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RESEARCH ARTICLE

CLINICO-ETIOLOGICAL PROFILE OF ATRIAL FIBRILLATION IN A TERTIARY CARE HOSPITAL

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Key words:-
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Abstract

Background And Objectives: Atrial Fibrillation is one of the frequently encountered arrhythmia in our population. This also has a significant effect on economic burden to the society by causing both morbidity and mortality. This study is intended to find out the varied presenting symptoms of AF and also possible underlying predisposing factors- cardiac and non-cardiac in Indian context.

Methods: This is a cross-sectional study done over 1 year. All patients above the age of 18 with clinically proven new onset AF and hemodynamically stable were enrolled after obtaining their informed consent. Any arrhythmia other than AF or with hemodynamic instability was excluded. All the demographic characteristics, past history, presence of co morbid illness were noted. Basic blood panel with thyroid profile were obtained. Trans thoracic echo with M-mode and colour doppler was done for every patient. The collected data were analysed with IBM.SPSS statistics software 21.0 Version. For descriptive data, frequency and percentage analysis were used.

Results: In our study 63% of patients were females. Most common age group was 41-60 years. Rheumatic heart disease was the most common cause of AF in our study, Systemic hypertension was the second most common cause for AF.CAD was seen in 17 cases, diabetes in 22 cases and COPD in 13 cases Breathlessness was the most common complaint followed by palpitation. Cardiac failure was seen in 37 % of cases while ejection fraction was decreased in 29 patients. Uncontrolled heart rate or tachycardia was seen in 49 % of patients. Coming to ECHO findings, increased LVIDd was seen in 30 patients. Regional wall motion abnormality was seen in 15 % of patients in our study group. Increased left atrial size – the most common ECHO finding seen in atrial fibrillation was present in 61 patients while increased right atrial size was seen in 26 patients.

Conclusion: Rheumatic heart disease was the most common aetiology followed by dilated cardiomyopathy in our patients. Breathlessness was the most common presentation, complete echocardiographic evaluation is valid in these patients for etiological evaluation and follow up.

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Introduction:-

Atrial Fibrillation is one of the frequently occuring arrhythmia (weak or irregular heart beat) in our population. Echocardiography is beneficial in finding out the cause for development of atrial fibrillation and various echocardiographic parameters helps in predicting the risk for future development of atrial fibrillation and complications associated with atrial fibrillation. This study is intended to find out the varied presenting symptoms of AF and also possible underlying predisposing factors- cardiac and non-cardiac in Indian context.

Aims And Objectives:-

1. To study the various clinical presentations of atrial fibrillations admitted in Kanyakumari Govt. Medical College Hospital
2. To estimate the frequency of underlying heart disease in patients with atrial fibrillation
3. Echocardiographic profile of the patients with atrial fibrillation.

Materials And Methods:-

Study design:
Cross-sectional study

Study period:
One year

Study area:
Govt. Kanyakumari Medical College and Hospital.

Study population:
Patients with new onset atrial fibrillation (in patients and out patients) in Department of General medicine and Department of Cardiology, Govt. Kanyakumari Medical College and Hospital.

Ethical clearance:
Ethics committee clearance was obtained.
Consent: Informed consent obtained from all subjects.

Inclusion criteria:
Patients aged more than 18yrs, Patients with electrocardiographically proven atrial fibrillation and hemodynamically stable patients.

Exclusion criteria:
Patients with atrial arrhythmias other than atrial fibrillation and hemodynamically unstable patients.

Methodology:-

100 patients with atrial fibrillation were analysed in this study, and their general and clinical data was included in the proforma.

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 waves, irregularly irregular ventricular rate in ECG were taken as the evidence for AF.

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.

Thyroid Function tests were done only for 'at risk' cases or those who are presented with signs and symptoms of hyperthyroidism. History of smoking and alcohol were taken in all patients. Detailed clinical examination was done in all patients.

