

Clinical profile and Echocardiographic findings in patients with Atrial Fibrillation

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Abstract- Introduction: Atrial fibrillation is the most common sustained arrhythmia, which is caused by different etiologies and it leads to morbidity and mortality.

Objectives: To know the various clinical presentations in atrial fibrillation and to detect various etiologies of atrial fibrillation.

Materials and methods: 50 cases of atrial fibrillation admitted in Gandhi hospital, Secunderabad, Cases are examined in detail, whenever it was found necessary and were subjected to echocardiography to know the cause.

Results: there were 32 females and 18 males, showing female predominance. Their age ranging from 21-80 years with majority in age group of 41-70 years. The chief complaints were SOB, pedal edema, palpitations, chest pain, hemoptysis, and stroke. Duration of symptoms were ranging from 15 days to 6 years with rheumatic etiology having longer duration. In this study RHD is (70%) is the most common cause followed by IHD (6%), HOCM (6%), HTN (4%), Pericarditis (4%), Ebstein's Anomaly (4%), and Lone AF (2%). Mitral stenosis MS (88.57%) is the most common lesion in RHD. Most of the cases L.A size ranged between 4 to 5 cm (56%). Most cases showing tachycardia, among those cases 30% showing heart rate >150 bpm. CHF is most common complication (48%) in 50 AF cases while 8 cases (16%) had clots.

Conclusion: Atrial fibrillation most common etiology is RHD despite of improving level of education and life expectancy in Indian citizens. Pericarditis leading to atrial fibrillation found in young age group. Congestive heart failure is the most frequent complication

Index Terms- Atrial Fibrillation, Rheumatic Heart disease, Left Atrium, and Echocardiography

I. INTRODUCTION

Atrial fibrillation is the most common sustained arrhythmia. Few patients may be asymptomatic, some patients may become symptomatic. If ventricular rate not controlled in patients with atrial fibrillation it leads to cardiomyopathy as result and increase the mortality. Irrespective of cause it increases risk of thromboembolic phenomenon.

Atrial fibrillation is an independent risk factor for stroke; it is associated with a four- to five-fold higher risk than in the unaffected Population. Overall, this rhythm disorder is implicated in approximately 75,000 strokes per year and is probably the major cause of embolic stroke. Older patients are not only more

prone to AF but their risk of stroke is considerably increased compared with younger patients with AF. The propensity of the elderly for stroke may be related to a higher prevalence of comorbid conditions and to the dual factors of age and chronicity. Both increasing age and chronicity of AF correlate strongly with increased left atrial size¹. Up to 40 % of strokes no cause can be identified even after extensive workup, such cryptogenic strokes have been caused to good extend by paroxysmal AF².

II. AIM OF THE STUDY

To know the various clinical presentations in atrial fibrillation and to detect various etiologies of atrial fibrillation.

III. MATERIALS AND METHODS

50 cases of atrial fibrillation, admitted in Gandhi hospital, Secunderabad, Cases are examined in detail, whenever it was found necessary. In each case, history of present and past illness was carefully inquired into on as to obtain a complete historical background of case.

Investigations like urine examination, complete blood picture, ESR, blood urea, serum creatinine, blood sugar, serum electrolytes and chest x-ray examination have been carried out. Special investigations like electrocardiogram, echo cardiogram, and thyroid profile were done. Whenever necessary blood for culture and sensitivity, CT brain in case of stroke was taken. The electrocardiogram was studied to assess the valvular lesions, MVA in mitral stenosis cases, and enlargement of chambers particularly the left atrium size.

IV. RESULTS

The percent of study consists of 50 cases of which there were 32 females (64%) and 18 males (36%), showing female predominance. Their age ranging from 21-80years with mean age of 52.4+/- 13.2 years. The main complaints were SOB, pedal edema, palpitations, chest pain, hemoptysis, and stroke.

Table 1: Presenting symptoms in atrial fibrillation cases

Complaints	No. of cases	percentage
SOB	41	82
Pedal edema	20	40
Palpitations	10	20
Chest pain	4	08
haemoptysis	2	04
stroke	3	06

In this study RHD is (70%) is the most common cause which is followed by IHD(6%), HOCM(6%), HTN(4%), Pericarditis(4%), Ebstein's Anomaly(4%), Lone AF(2%). Etiological incidence shows that female preponderance for RHD, while HTN, IHD and Ebstein's anomaly are equally found in both males and females. Pericarditis, DCM, lone AF are seen in males.

Table 2: etiological incidence in AF cases

S.no.	Disease	No. of cases	Percentage
1	RHD	35	70
2	HTN	2	4
3	IHD	3	6
4	HOCM	3	6
5	Pericarditis	2	4
6	DCM	1	2
7	Ebstein's anomaly	2	4
8	Lone AF	1	2

A. VALVULAR AFFECTION IN RHD CASES

Table 3 shows mitral stenosis is the most common lesion. Out of 35 cases 31 cases have MS (88.57%) from mild to severe variety in isolation and combination with other valve disease. Second isolated cause is MR (41%). Isolated MS cases are 10, isolated MR cases are 4, majority of patients have combined valvular lesions MS+MR, MS+MR+AR, MS+AR, MS+MR+AS.

Table 3: Valvular affection in RHD Cases

Valve	No. of patients	Percentage
MS	10	28.5
MR	4	11.42
MS+MR	6	17.14
MS+MR+AR	6	17.14
MS+AR	4	11.42
MS+MR+AS	6	17.14

B. Mitral valve area in AF patients

In this study MVA ranges from 0.5 to 3 Sq. cm. Most of the cases have <1 cm². The MVA in isolated cases of MS is less compared with combined valvular lesions.

