



ETIOLOGICAL PROFILE OF PATIENTS WITH ATRIAL FIBRILLATION WITH SPECIAL REFERENCE TO VALVULAR HEART DISEASES.

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ABSTRACT

Background : Atrial fibrillation is the most commonly encountered quivering or irregular heart beat (arrhythmia) in our population and it is the disordered supraventricular (atrial) event characterised by irregular heart rhythm, thereby altered atrial electrical and mechanical function. Atrial fibrillation often influences the quality of life as atrial fibrillation may be associated with disability, anxiety, cognitive impairment, chest pain, hospitalization and even absence from work. Many diseases have been implicated to the development of atrial fibrillation; amongst which Rheumatic valvular heart disease, systemic hypertension, ischemic heart disease, thyroid disease is very important. Alcohol and smoking add up to risk factors leading to development of atrial fibrillation. Although various studies had been reported from different parts of the country, not much clinical data is available on etiological and clinical profile of Atrial fibrillation in north eastern part of the country hence this study has been undertaken. **Materials and Methods:** In this Hospital based observational Study conducted in the department of Medicine, Jorhat Medical College and Hospital, Jorhat, Assam among 90 patients etiology of valvular and non-valvular atrial fibrillation was taken into account. **Results:** In our study, mean age of study population was 46.5 ± 5.09 years, for valvular etiology mean age 34.8 ± 2.05 years, for non valvular mean age 51.64 ± 3.08 years. 55.57% of study population were males, 44.43% were females. Valvular atrial fibrillation was found in 30% cases, non valvular etiology found in 70% cases.

KEYWORDS :

Introduction:

Atrial fibrillation is the most commonly encountered quivering or irregular heart beat (arrhythmia) in our population and it is the disordered supraventricular (atrial) event characterised by irregular heart rhythm, thereby altered atrial electrical and mechanical function. Although the presence of atrial fibrillation in general population (less than 65 years) is only less than 1% but presently the prevalence is in increasing trend.¹

Atrial fibrillation often influences the quality of life as atrial fibrillation may be associated with disability, anxiety, cognitive impairment, chest pain, hospitalization and even absence from work.²

Many diseases have been implicated to the development of atrial fibrillation; amongst which Rheumatic valvular heart disease, systemic hypertension, ischemic heart disease, thyroid disease is very important. Alcohol and smoking add up to risk factors leading to development of atrial fibrillation. Study conducted in Genoa in 2021 found hypertensive heart disease in (22%-36%), coronary heart disease in (14%- 32%), valvular heart disease in (12%- 26%), cardiomyopathy in (6%-10%) as the etiological cause of atrial fibrillation.⁴

Whereas another study from India reported Rheumatic heart disease, hypertensive heart diseases, degenerative valvular heart disease as the major causes of atrial fibrillation.⁵

Although various studies had been reported from different parts of the country, not much clinical data is available on etiological and clinical profile of Atrial fibrillation in north eastern part of the country hence this study has been undertaken.

Aim and Objectives

AIM: To study the etiological profile of atrial fibrillation with special reference to valvular heart disease.

OBJECTIVES:

1. To study the etiological profile of atrial fibrillation.

2. To compare the etiological profile in valvular and nonvalvular atrial fibrillation.

Materials and Method

A Hospital based observational Study was conducted in the department of Medicine, Jorhat Medical College and Hospital, Jorhat, Assam from July 2021- June 2022. Patients aged more than 12 years, hemodynamically stable with clinically and electrocardiographically proven atrial fibrillation were included in the study. A total of 90 patients fulfilling the inclusion and exclusion criteria were included in the study. Hemodynamically unstable patients and Patients aged less than 12 years were excluded from the study.

Proforma for recording history, physical examination and investigation, Laboratory Tools (Conventional 12 lead ECG with rhythm strip, transthoracic echocardiographic examination, chest radiograph), Laboratory Investigations (complete blood count, renal function test, Lipid profile, blood glucose levels- fasting and post prandial, thyroid function test) were taken as data collecting tools.

