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Research Paper

Clinical Study & Etiological Evaluation Of Atrial Fibrillation At Tertiary Care Hospital, Jamnagar, Gujarat, India. (A Study Of 100 Cases)

Medical Science

KEYWORDS : Atrial Fibrillation, Af, Rheumatic Af, Cardio-Embolic Stroke

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ABSTRACT

Atrial fibrillation(AF) is the most common sustained arrhythmia encountered in clinical practice,accounting 1/3 of hospital-admissions for arrhythmia and rate of admissions for AF has risen recently.The principle significance of AF both to patient and healthcare system is fivefold increased risk of embolic stroke.Electrocardiogram confirmed 100 patients of AF were included in this study and evaluated clinically.Incidence of AF in India is significantly high in younger age group and in Female(58%) as compared to Western countries,where AF is more common in old age and in Male(42%).Most common cause of AF is Rheumatic heart disease as compared to Western countries,where IHD is the commonest cause.The average age of patient having RHD developing AF,in India,is 15-20 years earlier than patients from Western countries.Most common complication of AF is Congestive cardiac failure. Most serious complication of AF is Cardio-embolic stroke.Increase in size of Left Atrium in AF is associated with increased risk of Cardio-embolic stroke.Trials have shown reduction in risk,if patients are adequately anticoagulated.

INTRODUCTION

Atrial fibrillation is the most common sustained arrhythmia encountered in clinical practice. It accounts for 1/3 of hospital admissions for cardiac rhythm disturbances and the rate of admissions for AF has risen in recent years. It is cardiac arrhythmia characterized by seemingly disorganized atrial depolarization without effective atrial contraction. There is no definite coordinated universal atrial contraction or relaxation,instead there are irregular dissociated twitchings at about 350-600/minute which produce worm like fibrillary quivering of atria without an effective atrial contraction3.Atrial fibrillation is associated with various degree of atrioventricular block. Usually ventricular rate varies between 100-160/minute, because only one out of three or four atrial impulses can gain access to the ventricles. In certain cases like paroxysmal type of AF or in patients without organic heart disease, rates varying between 170-200/minute may be observed. The principle significance of AF, both to patient and health care system is the fivefold increased risk of embolic stroke3,6. The incidence of stroke in AF is ranging from 5-15% and incidence increases with increase in age. Prospective trials have shown a reduction in risk, if patients are adequately anticoagulated. Rheumatic Heart Disease (RHD) is most common cause of Atrial Fibrillation in India9,while Ischaemic Heart Disease is commonest cause of AF in Western countries6.Studies have shown prevalence rate of AF from 25% to 60% (average 40%) of all hospitalized patients of RHD.

AIMS & OBJECTIVES

- Study of specific incidence regarding Age, Sex, Etiology & Complications of Atrial Fibrillation.
- Study of Signs, Symptoms, Electrocardiographic features, Echocardiographic features and Therapeutic measures employed for Atrial Fibrillation.

MATERIAL & METHOD

100 patients randomly selected from Indoor patients of Atrial Fibrillation at Guru Gobindsingh Hospital, Jamnagar,Gujarat between duration of June-2009 to June-2011 are included. Patients having AF confirmed by electrocardiogram were included in the present study. Each patient was evaluated in detail as follows:

Name, age, sex, and residence of patient were noted. Complains like breathlessness, palpitation, cough, hemoptysis, chestpain,edema feet etc. were noted. Past history of rheumatic fever, rheumatic heart disease,hypertension, diabetes,IHD,hyperthyroidism was elicited in detail.

Physical examination comprising of pulse, blood pressure, jugular venous pressure, edema feet, presence of cyanosis, thyroid swelling and anemia were noted. Cardiovascular system examination includes pulse(rate,rhythm),position and nature of apex beat, apex pulse deficit, presence of any thrills and murmurs and their characteristics. Respiratory system, gastro-intestinal system and central nervous system were examined and emphasis was made for any evidence of cardiac failure and cerebrovascular complications.

Routine hemogram, urine analysis, renal and liver function tests were done in all cases. Standard 12 lead ECG with rhythm and 2-D Echo were done in each case. Serum T3, T4 and TSH and prothrombin time with INR were estimated in selected patients.