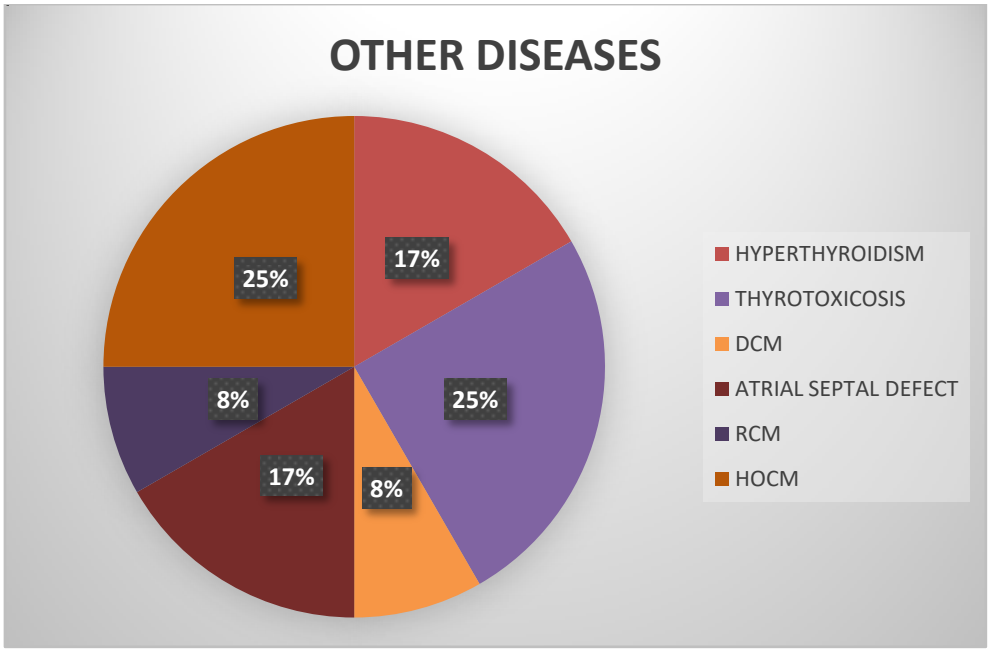
In our study, all patients were analyzed with 2D ECHO, M MODE and Colour Doppler .Tran-thoracic echocardiographic assessment also includes the search for the presence of left atrial clot.

Analysis of Data:
The different presentations of AF will be provided as % with 95% confidence interval.
The different predisposing factors will be provided as %.
The different parameters of Transthoracic Echocardiography will be provided in %.
The collected data were analysed with IBM.SPSS statistics software 21.0 Version.To describe about the data descriptive statistics frequency analysis, percentage analysis were used for categorical variables and the mean and S.D were used for continuous variables.

Results:-

Most of the patients in our study were in 41-60 age group followed by 20-40 age group. Females were more commonly seen in our study group than males with a male female ratio of 1:1.7. Among our patients 63% had past history of rheumatic heart disease, which is one of most common etiology, 17 % had past history of coronary artery disease, 29 % had history of systemic hypertension and 13 patients had past history of chronic obstructive pulmonary disease, pointing at the various etiological diagnoses. 22% of the patients had history of diabetes mellitus. 9 % patients had history of other diseases in our study group which is described in chart 1.

Chart 1:- Other associated diseases.



Among our study group patients had other diseases like thyroid disorders, cardiomyopathies and ASD.

Among our study group most common presenting complaints was breathlessness followed by palpitation. Chest pain was seen in 26 patients and pedal edema in 35 patients. In our study patients 32% of patients presented with single complaint and 32 patients with two complaints where as the rest of patients presented with more than 2 complaints.

PRESENTING COMPLAINTS	NO OF PATIENTS	PERCENTAGE
PALPIATATION	53	53%
CHEST PAIN	26	26%

BREATHLESSNESS	78	78%
PEDAL EDEMA	35	35%
GIDDINESS	6	6%
WEAKNESS OF LIMB	7	7%
OTHERS	4	4%

Table 1:- Presenting complaints.

In our study group 25% of patients had some sort of personal habits like smoking and alcohol intake.16% of the patients were smokers and 19% of the patients had history of alcohol intake. In our study patients around 37 patients had symptoms of cardiac failure with different ranges of ejection fraction.

Around half of patients in our study (n=49) uncontrolled heart rate or tachycardia while rest had normal rate and only two patients had bradycardia. Abnormal blood pressure, either high (n=32) or low (n=22) was seen in 54 patients while the rest had normal blood pressure. In our study group Left ventricular internal dimension during diastole was abnormal or increased in 30 patients among whom the increase was mild in 22 patients and moderate in 8 patients. In our study group decreased ejection fraction was seen in 29 patients among which 16 patients had mild decrease, 10 patients had moderate decrease and 3 had severe reduction.

