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Study of Atrial Fibrillation in Rheumatic and Non-Rheumatic Heart Disease Patients in Tertiary Care Centre

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Abstract: ***Atrial fibrillation is the most common sustained arrhythmia and is increasing as a major public health concern worldwide. Although its prevalence is set to increase owing to the increase in the elderly population, incidence is higher in countries with a high prevalence of Rheumatic Heart Disease (RHD), contributing to significant morbidity and mortality in a relatively young population. A cross sectional study of 126 samples, selected by non-probability convenience sampling method and who met the designed set of criteria, was conducted. In this study, RHD was the major etiological factor for Atrial Fibrillation in 79.37% of cases. Among RHD cases, 66% were females and 34% were males. There was no significant correlation between variables as P>0.05. In spite of increasing prevalence of various other cardiovascular risk factors and comorbid conditions, rheumatic heart disease, is a major etiological factor of Atrial Fibrillation in this study, especially in females.***

Keywords: atrial fibrillation, rheumatic heart disease, non-rheumatic heart disease

1. Introduction

Atrial fibrillation (AF) is the most common arrhythmia and was first demonstrated on electrocardiography more than a century ago[1]. It is the commonest sustained cardiac arrhythmia which a physician comes across during his course of study and medical practice. It is found in association with various types of diseases, cardiac as well as extra cardiac and sometimes as “lone phenomenon” [2]-[3].

Clinically AF does not directly cause death but rather causes disorders (such as heart failure or stroke) that indirectly lead to an increased mortality risk [4].Patients who have been diagnosed with atrial fibrillation have a five-fold increased risk of stroke compared to those without atrial fibrillation thus making it a public health problem[5]. Although the effect of AF on the quality of life and survival has been well documented in the western population, similar data on incidence, prevalence, etiology, mortality and morbidity in the Indian population are limited [5].

The most dreaded complication of AF is stroke/ thromboembolic events, the annual incidence of such an event in non-valvular AF is 4% per year as compared to 17-18% per year in patients with rheumatic AF. Hence, demonstrating increased morbidity and mortality translating to further increase in the economic burden on the national resources [6].

India is witnessing an increase in the burden of patients with AF due to increased longevity, higher prevalence of cardiovascular risk factors and comorbid conditions[7]-[8]. Thus, there is special interest to study atrial fibrillation in both rheumatic and non-rheumatic heart disease patients.

Accompanying the aging of populations worldwide, and increased survival with chronic diseases, the incidence and prevalence of atrial fibrillation (AF) are rising, justifying the term global epidemic [9].

2. Material and Methodology

A cross sectional study conducted in the department of Medicine in tertiary care hospital from 2018-2020. The study was conducted after formal approval of institutional ethical committee. Total 126 samples were selected by non-probability convenience sampling method and who met the designed set of criteria. Informed written consent was taken from patients.

Inclusion criteria:
a) Patient with clinically and electrocardiographically diagnosed atrial fibrillation
b) Patient having age more than 12 years

Exclusion criteria:
a) Patient having age less than 12 years
b) Patient having arrhythmias other than atrial fibrillation
c) Patient not willing to participate

Clinical grounds for inclusion:
Patient’s gender, history of coronary artery disease, systemic hypertension, congenital heart disease, thyroid disorder, chronic obstructive pulmonary disease and pericardial disease were taken into account.

The following features were noted:
a) Irregularly irregular pulse

b) Pulse deficit > 10 calculated by simultaneous counting of pulse rate and heart rate by 2 observers
c) Absent 'a' wave in jugular venous pulsation
d) Variable intensity of first heart sound on auscultation

ECG Recording

12 lead ECG was taken for all the cases with a standardization of 1mV= 10 MM, with the paper speed at 25mm/sec. The following features were noted:

a) Absence of P wave
b) Atrial activity reflected by an irregularly corrugated deflection 'f' wave.
c) Atrial rate >350/min
d) Irregularly irregular RR interval

Once patient was enrolled after taking necessary consent, the patient was thoroughly interviewed, examined and investigated by the investigator. Detailed history of illness and thorough general and systemic examination findings were recorded.

On analysis of data, observations were noted and results were formulated.Level of significance, "P" value, was evaluated, where P value < 0.05 was considered statistically significant.

3. Results and Discussion

In the present study of 126 patients, maximum numbers of patients were having Rheumatic Heart Disease, that is, 100 (79.37%). Also, it was found that most cases were in the age group of 41-60 years. The mean age was found to be 48.83 ± 14.75.

