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Original Article

Etiological Evaluation and Correlation with The Complications of Atrial Fibrillation at Superspeciality Cardiac Care Centre.

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Abstract

Introduction : Atrial fibrillation (AF) is a common supraventricular arrhythmia characterized by uncoordinated atrial activation with consequent loss of atrial mechanical function. Patients with Atrial fibrillation have greater than five-fold increase in the risk of stroke compared to the control populations without atrial fibrillation.

Purpose : Purpose of current study is to study etiology of AF, modes of presentation of AF, complications of AF, to find relation between various clinical and echocardiographic parameters and stroke, and thereby to identify cases with high risk of stroke.

Material and Methods : This study included Eighty consecutive patients of atrial fibrillation, diagnosed, based on clinical grounds, and confirmed by ECG and common etiological factors were included and were subjected to various relevant investigations. The data of the present study after its proper validation calculated and statistically analyzed.

Results: The mean age of male cases was 44.50 (±14.46) years and female cases was 35.94 (+14.63) and this was significantly lower than their male counterpart ($p<0.05$). More than three forth of the total cases i.e. 77.5% were observed with valvular AF, palpitation (83.8%) and dyspnoea (83.8%) were found to be the most common symptoms. Rheumatic heart disease was the most common etiology observed in 77.5% of the cases and Ischemic heart disease constituted second common etiology (12.5%). It was observed that left atrial diameter 51.2 (+/- 10.97) mms and mean right ventricular diameter 19.24 (+/- 5.89) mms were significantly higher, respectively in valvular atrial fibrillation in comparison with non valvular atrial fibrillation ($p < 0.05$). Among the cases of rheumatic heart disease, combination of Mitral stenosis with mitral regurgitation was the most common lesion observed in (38.7%). The mean age of cases with stroke was considerably higher compared with cases without stroke ($p < 0.05$). Other parameters like left atrial diameter and presence of left atrial thrombus were present significantly in cases with stroke ($P < 0.05$). The usage of OAC/ NOAC was very low and only 16.3% of the cases were on oral anti coagulations.

Conclusion : The most common etiology among the cases was rheumatic heart disease 77.5%, followed by ischemic heart disease 12.5% and the most common mode of presentation was palpitation (83.8%) and dyspnoea 83.8%. Presence of isolated mitral stenosis was significantly higher among case with stroke. Increasing age, significant congestive cardiac failure, left atrial diameter and presence of left atrial thrombus were significantly associated with stroke.

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Key words : Atrial Fibrillation, Stroke, Mitral stenosis, Rheumatic heart disease.

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INTRODUCTION

Atrial fibrillation (AF) is a common supraventricular arrhythmia characterized by uncoordinated atrial activation with consequent loss of atrial mechanical function. Atrial fibrillation is the most common sustained cardiac arrhythmia. According to population studies, the overall prevalence of atrial fibrillation is 0.4 %[1.] The prevalence of atrial fibrillation increases significantly, reaching 3% to 5% in people older then 65 years. After age of 80, the prevalence of atrial fibrillation increases to almost 9%.Patients with Atrial fibrillation have greater than five-fold increase in the risk of stroke compared to the control populations without atrial fibrillation.[2]

Among the patients with rheumatic heart disease, risk exits by upto 17 times of that of control group. Other sub groups of high risk include patients with dilated cardiomyopathy, dilated left atrium of any cause, and atrial fibrillation of recent onset and history of prior embolism. Patients with AF and left ventricular hypertrophy are also of higher risk, as are thyrotoxic patient. As a group, non-rheumatic disease states associated with AF found to have excess risk in the range of 5-6 folds. Risk of embolic events tends to cluster around changes in the rhythm, highest incidence occurs in the first year of onset of chronic atrial fibrillation.

The treatment of atrial fibrillation with anticoagulation or antiarrythmic medications can diminish the symptoms and thromboembolic events with which it is associated. however; these remedies are frequently contraindicated in the elderly and their use is often associated with significant morbidity. Identification of high-risk subgroups of AF patients by means of clinical features and echocardiography may permit drug treatment to be given to those at highest risk of stroke.

