients and methods:** 112 patients of mitral stenosis were investigated with an ECG and an echocardiography to confirm mitral stenosis and to measure anteroposterior left atrial dimensions on M-mode. All patients who were suffering from AF due to causes other than mitral stenosis were excluded. The significance of findings were tested through standard "t" test. **Results:** Atrial fibrillation is more in female patient and has a linear correlation with age. More common symptoms of shortness of breath followed by palpitation.

Key words: Atrial fibrillation, mitral stenosis, clinical symptoms

Chronic rheumatic heart disease is much the commonest cause of mitral stenosis. Incidence of rheumatic MS parallels that of acute rheumatic fever¹. Rheumatic involvement is present in 99% of the stenotic mitral valves excised at the time of mitral valve replacement. Approximately 25% of all the patients with rheumatic heart disease have pure MS and an additional 40% have combined MS and MR. Two third of all the patients with rheumatic MS are women². It is thus much commoner and present earlier in the Middle East, Indian sub-continent and far East than in the West¹. Atrial fibrillation usually develops in the presence of pre-existing ECG evidence of left atrial enlargement and is related to the size of the chamber, the extend of fibrosis of the left atrial myocardium, the duration of the atriomegaly and the age of the patient². 50%-80% of the patients develop paroxysmal or chronic atrial fibrillation that until the ventricular rate is controlled may precipitate dyspnea or pulmonary edema³.

MS is a slowly progressive disease and many patients remained seemingly asymptomatic, nearly by readjusting their life style to a more sedentary level. A small percentage perhaps 15% of patients with MS experienced chest discomfort. The principal symptom of MS is exertional dyspnea, largely the result of reduced pulmonary compliance. Dyspnea may be accompanied by cough and wheezing². The objective of study is to calculate the frequency of atrial fibrillation of MS and its correlation with age, sex and clinical symptoms

Material and methods:

This descriptive study was conducted in the setting of Mayo Hospital, Lahore and Punjab Institute of Cardiology, Lahore. Patients were selected for interview on the basis of convenient sampling. The data was collected on a specially designed proforma. One hundred and twenty nine consecutive patients of echocardiographically proved mitral stenosis, visiting the two institutions were contacted and the proforma was filled for each patient. The data was

later scrutinized and only 112 cases were included in the final workup.

All the patients were investigated with an ECG and an echocardiogram (to confirm mitral stenosis and to measure anteroposterior left atrial dimensions on M-mode). All patients who were suffering from AF due to causes other than predominant mitral stenosis were excluded. Clinical analysis helped rule out non-cardiac causes of AF. Cardiac causes of AF other than MS were ruled out on the basis of echocardiography and ECG. Those cases of mitral stenosis that did not have a complete record, including treatment history and previous ECGs, were also excluded. Similarly the data of the patients, who had been interfered with either surgically or PTMC, was entered on the basis of their pre-surgical record.

The data analysis was computer based. SPSS 10 was employed for this purpose. The significance of the findings was tested through Student's "T" test.

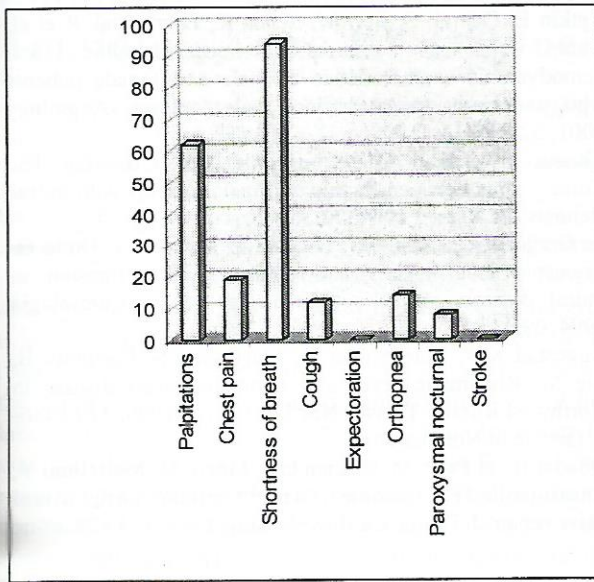
Results:

Atrial fibrillation is more common in female patients with MS (30% vs 19%). Atrial fibrillation in MS has a linear correlation with age (probably reflecting the duration of MS (P=0.000). Female patients of MS with Atrial fibrillation are older than the male patients of MS with Atrial fibrillation. (39.76±10.26 years vs 34.13±12.59 years). The most common symptoms are shortness of breath (83.9%) followed by palpitation (55.4%).

Table 1: Baseline characteristics of study population.