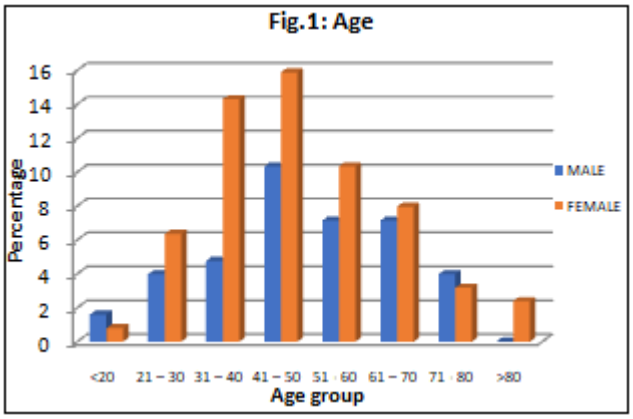


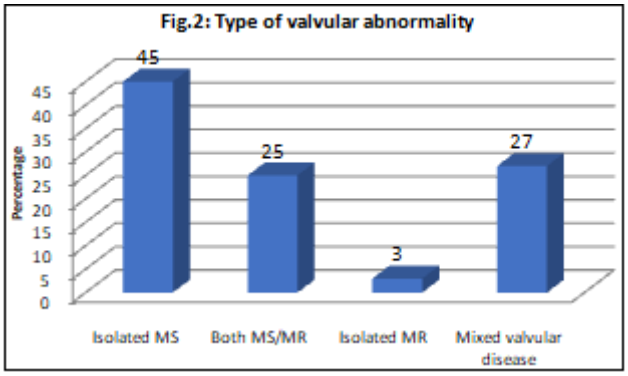
Table 1: Distribution of RHD and Non-RHD in study population, n = 126

Gender	RHD	Non-RHD	Total	p value
Male	34 (26.98%)	15 (11.91%)	49 (38.89%)	0.079
Female	66 (52.38%)	11 (8.73%)	77 (61.11%)	NS
	100 (79.37%)	26 (20.64%)	126	p>0.05

NS: Not significant

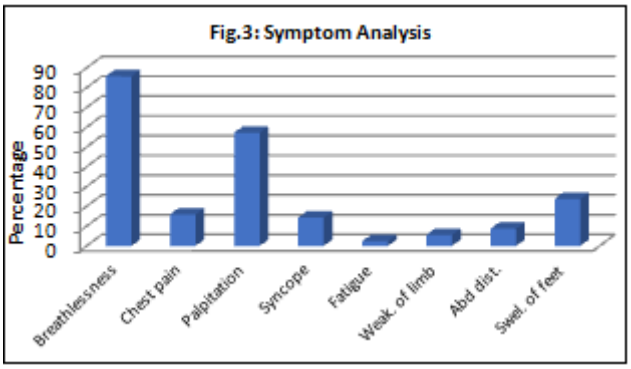
Furthermore, data reveals that in RHD cases maximum were females 66(52.38%) followed by males 34 (26.98%).Female to male simplified ratio was approximately 11:7.There was no significant correlation between RHD & non RHD related to gender as p>0.05.

Among the RHD cases most of them had isolated MS (45%) followed by mixed valvular disease in 27 %, both MS/MR in 25% and 3 % had Isolated MR.



In this study, maximum number of patients 89 (70.63%) had pulmonary hypertension followed by Heart failure in 36 (28.57%) and LA clot in 8 (6.35%).

Commonest symptom observed was breathlessness in 108 (85.71%) followed by palpitation in 72 (57.14%), swelling of feet in 30 (23.80%), chest pain in 20 (15.87%), syncope in 18 (14.29%), weakness of limb in 07 (5.56%) and the remaining were fatigue 3 cases (2.38%). Furthermore, data also reveals that patients have single or multiple symptoms. Most of RHD patients 97 (97%) discharged from hospital and 03 (3.00%) patients died during course of treatment. Further data shows no association between prognosis and RHD cases as p>0.05.



4. Discussion

In this study, Rheumatic Heart Disease was the most common etiological factor associated with AF. It was observed in 79.37% of the patients. The numbers of patients with Rheumatic Heart Disease were 100 and the remaining 26 cases had Non-Rheumatic etiological factors. These results correlate with previous Kannel WB. et.al.[10] and Diker E. et.al.[11] studies. Study by Morin DP. et.al.[12]concluded in their study that 70% of their population had RHD as the etiology.

Non-Rheumatic etiologies observed werecoronary artery disease, systemic hypertension, congenital heart disease, thyroid disorder, chronic obstructive pulmonary disease and pericardial disease

In a prospective, population-based cohort study (Rotterdam Study) demonstrated that COPD is associated with a 28%

increased risk of developing AF, and that having frequent COPD exacerbations increases the AF risk approximately 2-fold[13].

According to the Framingham study[14] half of the cases were accounted by hypertension andin AFFIRM study it was present in 71% of cases[15]. In the AFFIRM[15] study, CAD was present in 38% of the cases. Sameul Levy et.al.[16] reported 16.6% of CAD as the underlying cause of AF. Most of previous studies indicate that AF was commonly seen in RHD cases.

5. Conclusion

In spite of increasing prevalence of various other cardiovascular risk factors and comorbid conditions, Rheumatic Heart Disease, is a major etiological factor of Atrial Fibrillation in this study, especially in females.

6. Future Scope

This multifactorial arrhythmia is intertwined with common concomitant cardiovascular diseases, which share classical cardiovascular risk factors [9]. The logical future direction at this stage is to conduct longitudinal epidemiological studies to have a proper estimate of the burden of AF in India. It is equally important to educate and increase awareness among both the caregivers and the recipient patients [6].The public health dimension of AF motivates research in modifiable AF risk factors and improved precision in AF prediction and management[9]. Evaluations of the overall public-health burden of AF with emphasis on Rheumatic AF and the formulation of a national consensus policy are a much-desired need [6].

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