This study aims to identify etiological profile of atrial fibrillation in the studied cases and to find out relation of etiology, various clinical and echocardiographic parameters to stroke. Purpose of current study is to study etiology of atrial fibrillation, to determine the modes of presentation of atrial fibrillation, to correlate complications of atrial fibrillation with etiology, to find relation between various clinical and echocardiographic parameters and stroke, and there by to identify cases with high risk of stroke and to identify usage of anticoagulation among patients of atrial fibrillation.

MATERIAL AND METHODS

This study was carried out in patients of atrial fibrillation, who attended, Department of Cardiology, NSCB Medical College as in-patients and out-patients department. Eighty consecutive patients of atrial

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fibrillation, diagnosed based on clinical grounds, and confirmed by electro cardiography were included in this study. Cases were selected consecutively and pediatric patients were not included in this study.

The diagnosis of atrial fibrillation is made on clinical grounds and then confirmed by Electro Cardiogram. In all cases one or more ECGs were taken using a cardiart 6208 standard 12 channels ECG apparatus. It was standardized to produce a deflection of 10 mm per 1 mV input and the paper speed was set at 25 mm per second. The ECG features of atrial fibrillation were, Absence of 'P' wave, presence of fibrillatory wave, marked variation in RR interval and variation in configuration of QRS complex in ECG.

Echocardiography study were performed in M-Mode, 2-Dimensional and colour Doppler (when indicated) by using GE E 95 machine with 3.5 MHz transducer in various views viz, Ejection fraction of left ventricle was calculated by using the formula-

$$EF\ \% = LVEDV\text{-}LVES/LVEDV\ x100.$$

While approaching the patients, the common etiological factors were considered first, like:

1. Rheumatic heart disease

2. Ischemic heart disease

3. Hypertensive heart disease

When symptoms and signs point to a different etiology appropriate investigations were made. The following investigations were routinely done for every patient. Total WBC count, Differential WBC Count, Urine for Albumin, Sugar and Deposits. Erythrocyte Sedimentation rate, blood urea and X-ray chest were made. In selected patient, Barium Swallow study, estimation of ASO titer, SGOT and SGPT were done. CT head plain and with contrast was performed in patients who presented with stroke.

All the results were calculated as mean ± SD or proportions of the studied population size. The data of the present study were feeded into the computers and after its proper validation, checking for errors, coding & decoding were compiled and analyzed with the help of SPSS 11.5 for windows. Appropriate univariate, and bivariate analyses were carried out using t-test, z-test, and ^{2} test were calculated and tested.

OBSERVATION

The above table shows age sex distribution of studied cases with atrial fibrillation. In male cases 50% of cases were distributed in 30-49 age group, while 28.2% cases were observed in >60 years. The mean age of male cases was 44.50 (±14.46) years. In female cases 70% cases were concentrated in age range of 20-49 years while only 10.5% cases were observed in >60 years age range. The mean age of female cases was 35.94 (+14.63) and this was significantly lower than their male counterpart ($p<0.05$). This table is discussed on valvular and non-valvular atrial fibrillation. More than three forth of the total cases

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i.e. 77.5% were observed with valvular atrial fibrillation. The female cases were predominantly seen with valvular atrial fibrillation and out of the total 48 female 85.41% showed this. In nonvalvular category male constituted majority by 61.1%. Still in males also valvular atrial fibrillation constitutes majority by 65.62%. The female showed significantly higher proprtion of valvular etiology than males ($x^2 = 4.31$; $p<0.05$) As depicted in this table palpitation (83.8%) and dyspnoea (83.8%) were found to be the most common symptoms, followed by edema 71.3% and chest pain 62.5%. Hemoptysis was seen in 30 % of the cases while jaundice was reported in 2.5% only. Table :4

Table: 1 Sex wise distribution of the various etiologies in studied cases

Etiology	Male	Female	Total
Rhematic heart disease	21 (33.9)	41* (66.1)	62 (77.5)
Ischemic heart disease	7 (70.0)	3 (30.0)	10 (12.5)
Dilated cardiomyopathy	1 (33.3)	2 (66.7)	3 (3.75)
Hypertension	3 (100.0)	0 (0.0)	3 (3.75)
Atrial septal defect	0 (0.0)	1 (100.0)	1 (1.25)
Thyrotoxicosis	0 (0.0)	1 (100.0)	1 (1.25)
Total	**32 (40.0)**	**48 (60.0)**	**80 (100)**

P<0.05 (p=0.0378717)

This table describes various etiologies in relation to male and females. Rheumatic heart disease was the most common etiology observed in 77.5% of the cases. Rheumatic heart disease was observed significantly higher in female cases ($p<0.05$). Ischemic heart disease constituted second common etiology (12.5%), with males (70%) constituting the majority. Hypertension was observed only in male cases while atrial septal defect, thyrotoxicosis was observed only in females.