AF was treated with various drugs like Digoxin,Verapamil,Diltiazem,Metoprolol,Amiodarone and DC shock and effects of treatment were noted. Follow up of the patients were done to know whether ventricular rate was controlled or not,whether patient was relieved of symptoms or not and whether patient developed any complications like cardiac failure or cardio-embolic stroke is noted.

OBSERVATION

TABLE 1 AGE & SEX DISTRIBUTION IN AF

AGE (YEARS)	NO. OF PATIENTS		TOTAL NO. OF PATIENTS	PERCENTAGE (%)
	MALE	FEMALE		
15-20	1	1	2	2%
21-30	4	9	13	13%
31-40	21	25	46	46%
41-50	12	19	31	31%
51-60	2	3	5	5%
61-70	1	1	2	2%
>70	1	0	1	1%
SEX DISTRIBUTION	42	58	100	100%

Table1 shows that large no. of patients(77%) having AF

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were found between the age group of 31-50 years,out of which 46% were between 31-40 years of age & 31% patients were between 41-50 years. While 15 patients(15%) were between the age of 15-30 years. Remaining 8% patients were above the age of 50 years. According to Sex, incidence of AF was higher amongst Female(58%) than in Male (42%).Male:Female ratio being1:1.38

TABLE 2 ETIOLOGIES OF AF

ETIOLOGY	NO. OF PATIENTS	PERCENTAGE (%)
RHEUMATIC HEART DISEASE	78	78%
ISCHAEMIC HEART DISEASE	11	11%
CARDIOMYOPATHY	3	3%
HYPERTENSION	2	2%
COPD	4	4%
THYROTOXICOSIS	2	2%

Table2 shows that Rheumatic valvular heart disease was the most common cause of AF constituting 78% of the patients. Non rheumatic etiology was found in remaining 22% of the patients.11% of the patients showed Ischaemic heart disease as etiology of AF. Amongst the Rheumatic valvular diseases,Mitral Stenosis(MS) (37%),was most common lesion,followed by Combination of MS with MR(26%).

TABLE 3 COMPLICATIONS OF AF

COMPLICATIONS	NO. OF PATIENTS	PERCENTAGE (%)
CONGESTIVE HEART FAILURE	30	30%
CARDIOEMBOLIC STROKE	8	8%
CARDIAC CIRRHOSIS OF LIVER	1	1%

Table3 shows that out of 100 patients of AF 30 patients (30%) showed evidence of congestive heart failure.8 patients(8%) developed Cardio-embolic stroke as a complication of AF. While 1 patient developed Cardiac cirrhosis of liver.

Most patients had symptoms of Breathlessness(87%) and Palpitation(82%) as presenting complaint. Cough with expectoration(52%), Nausea/Vomiting (40%) and Chest pain(25%) were the other frequent symptoms. Apexpulsedeficit was present in all the patients of AF. Raised JVP(75%) and Edema feet(45%) were most commonly found signs in patients of AF. Hepatomegaly and Cyanosis was seen in 26% and 16% of patients respectively.

In ECG,73 patients(73%)showed coarse 'f'(Fibrillary) waves,while remaining 27% showed Fine 'f' waves. On Echocardiography Left Atrium(LA) was found enlarged in 80 patients(80%).62% had LA size >40 mm,out of which 32% had LA size between 40-45 mm,while 27% had size between 45-50 mm.1 patient had severely enlarged LA(size >55 mm).8 patients out of 100 developed Cardioembolic stroke, Out of this, 5 patients had LA size between 45-50 mm, while 2 had LA size >50 mm.

35 patients(35%) were treated with Digoxin,majority of which were having Rheumatic etiology of AF.13 patients (13%) given Metoprolol,majority of which were having Hypertension or Ischaemic heart disease as an etiology of AF. Diltiazem/Verapamil given to 5% patients. Another 35% patients were treated with combination of Digoxin with B-Blocker or CCB.7% patients required combination of all 3 drugs for treatment. Amiodarone was given to 2 patients. Synchronized DC shock was given to 2 patients.88 patients (88%)showed Good response to therapy.