Statistical Analysis:

All data were compiled and entered in Microsoft excel and was analyzed for corrections. Further the corrected data was evaluated using SPSS 21 and the results were obtained in the form of percentage and frequencies.

Results and Observation:

The Age ranged from 16 to 80 years. 40 patients belonged to 50-59 years age group (44.4%), 25 patients belonged to 30-39 years age group (28%), 10 patients belonged to 40 to 49 age group (11.10%), 8 patients belonged to ≥ 60 age group (8.80%), 5 patients belonged to 20-29 age group (6%) and 2 patients belonged to 12- 19 age group (2.20%). The mean age for the patients is 46.6 ± 5.09 years, mean age for males is 51.3 ± 3.65 years, and mean age for females is 40.75 ± 3.52 years. Out of 90 patients, 50 (55.57%) were males and 40 (44.43%) were females. Highest number of males were in the age group of 50-59 years ($n=30; 33.30\%$) DEPARTMENT OF MEDICINE, JMCH, JORHAT Page | 30 while highest number of females were in the age group of 30-39 years ($n=18; 20\%$).

Table 1: Age and sex distribution of patients with atrial fibrillation

Age and sex distribution of patients with atrial fibrillation						
Age group (Years)	Male		Female		Total	
	No	%	No	%	No	%
>12 - 19	1	1.11%	1	1.11%	2	2.20%
20-29	2	2.22%	3	3.33%	5	6%
30-39	7	7.77%	18	20%	25	28%
40-49	3	3.33%	7	7.77%	10	11.10%
50-59	30	33.30%	10	11.10%	40	44.40%
≥60	7	7.77%	1	1.11%	8	8.80%
Total	50	55.57%	40	44.43%	90	100%

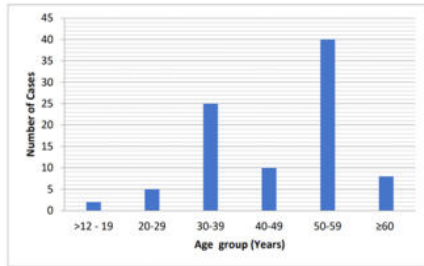


Fig. 1[A]: Age distribution of patients with atrial fibrillation

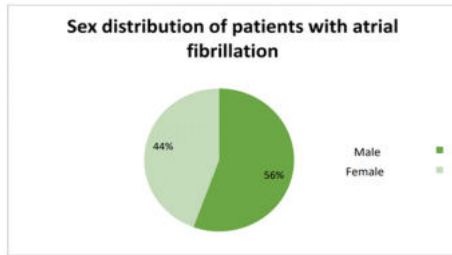


Fig. 1[B]: Sex distribution of patients with atrial fibrillation

Amongst 90 patients, hypertension was found to be the most common etiology (n=33;36.8 %), followed by rheumatic heart disease (n=27;30%), ischaemic heart disease (n=15 ; 16%), Cardiomyopathy (n=7; 7.8%), COPD(n=4;5%),hyperthyroidism (n=2; 2.2%) and Lone atrial fibrillation (n=2; 2.2%).

Table 2: Etiology of atrial fibrillation

Etiology of atrial fibrillation		
Etiology	Number of Patients	Percentage(%)
RHD	27	30
IHD	15	16
HTN	33	36.8
COPD	4	5
CMP	7	7.8
THY	2	2.2
LONE AF	2	2.2
TOTAL	90	100%

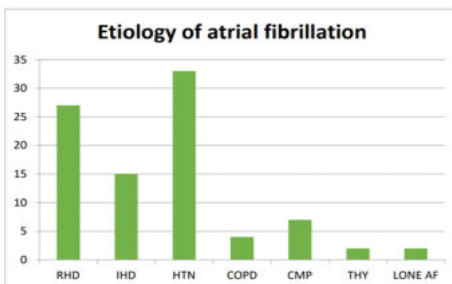


Fig.2: Etiology of atrial fibrillation

Amongst 27 cases of valvular atrial fibrillation, isolated mitral stenosis was present in 16 number of cases (59.26%), followed by mitral stenosis with mitral regurgitation in 8 number of cases (29.63%), followed by mitral stenosis with mitral regurgitation with aortic

regurgitation in 3 number of cases (11.11 %).