Regional wall motion abnormality was seen in 15 patients in our study group.

Left atrial size was increased in 61 patients among which it was mildly increased in 41 patients, moderately increased in 14 patients and severely increases in size in one patient.

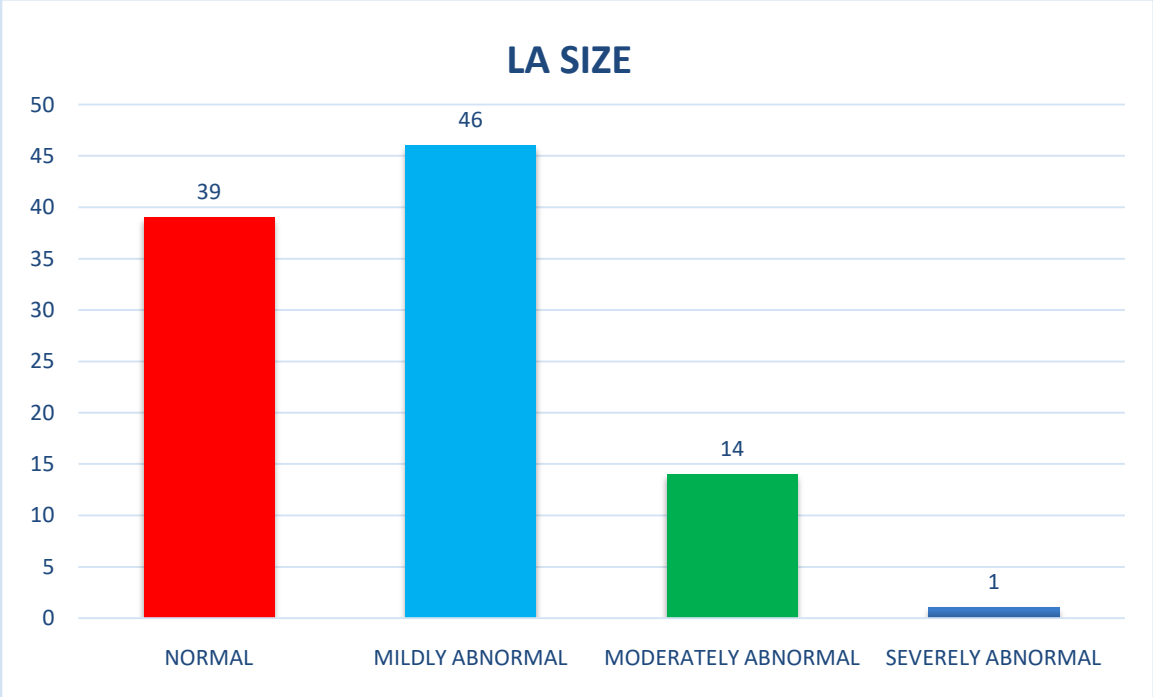


Chart 2:- Left atrial size.

Right atrial size was increased in 26 percent of patients in our study group
Left atrial clot was seen in only 2 patients in our study group.

Discussion:-

In our study, 100 patients who satisfied the inclusion and exclusion criteria with atrial fibrillation were included. Our study population were mostly in 41-60 year group. Both the Framingham Heart Study[1] and the Rotterdam Study[2] estimated that the lifetime risk of development of AF in adults >40 years and at the age of 55 years respectively to be approximately 1 in 4. Novel risk factors for AF in young age are increasingly being discovered such as genetic

causes, lifestyle factors (such as alcohol consumption, personality traits, and smoking), body mass index, and physical activity. A decreased mean age in our study may be due to above associated factors among patients in our study.

In our study females were more in number than males. This could be because of the increased prevalence of rheumatic heart disease which has increased preponderance to females, was similar to study done by Dushyant S., et al[3].

Among our patients 63 percent had past history of RHD and on treatment for the same. These results are similar to previous studies done by Kannel WB., et al[4] and Diker E., et al[5]. One-fourth of patients with rheumatic valvular heart disease have Atrial Fibrillation (AF).