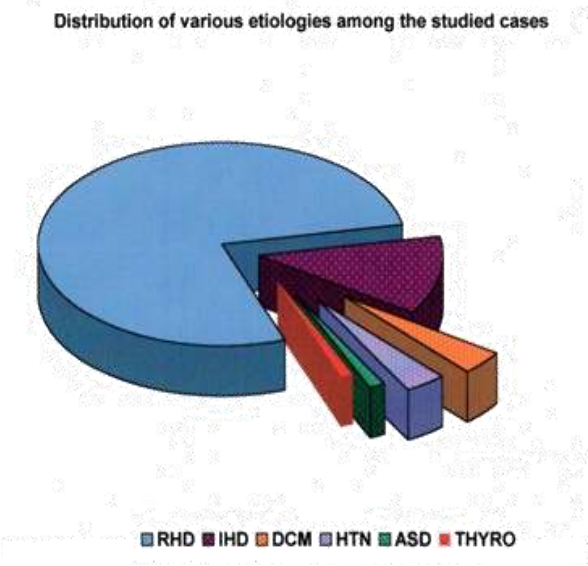

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Table: 2 Study of Mean age of various etiologies in studied cases

Etiology	Number of patents	Mean SD	Range
Rhematic heart disease	62	34.85 ± 12.29	15-70
Ischemic heart disease	10	53.60 ± 9.48	40-65
Dilated cardiomyopathy	3	65.67 ± 9.23	55-72
Hypertension	3	48.67 ± 19.63	26-60
Atrial septal defect	1	33.00 ± 0.0	33-33
Thyrotoxicosis	1	76.00 ± 0.0	76-76
Total	**80**	**39.36** ± **15.08**	**15-76**

Table: 3 Echocardiographic profile of patients with atrial fibrilation

Parameter	Valvular atrial fibrillation (n=62)	Nonvalvular atrial fibrillation (n=18)	Total
LVEDD	49.86 ± 11.32	51.00 ± 6.59	50.12 ± 10.43
LVESD	39.41 ± 10.98	40.44 ± 6.54	39.64 ± 10.42
Stroke volume	68.92 ± 35.35	67.79 ± 19.99	68.66 ± 32.42
Ejection fraction	49.20 ± 10.10	49.27 ± 6.63	49.2 ± 9.39
Left atrial diameter	51.20 ± 10.97	42.22 ± 9.29	49.18 ± 11.22
RV	19.24 ± 5.89	15.67 ± 4.28	18.44 ± 5.75
Mitral valve Area	1.58 ± 0.87	-	1.58 ± 0.87

*p<0.001 **p<0.05

The above table shows echocardiographic profile of cases with valvular and non-valvular atrial fibrillation. It was observed that left atrial diameter 51.2 (pm 10.97) mms and mean right ventricular diameter 19.24 plus/minus (5.89)mms were significantly higher, respectively in valvular atrial fibrillation in comparison with nonvalvular atrial fibrillation ($p < 0.05$) .Other parameters did not show any significant difference between valvular and non-valvular atrial fibrillation($p > 0.05$)

Table: 4 Distribution of the valvular lesions among the studied

Valvular lesions	Male	Female	Total
Isolated mitral stenosis	4	15	19 (30.6)
Mitral stenosis with mitral regurgitation	7	17	24 (38.7)
Mitral regurgitation with aortic regurgitation	0	1	1 (1.6)
Mitral stenosis, Mitral regurgitation with aortic regurgitation	7	4	11 (17.7)