Table 3: Rheumatic valvular Atrial fibrillation

Rheumatic valvular Atrial fibrillation		
Valvular lesions	Number of Patients	Percentage %
MS	16	59.26%
MS+MR	8	29.63%
MS+MR+AR	3	11.11%
Total	27	100%

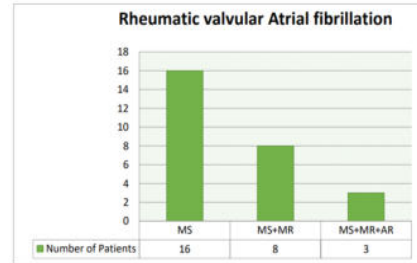


Fig.3: Rheumatic valvular Atrial fibrillation

Among 63 cases of non valvular atrial fibrillation, hypertension was the most common etiology (n=33;52.38%), followed by ischaemic heart disease (n=15; 23.8%), cardiomyopathy (n=7; 11.11%), COPD (n=4;6.3%) hyperthyroidism and lone atrial fibrillation in 2 cases each(3.17%).

Table 4: Etiology of Non Valvular atrial fibrillation

Non Valvular atrial fibrillation		
Etiology	Number of Patients	Percentage(%)
IHD	15	23.8
HTN	33	52.38
COPD	4	6.3
CMP	7	11.11
THY	2	3.17
LONE AF	2	3.17
TOTAL	63	100%

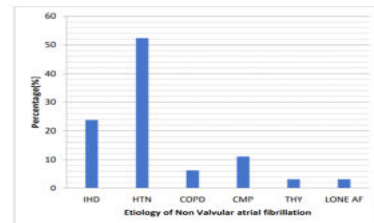


fig.4: Etiology of Non Valvular atrial fibrillation

Among 27 cases of valvular atrial fibrillation, 20 cases were in the age group of 30-39 years (74.00%), 4 cases in the age group of 40-49years (14.80%), 3 cases in the age group of 20-29years (11.10%). The mean age for valvular atrial fibrillation is 34.8±2.05 years. Among valvular atrial fibrillation 7 cases were males (26%), while 20 cases were females (74%).

Table 5: Age and sex distribution of Valvular AF

Age and sex distribution of Valvular AF					
Age group (Years)	Male		Female		Total
20-29	1	3.70%	2	7.40%	3
30-39	3	11.11%	17	62.90%	20
40-49	3	11.11%	1	3.70%	4
Total	7	26%	20	74%	27

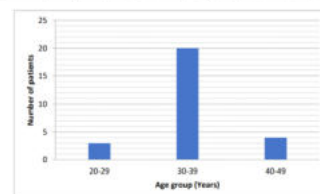


Fig.5[A]: Age distribution of Valvular AF

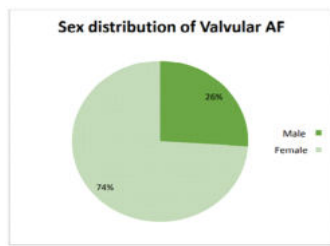


Fig.5[B]: Sex distribution of Valvular AF

Among 63 cases of non valvular atrial fibrillation ,most of the cases belonged to age group of 50-59 years (n=40;44.40%), followed by ≥ 60 years age group (n=8;8.80%), 40-49 years age group (n=6;6.66%),30-39 years age group (n=5;5.55%), 20-29 years age group (n=2;2.22%), $>12-19$ years age group (n=2;2.22%). The mean age for non valvular atrial fibrillation is 51.64 ± 3.08 years. Among 63 cases of non valvular atrial fibrillation, 43 cases were males (68.26%), 20 cases were females (31.74%).