Mortality in present study was 2%.1 patient died due to Congestive heart failure and 1 due to Cardio-embolic stroke.

DISCUSSION

In Present Study,large no. of patients(46%) having AF were found between the age of 31-40 years,31% patients were between 41-50 years. While 15 patients(15%) were between the age of 15-30 years. Incidence of AF is higher amongst Female patients(58%) than in Male patients(42%),with Male : Female ratio being 1:1.38

In Prakash & Chugh Study(1973)1 91.61% had Rheumatic heart disease as an etiology of AF & most of the patients were between the age of 31-50 years. AF was more common in women than in men, because RHD is the commonest cause of AF in India & RHD in India affects women more than men. Male : Female ratio being 1:1.5

In Framingham Heart Study4,10, the incidence of AF was higher in men than women and increased with age. Incidence rates increased from 6.2 and 3.8 per 1,000 persons in 55-64 year old men and women, respectively, to 75.9 and 62.8 per 1,000 persons in men and women aged 85-94 over 38 years of follow-up. In both Framingham Heart Study4,10 and Atherosclerosis Risk in Communities Study,men had a 1.5-fold greater risk of developing AF than women. The Male : female ratio being 1.5:1.

In Present Study 78% had Rheumatic heart disease as an etiology of AF,while Ischaemic heart disease was in 11% as an etiology of AF.

In Prakash & Chugh Study (1973)1 91.61% had Rheumatic heart disease as an etiology of AF,while Ischaemic heart disease was in 5.94%as an etiology of AF.

In Hurst Study(1964)2 34% patients had Ischaemic heart disease as an etiology of AF,while Rheumatic heart disease was in 20%.

In Present Study, on Echocardiography Left Atrium was found enlarged in 80 patients(80%).8 patients(8%) developed Cardio-embolic stroke as a complication of AF.30 patients(30%) of AF showed evidence of congestive heart failure.

In Olmsted County study5,7, diagnosed with first AF,11% sustained a first ischemic stroke over a mean follow-up of 5.5 years & 16.2% after 20 years. Incidence of CHF was 7.8% within the first year, and 20% after 5 years of follow-up.

CONCLUSION

- ✓ Most common age group having Atrial Fibrillation was between 31-50 years, which indicates that the incidence of Atrial Fibrillation in India is significantly high in younger age group as compared to Western countries,where AF is more common in old age. According to sex, incidence of Atrial fibrillation was higher amongst Female (58%) than in Male (42%) as compared to western countries,where AF is more common in male. The Male : Female ratio being 1:1.38
- ✓ Most common cause of AF was Rheumatic heart disease(78%),as compared to Western countries,where IHD is the most common cause of AF. The time interval between onset of symptoms of rheumatic fever and presentation of symptomatic RHD is relatively short in India. The average age of patient having RHD developing AF, in India is 15-20 years earlier than patients from western countries. Nonrheumatic etiology group (22%) included IHD,Cardiomyopathy, Hypertension,COPD and Thyrotoxicosis.
- ✓ Most serious complication of AF was Cardio-embolic stroke(8%).Increase in size of Left Atrium in Atrial

Fibrillation is associated with increased risk of Cardio-embolic stroke. Most common complication of AF was Congestive cardiac failure (30%).CCF can be both,either cause or complication of AF.

- ✓ Most common symptoms of AF were Breathlessness (87%) and Palpitation (82%). Most common sign of AF was Apex pulse deficit(100%), followed by Raised JVP(75%) and Edema feet(45%).
- ✓ In ECG, Coarse 'f'(Fibrillary) waves were characteristic of Rheumatic valvular disease,while Fine 'f' waves were characteristic of Ischaemic heart disease. On Echocardiography, Left Atrium was enlarged in 80 patients(80%)
- ✓ Response of AF to therapy was good. Digoxin showed good response in patients having Rheumatic etiology of AF. Metoprolol showed good response in patients having Hypertension or IHD as an etiology of AF. Diltiazem/Verapamil also showed good response.

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