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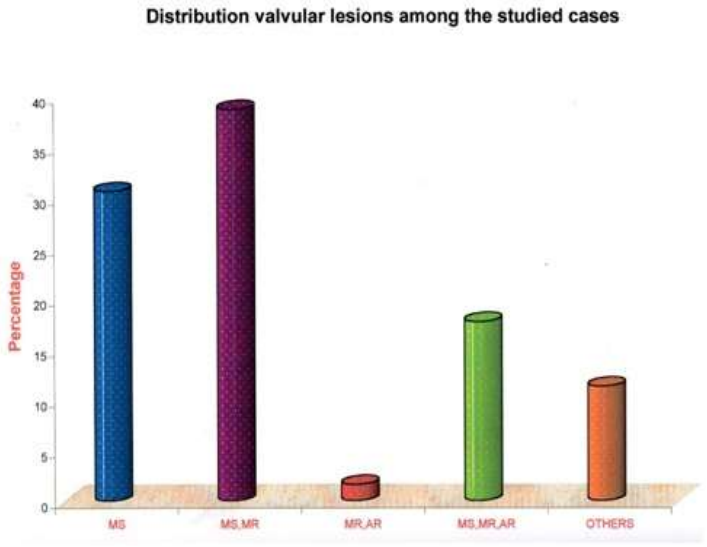
Mitral stenosis, Mitral regurgitation aortic regurgitation, tricuspid regurgitation	0	2	2 (3.2)
Mitral stenosis, Mitral regurgitation aortic stenosis, aortic regurgitation	1	0	1 (1.6)
Mitral stenosis, Mitral regurgitation aortic stenosis, aortic regurgitation, tricuspid regurgitation	2	2	4 (6.5)
Total	**21**	**41**	**62 (100)**

Among the cases of rheumatic heart disease, combination of Mitral stenosis with mitral regurgitation was the most common lesion observed in (38.7%), followed by isolated mitral stenosis, which was observed in 30.6% of the cases. Mitral stenosis, Mitral regurgitation with aortic regurgitation was found in 17.7% of the cases. While others were observed each by 1.6 includes Mitral regurgitation with aortic regurgitation and Mitral stenosis, Mitral regurgitation aortic stenosis, with aortic regurgitation. Of the total of 62 cases of valvular atrial fibrillation, only 38 cases (33.33%) had the past history of rheumatic fever.



The mean age of studied cases presented with stroke was 48.35 ±(13.39) years, of which females were 62.5% an dmales were 37.5%. Presence of significant congestive cardiac failure was noted in 62.5%. The mean pulse rate was 96 plus/minus (10.95) per minute. The mean systolic blood pressure and diastolic blood pressure were 103 plus/minus (5.55) and 72.5 plus/minus (8.86) mmhg respectively. The above table shows echocardiographic findings in studied cases presented with stroke. The mean left ventricular end diastolic and end systolic diameters were 38.00 plus/minus (5.12) and, (28.13 plus/minus 4.8) mms respectively. There was no statistically significance in both the parameters when compared with normal population means ($p < 0.05$) Mean ejection fraction of cases presented with the stroke was also observed in the normal range. While Left atrial diameter and Right ventricle diameter were found to be significantly raised ($p < 0.05$)

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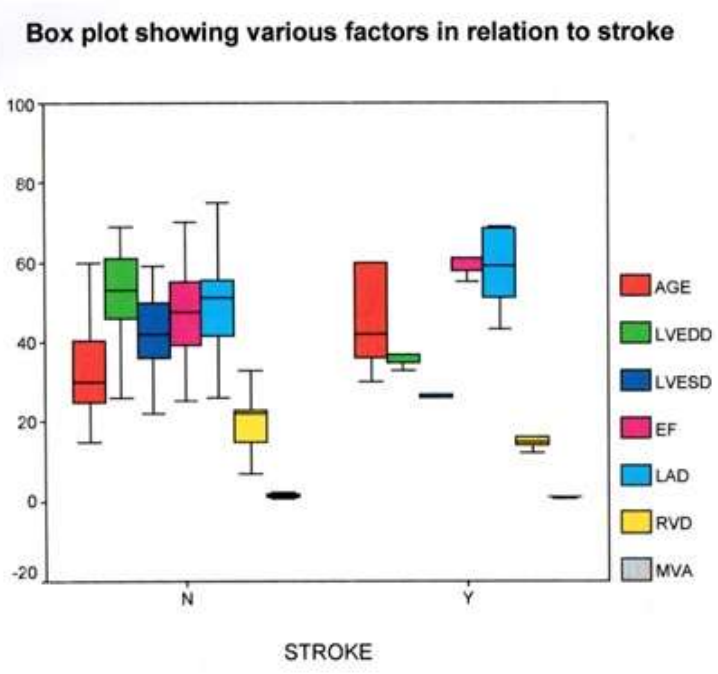
Table : 5 Study of various confounding factors in relation to stroke.