Table 6 : Age and Sex distribution of Non Valvular atrial fibrillation

Age and Sex distribution of Non Valvular atrial fibrillation						
Age group (Years)	Male		Female		Total	
	No	%	No	%	No	%
>12 -19	1	1.58%	1	1.58%	2	3.16%
20-29	1	1.58%	1	1.58%	2	3%
30-39	4	6.34%	1	1.58%	5	8%
40-49	0	0.00%	6	9.52%	6	9.52%
50-59	30	47.61%	10	15.80%	40	63.41%
≥60	7	11.11%	1	1.58%	8	12.69%
Total	43	68.26%	20	31.74%	63	100%

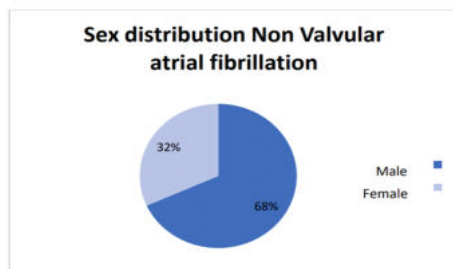
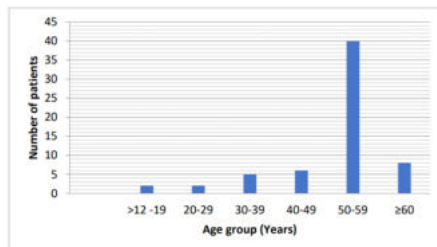


Fig.6[B] Sex distribution of Non Valvular atrial fibrillation

The mean age for valvular atrial fibrillation is 34.8 ± 2.05 years, whereas mean age for non valvular atrial fibrillation is 51.64 ± 3.08 years. Valvular atrial fibrillation is more common among females (n=20;74.07%); whereas nonvalvular atrial fibrillation is more common among males (n=43;68.25%)

Table 7: Age and sex distribution of valvular and Non valvular atrial fibrillation

Age and sex distribution of valvular and Non valvular atrial fibrillation		
Parameters	Valvular	Non valvular
Mean age	34.8 ± 2.05	51.64 ± 3.08
Sex (n)		
Male	7(25.93%)	43(68.25%)
Female	20(74.07%)	20(31.75%)

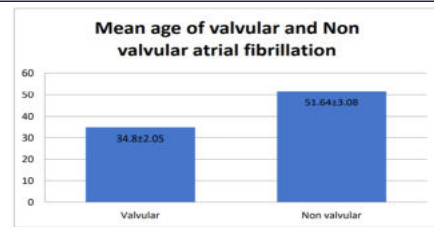


Fig.7[A] Mean age of valvular and non valvular atrial fibrillation

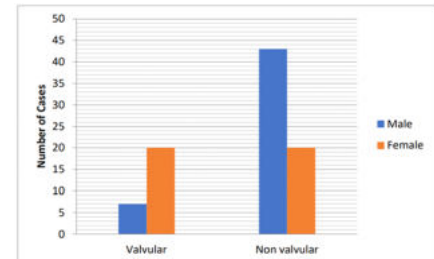


Fig.7[B] Sex distribution of valvular and non valvular atrial fibrillation

Amongst 90 cases , alcohol consumption was the most common substance habit (n=15,16.66%), followed by tobacco consumption (n=5, 5.55%).

Table 8: Substance Habit in male and female Patients with atrial fibrillation

Substance Habit in male and female Patients with atrial fibrillation						
Substance Habit	Male		Female		Total	
	No	%	No	%	No	%
Alcohol	10	11.11%	5	5.55%	15	16.66%
Smoking	3	3.33%	0	0%	3	3.33%
Tobacco	2	2.22%	3	3.33%	5	5.55%
Total	15	16.66%	8	8.88%	23	25.54%