The second most common predisposing factor in our study was systemic hypertension. Around 29 patients had history of treatment for SHT. This is similar to a study by Framingham, who also found a significant association between SHT and AF. Both conditions are associated with aging and often coexist.[6] In some studies, up to 90% of AF patients are observed to be hypertensive. Beyond the direct relations between AF and HTN, HTN is also associated with other cardiovascular co morbidities that increase risk for AF, including coronary artery disease, heart failure, metabolic syndrome, chronic kidney disease, and sleep apnoea. Higher pulse pressure has also been shown to increase the risk of developing AF[7]. In a prospective study involving Framingham Heart Study and offspring participants, each 20 mm Hg increase in pulse pressure was associated with a 24% increased risk of AF over a 20-year follow-up. This suggests that increased pulse pressure may be an independent predictor of arterial stiffness and capture an additional modifiable AF risk element distinct from systolic hypertension[7].

Also about 17 patients with AF in our study had CAD as a possible etiological factor, and this conforms to the study by Kannel WB[4]., et al and Crenshaw BS[8]., et al. The prevalence of CAD in patients with AF is from 17% to 46.5% which is similar to our study while the prevalence of AF among patients with CAD is low and it is estimated from 0.2% to 5%.

In our study group around 22 patients had history of treatment for diabetes mellitus and 13 patients had past history of COPD. COPD is not only an independent predictor for major adverse cardiac events but also a predictor of AF incidence[9]. The rate of AF incident was inversely associated with forced expiratory volume in one second (FEV1).

Among other diseases associated in patients with atrial fibrillation in our study group, thyroid disorders were seen in 5 patients(hyperthyroidism -2 & Thyrotoxicosis -3). AF occurs in up to 15% of patients with hyperthyroidism compared to 4% of people in the general population and is more common in men and in patients with triiodothyronine (T3) toxicosis. The incidence of AF increases with advancing age. Also, subclinical hyperthyroidism is a risk factor associated with a 3-fold increase in development of AF.

Different types of cardiomyopathy was seen in around 5 patients (HOCM-3, DCM-1 & RCM 1), Increased left atrial size and volume along with impaired left atrial function confer an increased likelihood of AF. Atrial septal defect was seen in a solitary patient.

Coming to presenting complaints a previous study done by Flaker, Greg C.[10], et al study showed 78% of the patients with breathlessness and next common presentation was chest pain. Similarly another study done by Tischler et al[11] showed breathlessness in 62% of patients, palpitation in 33% patients, and giddiness in 12% patients. In our study predominant symptom was breathlessness similar to above studies with 78 patients presenting with breathlessness followed by palpitation in 53% cases. Other common symptoms were chest pain (n=26) and pedal edema (n=35). Giddiness was seen only in six patients, weakness of limb in seven patients.

Most of the patients actually had multiple symptoms. In our study 32 patients presented with single complaints, while patients who had two complaints were also 32. Rest of 36 patients presented with two or more complaints.

In our study personal habits like smoking and alcohol intake was seen in around 25% of cases. Cigarette smoking and excessive drinking are important risk factors for incidence of AF.

Cardiac failure was seen in 37% of patients in our study group. In our study 29 patients had reduced EF. Presence of such abnormal EF (LV systolic dysfunction) independently predicts the risk of stroke shown by study on atrial fibrillation by researchers[10]. The reported prevalence of AF in heart failure series ranges from 13% to 27%. In the Framingham Heart Study, 26% of patients developed both AF and heart failure. Moreover, the prevalence of AF increases with the severity of heart failure. These results are similar to our study.

Further we evaluated the transthoracic echocardiographic finding in all patients of our study group

The left ventricular internal dimension during diastole was increased in 30 % of patients in our study group. Increased LV size as detected by echocardiography is a strong independent predictor of cardiovascular morbidity, especially in hypertensive men. .

Almost 61% of our patients had abnormal sized left atrium. Occurrence of AF is known to correlate with LA size; the incidence of AF rises from 3% when the left atrial diameter is < 40mm to 54% if the left atrial diameter is > 40 mm[12]. LA enlargement itself is an important risk factor for incident AF, and is related to increased stroke risk[13].

Conclusion:-

In our study we found that rheumatic heart disease was found to be the most common cause of atrial fibrillation followed by dilated cardiomyopathy. Females were more affected as compared to males. Common presentations were shortness of breath, palpitations. Commonest finding in ECHO was increased left atrial size. A complete echocardiographic evaluation is must in patient diagnosed with atrial fibrillation which helps in etiological diagnosis.

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