Confounder	With Stroke (n=8)	Without Stroke (n=72)	Significance
Clinical variables			
Age	48.35 ± 13.395	38.40 ± 15.033	Z=1.97 P<0.05
Female sex	5/8(62.5%)	43/72(59.7%)	P=0.8790725 $X^{2=0.02}$
Significant CCF*	5/8(62.5%)	20/72(27.8%)	P=0.0444232 $X^{2=4.04}$
Echocardiographic variables			
Left atrial diameter	57.63 ± 10.11	48.24 ± 10.99	P=0.0476036 $X^{2=3.92}$
Left atrial thrombus	2/8(25%)	4/72(5.6%)	Z=2.47 P <0.05
Mitral valve area**	1.11+0.29	1.16+0.29	Z=0.46 P >0.05

*Significant CCF refers to cases that had NYHA class III and IV

**Only cases of valvular atrial fibrillation



The above table shows correlation of various clinical and echocardiographic parameters with stroke. The mean age of cases with stroke was considerably higher compared with cases without stroke ($p < 0.05$) Sex did not show any significant impact on stroke($p > 0.05$) while the significant congestive cardiac failure showed a significantly higher proportion among cases with stroke. ($P < 0.05$) Other parameters

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like left atrial diameter and presence of left atrial thrombus were present significantly in cases with stroke. ($P < 0.05$) But the mitral valve area was almost equal in both the categories. ($P > 0.05$)

This table indicates the correlation between stroke and etiology. The incidence Ischemic heart disease of was equal (12.5%) in cases with stroke and without stroke ($p < 0.05$) The finding of isolated mitral stenosis was considerably higher among cases with stroke; statistically this was significant ($p < 0.05$) The Mitral stenosis with regurgitation was observed by25% and 30.6% respectively in stroke cases and withoutstroke cases but significant difference was not found($p > 0.05$) This table shows percentage of usage of various drugs among the studied cases. Digoxin was the most commonly used drug given to all cases, followed by diuretics. Among other drugs used to control the ventricular rate calcium channel blockers were commonly used (17.5%). Amiodarone was used in a single patient. among drugs used for anticoagulation aspirin was the most commonly used drug (33.8%). The usage of warfarin was very low and only 16.3% of the cases were on warfarin.

DISCUSSION

This study was carried out in 80 consecutive patients of atrial fibrillation, who were diagnosed on clinical grounds and confirmed by electrocardiography. The study population consisted of 32 male cases and 42 female cases. The mean age of the studied population was 39.39 (15.08) years. The mean age of the female cases was 35.35 (±1463) significantly lower than the male cases 44.50 (± 14.46).$Z = 2.58$ $p<0.01$. Similar findings were observed by Diker eta(1996)[16] and Goswami et al (2000)[12] While somewhat higher values have been reported by investigators of SPAF (1992)[13] and Wang et al (2003)(90) .

Higher mean age observed in these studies may be due to the presence of majority of non rheumatic atrial fibrillation cases, which is more common in older population. Overall females constituted 60% of the cases. This may be due to the fact that rheumatic heart disease was the most common etiology and it was significantly common among females.($P < 0.05$)

In this study more than three forth (77.5%) of the cases belonged to rheumatic heart disease, while 22.5% of cases 30 belonged to non-rheumatic atrial fibrillation. Similar findings were also observed by Diker et al (1996). Ostranderld et al (1965) observed the prevalence of atrial fibrillation to be 0.4% of the general population, increasing with age. Atrial fibrillation is uncommon in childhood except after cardiac surgery. It occurs in less than 1% of those under 60 years of age but in more than 6% of those over 80 years of age[9] Among the non-rheumatic atrial fibrillation ischemic disease was the most common etiology (12.5%). Males constituted majority by 70%. Among 10 patient heart disease 6 patients had anterior wall myocardial infarction (60%), while 4 patients had inferior wall myocardial infarction (40%). except one all patents developed atrial fibrillation within 24 hours, and persistently had atrial fibrillation until discharge. The rate of ischemic stroke among patients with nonrheumatic atrial fibrillation averages 5% per year, which is 2 to 7 times the rate for people without atrial fibrillation[15]

