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A study of clinical profile of atrial fibrillation and its transthoracic echocardiography presentation a cross sectional study at a tertiary care hospital

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Abstract

Introduction: Atrial Fibrillation is the most commonly encountered irregular heart beat (arrhythmia) in our population. Its prevalence though less than 1 % in general population below 65 years old, its incidence and prevalence is in increasing trend. Initially asymptomatic in due course they will land up with lot of complications. Echocardiography is useful to find out the causes for development of atrial fibrillation and various echocardigraphic parameters predicts risk for future development of atrial fibrillation and complications associated with atrial fibrillation.

Methodology: 100 patients with atrial fibrillation were analysed. Evaluation regarding etiology of AF is done by using ECG and Transthoracic echocardiogram, Chest radiograph were done in all patients. Thyroid Function tests were done only for 'at risk' cases and those who are presenting with signs and symptoms of hyperthyroidism.

Results: Out of 100 total patients 68 were females, 32 were males. The number of patients with RHD were 77, and the remaining 23 cases had Non RHD etiological factors.

Conclusion: Most common symptom in our study was palpitation. Most common etiology was Rheumatic heart disease with Mitral stenosis. Few Patients with severe MS presented with LA clot.

Keywords: atrial fibrillation, clinical profile

Introduction

Atrial Fibrillation is the most commonly encountered quivering or irregular heart beat (arrhythmia) in our population, and it is the disordered supraventricular atria) event characterized by irregular heart rhythm, there by altered atrial electrical and mechanical function will occur, it will lead to significant economic burden to the society by causing morbidity and mortality.

Its prevalence though less than 1 % in general population below 65 years old, its incidence and prevalence is in increasing trend. Male sex is the risk factor compared to female sex and moreover its incidence and prevalence more in males than females, females develop atrial fibrillation later in life when compared to male sex. White people are more affected than Black People.

Most of the of patients are initially asymptomatic due course they will land up with lot of complications, limiting their day today activities. Because of the abnormality in atrial activity there is abnormal atrial systolic event leading to ventricular dysfunction with reduced output, formation of thrombus in atrium leading to cerebro vascular accident and thrombo embolic events. Pathophysiology of atrial fibrillation remains in controversy, but lots of theories have been proposed like" "mother rotor theory", "multiple wavelet theory".

There are so many diseases are contributing to the development of atrial fibrillation among them Rheumatic valvular heart disease, Systemic hypertension, Ischemic heart disease are very important. Smoking and alcohol consumption are risk factors adding to the development of this dysrhythmias.

There are different types atrial fibrillation causes can be defined, but in undetermined or Lone AF no cause can be found.

Different diseases contributing to atrial fibrillation will appear at different ages, atrial fibrillation appearing because of valvular heart disease appears earlier than other diseases contributing to the development of atrial fibrillation.

ECG Shows irregular rhythm with normal or rapid rate, absent P waves, normal QRS Complex. Main treatment modality is pharmacological, non pharmacological treatment options reserved for some patients. Newer drugs and Approaches under study.

Investigations are done to find out causes for atrial fibrillation and guide the clinicians for treatment strategies. Echocardiography is useful to find out the causes for development of atrial fibrillation and various echocardigraphic parameters predicts risk for future development of atrial fibrillation and complications associated with atrial fibrillation.

2. Methodology

100 patients with Atrial fibrillation were analysed in this study. Patient's age, sex, clinical symptoms and past history of Systemic Hypertension, Rheumatic heart disease, Coronary Artery Disease, chronic obstructive pulmonary disease, Hyperthyroidism, Cardiomyopathy, Congenital heart disease, Stroke, and treatment history, were taken in to account.

Diagnosis of atrial fibrillation was done by absent P waves, fibrillatory (F) waves, irregularly irregular ventricular rate in ECG were taken as the evidence for AF.

Evaluation regarding etiology of AF is done by using ECG and Transthoracic echocardiogram, Chest radiograph were done in all patients.

For the history of Rheumatic heart disease H/O Rheumatic fever in the past with, migratory joint pain with no residual deformity were included, and confirmed by ECHO.

Diagnosis of Systemic hypertension was made by blood pressure with systolic BP > 140 mmHG and /or Diastolic BP > 90mmHG.

Presence of 'T' wave inversion and Significant Q waves in ECG, Regional wall motion abnormality in ECHO were taken as evidences for coronary artery disease.

COPD was diagnosed by using history of chronic cough and history of smoking, Chest radiograph, ECG, Transthoracic ECHO.

Thyroid Function tests were done only for 'at risk' cases and those who are presenting with signs and symptoms of hyperthyroidism. History of smoking and Alcohol were asked in all patients.

a) Inclusion criteria

- Patients aged more than 18yrs,
- Patients with clinically and electrocardiographically proven atrial fibrillation and
- Hemodynamically stable patients.

b) Exclusion criteria

- Patients with atrial arrythmias other than atrial fibrillation and
- Hemodynamically unstable patients.

3. Results

Out of 100 total patients 68 were females, 32 were males. Rheumatic heart disease was the most common cause of AF in our study, systemic hypertension was the second most common cause for AF. In our study the number of patients with RHD were 77, and the remaining 23 cases had Non RHD etiological factors.

In our study isolated MS was present in 76 patients with RHD, and 1 patient with isolated MR, out of 76 patients, mild MS was present in 66 patients, and the remaining 10 cases presented with severe MS.

Thus rheumatic mitral stenosis was the most common cause of AF in our study with more female preponderance.

Few Patients with severe MS presented with LA clot. We detected LA Clot only in a very few patients with AF because TTE has low sensitivity of detecting LA clot.