Parameters	Frequency	%age
Palpitations	62	55.4
Chest pain	19	17
Shortness of breath	94	83.9
Cough	12	10.7
Expectoration	4	3.6
Orthopnea	14	12.5
PND	8	7.1
Syncopal attacks	5	4.5
Stroke	1	0.9

Fig. 1: Symptomatology of MS



Discussion

The objective of this study was to calculate the frequency of AF in cases of MS and its correlation with age, sex and clinical symptoms.

The age in our group ranged from 7-73 years (mean 28.8 ± 12.50). A similar study conducted locally, carried out by Nadeem et al⁴ on valvular heart disease showed a mean age of 40.09 ± 11.99 years. Okubo et al⁵ reported younger age in patients of MS from Bangladesh. Other international studies show higher mean age like Mrozowska et al⁶ (52.5 years), Sanada et al⁷ (51 ± 10 years) and Sagie et al⁸ (61 ± 14 years).

Yetkin et al⁹ in Turkey reported that male patients with MS were older than females (39 vs 34 years). However, our data showed a different distribution, where the mean age in male patients was 26.81 ± 13.2 years as compared to 30.11 ± 11.99 years in females. A similar finding was noted by Chiang et al¹⁰ in Taiwan, where the mean age for males was 48 ± 14 years and for females, 49 ± 13 years.

The possible explanation for a lower age in our study is that due to non-availability of basic diagnostic and management facilities in the primary health care setup, even those cases, who do not require active management, end up in tertiary care hospitals. Another possibility could be the deterioration of the condition of these patients more rapidly leading to complications, requiring intervention earlier, which again could be secondary to lack of diagnostic and management facilities in the periphery.

The international studies seem to have higher age group as these studies were conducted in tertiary care hospitals where only complicated cases or cases requiring intervention are referred from primary health care.

70 of our patients (62.5%) were females which was the case every where else also; Yetkin et al⁹ reported

78.2% females, Sanada et al¹⁰ 57.04%, Chiang et al⁷ 66.2%, Sagie et al⁸ 74%, and de Gregorio et al¹¹ 80%.

The frequency of AF increased with age ($p = 0.000$) in our study. The mean age for patients in AF was 38.21 ± 11.02 years as compared to the age of patients in sinus rhythm, which was 25.61 ± 11.34 years. Mrozowska et al⁶ and Obadia et al¹³ had a similar observation.

The frequency of AF in males with MS was only 19% as compared to the females, where it was 30%. The age of male patients with MS + AF was 34.13 ± 12.59 years as compared to 39.76 ± 10.26 years in females. Chiang et al¹⁰ was unable to see any difference in the incidence of AF sex-wise. Nadeem et al⁴ reported AF to be commoner in females.

The most common symptom in our study was shortness of breath (83.9%) followed by palpitations (55.4%) (Fig.1). Augestad et al¹² from Russia reports similar findings with incidence of shortness of breath as 98.9% and palpitation 35.4%. Our study reported only one case of cerebral stroke (0.89%) as compared to Augestad et al¹² who found it in 15 out of 296 patients (5.07%).

Sixty one (54.5%) of our patients had pure MS whereas the rest (45.5%) had associated mild MR diagnosed on Doppler study. Sagie et al⁸ reported that at least 78% of cases with MS had minimal/ mild MR detected on Doppler study and only 22% had pure MS.

Using the general terminology of severity of MS, mild MS ($MVA > 1.5 \text{ cm}^2$) was seen in 14 cases (12.5%), moderate MS (MVA between $1.5-1.1 \text{ cm}^2$) in 24 cases (21.4%) and severe MS ($MVA \leq 1.0 \text{ cm}^2$) in 74 cases (66.1%). Sagie et al⁸ noted mild MS in 28%, moderate MS in 34% and severe MS in 38% cases.

Our group had MVA in the range of $0.5-3.1 \text{ cm}^2$ (mean 1.0469 ± 0.4146). The males had a mean value of $1.031 \pm 0.4807 \text{ cm}^2$ and the females $1.0564 \pm 0.3728 \text{ cm}^2$. Yetkin et al⁹ noted mean MVA in males as $0.97 \pm 0.22 \text{ cm}^2$ and in females as $1.09 \pm 0.25 \text{ cm}^2$.

Conclusions:

AF is more common in female patients with MS (30% vs 19%)

AF in MS has a linear correlation with age, probably reflecting the duration of MS ($p = 0.000$)

Female patients of MS with AF are older than male patients of MS with AF (39.76 ± 10.26 years vs 34.13 ± 12.59 years)

The most common symptom was shortness of breath (83.9%) followed by palpitations (55.4%)

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