Sakarta et al (1997)[10] were also observed similar findings They reported 46% inferior wall myocardial infarction, 42% anterior wall myocardial infarction, 5% lateral wall and 7% non- Q wave myocardial

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infarction among the cases of MI who had atrial fibrillation. This distribution is similar to that observed in our study. Hinton et al (1977) found a 91% prevalence of prior myocardial infarction in patients with atrial fibrillation at autopsy but found no difference in the prevalence of a history of congestive heart failure between patients with and without previously documented atrial fibrillation[5] While Karagkiozaki et al (2003)[14], Kannel et al (1998)[11] and SPAF investigators (1992)[7] observed higher incidence of non-rheumatic causes of atrial fibrillation.

In western countries there is change in etiological profile of atrial fibrillation. Now most of the cases of atrial fibrillation are caused by non-valvular etiologies[16]. But in the developing countries valvular heart disease, still remains the most common cause of atrial fibrillation. This was reflected in our study also were 77.5% cases belonged to rheumatic heart disease.

Among the cases who had rheumatic heart disease, mitral stenosis with mitral regurgitation was the most common lesion (38.7%). This was followed by isolated mitral stenosis, which present in 30.7% of the cases of rheumatic heart disease. In total multivalvular lesions constituted 30.6% of cases. Mitral was stenosis was the most common lesion present in 98% of the cases. Mitral regurgitation was the next common lesion found in 43 (69%) of the cases. This was Similar to observations made by Diker et al (1996) [16].

Atrial fibrillation seen in rheumatic mitral valve disease believed to occur as a result of hemodynamic changes that cause increase in left atrial pressure and diameter. These mechanisms may explain the frequent occurrence of atrial fibrillation in mitral stenosis. Atrial fibrillation is rare in aortic valve disease. Apart from this 70% of the patients with ischemic heart disease also had mild to moderate mitral regurgitation with dilated left atrium. In these entire patients valves appeared normal in Tran thoracic Echocardiography Somewhat lowes values (55%) have been observed by Sakata et al (1997)

In this study all patients have under gone two Dimensional, M-mode Echocardiography and Colour Doppler examination (as indicated). All the cases had measurement of ventricular end diastolic diameter (LVEDD), Left ventricular end systolic diameter (LVESD), stroke volume (SV), ejection fraction (EF), left atrial diameter (LAD), right ventricular diameter (RVD) and mitral valve area (MVA) as defined previously. Although ischemic stroke and systemic arterial occlusion in atrial fibrillation are generally attributed to embolism from the left atrium (LA), the pathogenesis of thromboembolism is complex[6]

The mean left atrial diameter observed in the cases with valvular atrial fibrillation was 51 ±(10.97) mms which was significantly higher than the cases of non-valvular atrialfibrillation 42 (±9.29) mms ($P < 0.01$) Similar left atrial diameters have been observed by Diker et al (1996) Goswami et al (2000) ^ 83 and Middlekauff et al (1991) in the cases of rheumatic atrial fibrillation. Left Ventricular systolic dysfunction predicts ischemic stroke of atrial fibrillation patients receiving no antithrombotic therapy[7-8]

The right ventricular diameter was another parameter, which was significantly higher in valvular atrial fibrillation 19.29 +5.89) compared to non-valvular atrial fibrillation 15.61 (+4.28).The mean right ventricular diameter in the studied cases was 18.44 (±5.1) mms. Sakata et al (1997)61 also observed similar value (17±5mms).11 In our study Mean left ventricular dimensions observed were.(1) LVEDD

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49.86 (± 11.32) mms in valvular AF versus6.59) mms in non-valvular AF. 51.00(±(ii) LVESD 39.41 (± 10.98) mms in valvular AF versus6.54) mms in non-valvular AF.40.44(±. Similar findings were observed by Kannel et al (1998), Dikeret al (1996)[16] Sakata et al (1997)7, Vaziri et al (1994) and investigators of SPAF (1992)[8], The AFFIRM trial (Atrial Fibrillation Follow-up Investigation of Rhythm Management), which is still progress, is comparing maintenance of sinus rhythm with rate control in patients with atrial fibrillation addressing many facets of life, as did the smaller PIAF (Pharmacological Intervention in Atrial Fibrillation) study.[9]