Table 1: Prevalence of symptoms

S. No	Symptoms	Prevalence
1.	Shortness of breath	66%
2.	Chest pain	35%
3.	Palpitation	72%
4.	Syncope	6%
5.	Fatigue	28%
6.	Limb weakness	1%

Predominant symptom was palpitation, which was present in about 72%, next comes shortness of breath which was present in about 66%, syncope accounted for 28%, and limb weakness was present in only about 1%. Many patients actually had multiple symptoms.

Table 2: Etiology

S. No	Etiology	Prevalence
1.	Rheumatic heart disease	77
2.	Systemic hypertension	7
3.	Coronary heart disease	4
4.	Chronic obstructive pulmonary disease	1
5.	Hyperthyroidism	2
6.	HCM	1
7.	Atrial septal defect	1
8.	Mitral valve prolapse syndrome	1
9.	Dilated cardiomyopathy	2
10.	Drug induced	1
11.	Lone or Undetermined AF	3

Rheumatic heart disease was the most common etiological factor associated with AF. The number of patients with Rheumatic heart disease were 77, and the remaining 23 cases had Non rheumatic etiological factors. The second most common factor was Systemic Hypertension in about 7, followed by CAD.

Table 3: Age distribution

			RHD		Total
			N	Y	
Age Group	< 20yrs	Count	0	1	1
		%	0.0%	1.3%	1.0%
	21-40yrs	Count	7	56	63
		%	30.4%	72.7%	63.0%
	41-60yrs	Count	10	20	30
		%	43.5%	26.0%	30.0%
	>60yrs	Count	6	0	6
		%	26.1%	0.0%	6.0%
Total		Count	23	77	100
		%	100%	100%	100%

In the <20 years age group only one (1.3%) patient present,21-40years of age group(72.7%) there were present, 41-60 years (26%), and in >60 years nil patient present. The relationship between age group versus RHD and Non RHD was found to be significant ('P'value < .05). Mean age of RHD was 36yrs and non RHD was 52yrs.

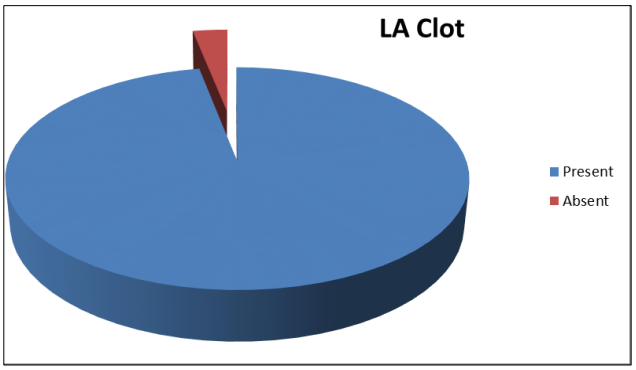

Fig 1: LA clot was present in 3% of the patients.

4. Discussion

In our study 100 patients with AF were included, the mean age of our study population for RHD 35.92, Non RHD 51.70. In Non RHD patients AF occurs older age compared to RHD patients they were presented in younger age.

Females were more in number than males. Out of 100 total patients 68 were females 32 were males. In general male

patients are more affected than female patients in AF but in our study female patients are more affected, since main etiology for AF in our study is RHD, this results conforms with the previous study by Dushyant S., *et al*.

Flaker, Greg C., *et al*. study 70 shows 78% of the patients with 'SOB' and 11% of them were with chest pain, Tischler *et al*. study75 shows 'SOB' in 62% of patients,' palpitation' in 33% patients, and' syncope' in 12% patients, but in 85 our study predominant symptom was palpitation, which was present in about 72%, next comes shortness of breath which was present in about 66%, syncope accounted for 28%,and limb weakness was present in only about 1%.Many patients actually had multiple symptoms. In our study only shortness of breath, that is, without the other mentioned symptoms, was present in 11%. Only chest pain was present in 5%, only palpitation in 14%, only fatigue in 3%, and only limb weakness in 1%. Syncope in our study group was always present along with at least one another symptom. Only syncope, without another of the mentioned symptoms, was not observed. All the other patients had combinations of two or more symptoms in varying percentages.

In our Study Rheumatic heart disease was the most common etiological factor associated with AF. It was observed in 77% of the patients. Number of patients with Rheumatic heart disease were 77, and the remaining 23 cases had Non rheumatic etiological factors. This results conforms with previous Kannel WB., *et al.* and Diker E., *et al.* studies 48, 50. The second most common predisposing factor in our study was SHT. It was present in about 7%. This is in agreement with the study by Framingham 76, who also found a significant association between SHT and AF. About 4% of the cases of AF in our study had CAD as a possible etiological factor, and this conforms with the study by Kannel WB., *et al.* and Crenshaw BS., *et al*. 48, 49.

One patient had chronic use of alcohol, and presented with a history of binge alcohol intake associated with AF. That particular case can be considered as "Holiday heart syndrome". About 2% of the cases were due to 'Hyperthyroidism', and this conforms with a previous study by Selmer C., *et al.* 58. Another 2% of the cases were due to 'Dilated cardiomyopathy' and this conforms with the study by Tsang TS., *et al*.

There were 10 patients with severe MS in our study, of whom 3 patients presented with LA clot. A statistically significant relationship was observed between severe MS and LA clot ('P'value < .05), this conforms with the study by Srimannarayana, J., *et al.* 77.

5. Conclusion

- Patients with RHD etiology presented with AF in middle age, patients with Non RHD etiology presented in older age.
- Female patients were more common then male patients.
- Most common symptom in our study was palpitation.
- Most common etiology was Rheumatic heart disease with Mitral stenosis.
- Few Patients with severe MS presented with LA clot.
- We detected LA Clot only in a very few patients with AF because TTE has low sensitivity of detecting LA clot.

6. References

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