DISCUSSION

In the present study, among 90 patients, age distribution ranged from 16 years to 80 years. 40 patients belong to the age group of 50-59 years (44.4%), followed by 25 patients who belong to the age group of 30-39 years (28%). Another 8 patients belong to ≥ 60 years age group. The mean age of study population in our study is 46.5 ± 5.09 years. Mean age for male is 51.3 ± 3.65 years, mean age for female is 40.75 ± 3.52 years. Whereas Benjamin et al.³ and Abdou Elhandy et al.⁶ reported mean age as 58 and 67 years in their respective studies. Maru⁷ reported mean age to be 41 years in his study among 136 Ethiopian cardiac outpatients. Crijns et al.⁸ in their study evaluating 127 patients, found average age of their patients to be 60 years. James et al.⁹ study reports mean age to be 71 years, AFFIRM study¹⁰ reports mean age to be 74 years.

In the present study mean age of valvular atrial fibrillation is 34.8 ± 2.05 years, while mean age of non valvular atrial fibrillation is 51.64 ± 3.08 years.

In the present study, 55.57% of our study population were males, while females accounted for only 44.43 % of the study population . The finding of more prevalence of atrial fibrillation amongst males as compared to females correlated with AFFIRM study¹⁰ where incidence among males was 61%, Howard S. et.al¹¹ study where incidence among males was 52.63%, Abdou Elhendy⁶ study where incidence among males was 66%. Framingham Heart Study also showed greater incidence of atrial fibrillation in males¹².

The present study shows that among valvular atrial fibrillation, 74% were females, 26% were males whereas among non-valvular atrial fibrillation, 32% were females, 68% were males.

In the present study it was found that hypertension was the most common etiology of atrial fibrillation, amongst 90 patients hypertension was present in 33 patients accounting for 36.8% of total study population. Similarly, study conducted by A bergh¹³ among 463 cases of atrial fibrillation noticed hypertension in 34% cases, Framingham study found hypertension in about 50% of cases¹² . Hypertension was present in 71% of cases in AFFIRM study¹⁰ . Abdou Elhendy et al. reported incidence of systemic hypertension in 51% in

their study⁶. Ischaemic heart disease was found in 15 patients out of 90 patients as the etiology of atrial fibrillation which accounted for 16% of cases of the present study. Samuel Levy et al.¹⁴ reported 16.6% of his study population has coronary artery disease as the cause for atrial fibrillation.

Cardiomyopathy was found to be the etiology of atrial fibrillation in 7 cases out of 90 accounting for 7.8% of the present study population. Benjamin J R Bueley et al.¹⁵ also showed in their study the association between cardiomyopathy

Chronic obstructive pulmonary disease was found to be the etiological cause of atrial fibrillation in 4 out of 90 cases accounting for 5% of total study population. Association between atrial fibrillation and COPD has been shown in the study by Khairy P et al.¹⁶.

In the present study hyperthyroidism was found to be the etiological cause of atrial fibrillation in 2 out of 90 patients accounting for 2.2%. Study by Salmon C et al.¹⁷ also confirms association between hyperthyroidism and atrial fibrillation.

In the present study Rheumatic valvular heart disease was found to be the etiology of atrial fibrillation in 27 out of 90 cases accounting for about 30% of study population. Crijns et al.¹ evaluated 127 patients of atrial fibrillation and found Rheumatic valvular heart disease in 24% of his study population. AFFIRM study¹⁰ reports low incidence of Rheumatic valvular heart disease, Abdou et al⁶ also reported low incidence of Rheumatic valvular heart disease. Samuel levy et al.¹⁴ found Rheumatic valvular heart disease as etiology in 33% cases of his study population.

CONCLUSION

In the present study, most of the patients belonged to the age group of 50 -59 years. Prevalence was more common in males compared to females. Most common etiology of atrial fibrillation was non valvular atrial fibrillation, among which hypertension was the commonest etiology, followed by Ischaemic heart disease. Amongst valvular atrial fibrillation rheumatic mitral stenosis was the commonest etiology. Nonvalvular atrial fibrillation was more common among males, whereas valvular atrial fibrillation was more common among females. Valvular atrial fibrillation occurred at younger age compared to nonvalvular atrial fibrillation.

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