But Middlekauff et al (1998)[19] noted grossly dilated left ventricular dimensions (LVEDD 72(±12) mms, LVESD 82 (±13) mms. This may due to the fact the, cases in this study consisted of mainly cases of advanced cardiac failure (NYHA class III and IV). The mean mitral area observed in this study was 1.58 (± 0.87)cm² this was in accordance with observation made by Moreyra et al (1996)[22] (1.2 ±0.5 cm ^{2}) Somewhat higher values have been observed by Diker et al[16] (2.2 ±1.4 cm^2)

This study consisted of 8 cases of stroke on admission out of 80 cases (10%). Of those 5 cases were females and 3 were males, There was no statistically significant difference 34 among the sex. Similar observation was also made by chlanget al (1994)[17] and Copenhagen stroke study (1996) While J Wang et al (2003)[15], observed female sex to be an independent risk factor for stroke.

The mean age of cases presented with stroke was 48.35 (+13.39) mms, which was significantly higher than 38.40 (+/- 15. 3) cases without stroke ($p < 0.05$) Chiang et al and investigators of SPAF also noted increasing age as a risk factor for stroke.Number of patients, who had significant congestive cardiac failure i.e., NYHA classes III, IV was 62.5%. This was significantly higher than, cases without stroke. ($P < 0.05$) . Similar observation was also made by Wolf et al (1987)[4] Middle kauffeta[21] Chiang et al[27] and investigators of SPAF.

Left atrium of the cases who presented with stroke was grossly dilated with a mean diameter of 57.63 (+ 10.11) mms,which was significantly higher than 48.24(+/- 10.99) mms, incases without stroke ($p<0.05$). The mean right ventricular diameter was 15.63 (+/- 2.92) mms. The mean mitral valve area was 1.11 (+ 0.09) cms2. There was no significant difference among cases with and without stroke ($p > 0.05$) .In our study, of the echocardiographic parameters left atrial size and presence of left atrial thrombus on echocardiography were significantly associated with stroke on univariate analysis. ($P<0.05$). Investigators of SPAF 1 (1992) and Caplan et al[28] have also reported statistically significant association between LA events while Wiener et al[26]Thromboembolic and the AFFIRM study[9] did not observe significant diameter association. and al[27] and Moulton et al.

Other Tran thoracic echocardiographic parameters have been evaluated in-patients with AF in relation to thrombo embolic events. Investigators of SPAF reported, some univariate associations between thromboembolic events and LV end-diastolic diameter 52 mms and LV wall thickness or ventricular mass. In univariate analysis Weiner et al (1987) have found no associations between thromboembolic events and LV end- diastolic diameter, LV wall thickness, ventricular mass or LV end-systolic diameter[35]. None of these associations have been supported in multivariate analyses, with the exception

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of LV mass by Aronow et al (1989) and qualitative assessment of global LV systolic dysfunction by SPAF investigators[8] In the AFFIRM study[9] neither LA diameter nor any other studied transthoracic echocardiographic parameter was associated with thromboembolic events in univariate or multivariate analyses.

In our study two patients had left atrial thrombus by Tran thoracic echocardiography. This was significantly higher compared with cases with out stroke ($P<0.05$). Stollberger et al (1998)[17] noted only a trend ($p=0.09$) for LA thrombus to predict stroke or peripheral embolism in patients with AF. In this study, clinical variables such as hypertension, previous stroke, and increasing age were significantly associated with subsequent stroke. Importantly, in this study the incidence of LA thrombus was merely 2.5% and may explain the lack of a statistically proven association between LA thrombus and embolic events. In a TEE sub study of the Stroke Prevention in atrial fibrillation III trial, a multivariate analysis examining TEE parameters failed to establish an independent predictive value of LA thrombus for subsequent embolic events[17] in 192 patients with non valvular atrial fibrillation assigned to a combination therapy of low-intensity warfarin plus aspirin, despite the presence of LA thrombus in 14% of these subjects. However, in this trial, univariate analysis did show a relative risk of 2.7 ($p=0.04$) for embolism in patients with LA thrombus versus those without, supporting an association, In a group of 82 patients with LA thrombus by TEE[18].