Table 4: Mitral valve area in AF patients

Mitral valve area	No. of patients	Percentage
<1 cm ²	12	55
1.1-3cm ²	20	30
>3 cm ²	18	15

C. LA size

The L.A size ranges from 3 cm to 4 cm. Most of the cases L.A size between 4-5 cm (56%). Large L.A commonly associated with regurgitate valvular lesions.

Table 5: LA size in 50 cases

LA size	No. of patients	Percentage
< 4 cm	12	24
4-5 cm	34	85
>5 cm	6	15

D. ECG changes

1. Rate

The heart rate ranges from 76-180 bpm. Most cases showed tachycardia, among those cases 30% showing heart rate >150 bpm. RHD cases which are presenting with CHF showing tachycardia with HR >150 bpm.

Table 6: Ventricular rate in atrial fibrillation

Ventricular rate	No. of patients	Percentage
≤ 100	10	20
100 – 150	25	50
≥150	15	30

2. QRS axis

Table 7: QRS axis in AF cases

ECG	QRS axis
Normal	22
RAD	20
LAD	8

E. Ventricular hypertrophy

RVH was seen in 30 cases (62%) while LVH was seen in 10 cases (20%). Most cases of RHD showed RAD & RVH where as HTN & HOCM cases showed LVH.

F. Complications

CHF is most common complication (48%) in 50 AF cases. The incidence of angina 8% as the second common complication. Angina is seen in patient with RHD presenting with CHF and has severe pallor. Hemoptysis seen in patient with RHD with AF and 1 case occurred after starting on anticoagulation.

Table 8: Complications in 50 cases of AF

Complication	No. of patients	Percentage
CHF	24	48
Stroke	3	6
Pericarditis	2	4
Haemoptysis	4	8
angina	8	16

G. Clots in Cardiac chambers L.A / L.V

In this study out of 50 cases 8 cases (16%) have clots. Out of 8 cases rheumatic etiology seen in 6 cases, remaining cases are Ebstein’s anomaly. All patients of stroke have LA clot.

V. DISCUSSION

A. AGE AND SEX DISTRIBUTION

In present study atrial fibrillation is seen more commonly in patients after 50 yrs. According to Paul wood and Lip Gy, Golding DJ majority of people fibrillated after 50 years of age, Present study matches to it. RHD is the most common aetiology for AF in India, IHD and HTN are common in western study³. In present study female preponderance is seen, which matches to Indian studies Lok NS, Lan CP. In one Indian study males are affected more compared to females^{4,5}.

B. Clinical Presentation

In present study dyspnea (82%), pedal edema (40%), palpitations (20%) are most common presentation. Symptoms are longer duration in RHD patients while short duration of symptoms present in IHD, pericarditis and in other cases. In Lok LS, Lau CP study dyspnea (38.1%) and palpitations (42.3%) are the most common presentation.

Table 9: Etiological incidence of AF by various authors

Author	No. of cases	RHD %	IHD %	HTN %	Others %
Kanner et al (Framingham study)	98	17	10	47	---
Hinton et al 1977	333	30	51	10	10
Lok NS, Lau CP	291	17.5	---	28.9	---
LIP Gy ⁷ , Golding DJ ⁸	111	--	28.8	36.9	36.9
Present study	50	80	2	6	12

There is significant variations present in incidence of causes between first 4 and present study. The RHD is the most common cause of AF in present whereas HTN, IHD are the most common causes in western studies. In valvular heart diseases isolated MS 28.5%, isolated MR 11.42%, 17.14% MS+MR and MS+MR+AR, and for MS+MR+AS, MS+AR is 11.42%. In our study combination of lesions are common. Other causes of AF in present study are DCM 2%, Ebstein’s anomaly 4% and lone AF 2%. In other Indian studies valvular heart disease

51.51%, DCM 15.15%, HTN 8% are found to be common causes of AF^{4,5}. Apart from heart diseases thyrotoxicosis and COPD are other causes of AF.

C. MVA in RHD associated with MS

In present study MVA ranges from 0.8 sq.cm to 3 sq.cm. Most cases of AF associated with MVA are between 1 to 3 sq.cm. In present study isolated cases of MS seen in 28.57%, MS and MR seen in 11.42% cases. Patients who presented with stroke have severe MS with chronic duration of SOB. In present study severe MS cases have prolonged duration of symptoms and complicated by CHF. Isolated MS have less MVA as comparatively associated with other valvular lesions.

D. Complications in 50 cases of chronic AF

In present study CHF, stroke, angina, and Hemoptysis are the complications, among these CHF 48% is most common complication. CHF was independent and important complication and risk factor for atrial fibrillation according to framing heart study, which matches with present study⁴. Followed by angina 16%, stroke (6%), and other complications are Hemoptysis. In all patients with stroke, etiology is rheumatic and they have severe stenosis. Hemoptysis seen in 8% of cases, among these one case was presented after starting anticoagulation. Angina is seen in patients with IHD.

Left atrial clot formation found in 10% of cases in our present study. In one Indian study also found left atrial thrombus in 10.6% of cases. Patients with left atrial dimensions of more than 4 cm had sustained atrial fibrillation. In a study from Trieste, Italy, 34% of patients with chronic AF had significantly higher rates of thromboembolism⁶. In Lip GY, Golding DJ study the common complications are CHF (30.6%) and stroke (18%)^{7,8}.

VI. CONCLUSION

AF is the most common presentation seen in more than 50 yrs age group people, which matches to western studies. But atrial fibrillation most common etiology is RHD despite of improving level of education and life expectancy in Indian citizens. Other causes like HTN, IHD are common in old age group. Pericarditis leading to atrial fibrillation found in young age group. Females are affected more commonly in RHD cases. Congestive heart failure is the most frequent complication. Most of the cases (74%)

are associated with large left atrial size 4cms.

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