Leung et al (1997)[19] noted an embolic event rate of 10.4% per year. In patients with non-rheumatic atrial fibrillation, Archer et al (1995)[20] noted, during a mean follow-up duration of 34 months, stroke in 1 of 5 (20%) subjects with LA thrombus compared to an embolic event in 6 out of 50 (12%) patients without LA thrombus (i.e., stroke in 4 subjects, TIA in 1, and peripheral embolism in 1). However, the study was to reach assessment by underpowered independent predictor multivariate of embolic event In our study also we observed 7 out of 8 strokes involving a possible 39 analysis as middle cerebral artery. One patient had stem of middle cerebral artery involvement, with infarction of fronto temporoparietal lobes, leading to death. There was no case of intracerebral hemorrhage in our study. In the Copenhagen stroke study, it observed that patients with atrial fibrillation have more severe stroke. They observed stroke in patients with atrial was fibrillation is mainly cardio embolic in origin occluding larger cerebral arteries and consequently more severe strokes. Intracerebral hemorrhage was significantly less frequent cause of stroke in-patients with atrial fibrillation

In Copenhagen stroke study[24] a chronically reduced cerebral blood flow in patients with atrial fibrillation compared to sinus rhythm was noted. They also observed systolic Blood Pressure on admission was significantly lower in patients with atrial fibrillation and stroke. They therefore proposed combined effect of chronically reduced cerebral blood flow and relatively low blood pressure in the acute phase of stroke contributing to the severity of the stroke.

In our study presence of isolated mitral stenosis was higher in patients with stroke compared to patients without stroke. This was statistically significant ($p<0.05$). While combination of mitral stenosis and regurgitation though more common lesion in this study was not statistically significantly present in-patient with stroke. This observations differed from those made by Arborik et al (2000)[25], Hinton et al

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(1977)[5] and observations of Framingham heart study which showed significantly lower number of patients with stroke. This may be due to high prevalence of rheumatic heart disease in India and changing etiological profile of atrial fibrillation in western countries.

In our study most common drug used control of rate was digoxin. In our study 16.3 % of the patients were anticoagulated-using warfarin. Aspirin, the antiplatelet drug was used in 33.8 of the patients. Out of 13 patients receiving warfarin 8 were patients of stroke, and 2 of dilated cardiomyopathy, who had Left Ventricular apical thrombus. While Middlekauff et al[21-22] have reported 47% anticoagulation among cases of atrial fibrillation. This reduced use of warfarin in our study can be due to risk of bleeding and difficulties in monitoring of anticoagulation.

The results from The Copenhagen stroke study[24] supported the hypothesis that stroke cases in atrial fibrillation is usually embolic in origin leading to occlusion of larger cerebral arteries and subsequently more severe strokes. Thus they emphasize importance of identifying high-risk patients and subsequent anticoagulation in patients with atrial fibrillation.

CONCLUSION

The most common etiology among the cases was rheumatic heart disease 77.5%, followed by ischemic heart disease 12.5% and the most common mode of presentation was palpitation (83.8%) and dyspnoea 83.8%. Among the echocardiographic parameters, left atrial diameter and right ventricular diameter showed significant difference among the cases of valvular and non-valvular atrial fibrillation. The most common valvular lesion observed was mitral stenosis with mitral regurgitation (38.7%) followed by isolated mitral stenosis (30.6%).

On univariate analysis, of the clinical parameters age and significant congestive cardiac failure showed significant difference among cases with stroke and without stroke and of the echocardiographic parameters, left atrial diameter and presence of left atrial thrombus by Tran thoracic echocardiography showed significant difference among cases with stroke and without stroke. Presence of isolated mitral stenosis was significantly higher among case with stroke. Increasing age, significant congestive cardiac failure, left atrial diameter and presence of left atrial thrombus were significantly associated with stroke.. Underutilisation of Oral anticoagulants noticed, it were used only in 16.3% of the cases. Before applying these observations in masses, a large- scale study with lager sample size has to be carried out.

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