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Study on Clinical Profile of Article Fibrillation in a Teaching Hospital

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ABSTRACT

Background: Atrial fibrillation is the most common chronic arrythmia, with an incidence and prevalence that rises with age. High incidence and prevalence is seen in elderly people. Approximately 33% of arrythmia related hospitalization are for atrial fibrillation. It is estimated that 1% of population in the United States has Atrial Fibrillation. The incidence of atrial fibrillation is age and gender related. Atrial fibrillation is associated with approximately a fivefold increase in the risk of stroke.

Aim of the Study: This study has been conducted to determine the prevalence, etiology and clinical features of atrial fibrillation in a teaching hospital.

Materials and Methods: This study has been conducted for 1 year 3 months from June 2020 to September 2021 in the department of General Medicine, in Geethanjali Medical College Udaipur. We have included 55 patients in this study out of these 55, Males were 35 and Females were 20.

Results: We have included 55 patients, out of these 55 patients, Male patients were 35 and Female patients were 20. The common age group involved in between 20 years and 80 years. 3 patients died with severe heart failure.

Conclusion: Atrial fibrillation is a common, chronic arrythmia, commonly seen in males. The incidence is increases with age. Stroke and heart failure are common complications associated with atrial fibrillation.

Keywords: Arrythmias, Atrial Fibrillation, Rheumatic Fever, Heart Failure, Stroke.

INTRODUCTION

Atrial fibrillation is characterized by disorganised, rapid and irregular atrial activation with loss of atrial contraction and with an irregular ventricular rate that is determined by AV nodal conduction.[1] Atrial fibrillation is the most common sustained arrythmia and is a major public health problem. The prevalence is increases with age, in western countries more than 85% patients are older than 60 years of age. The prevalence by age 75 is approximately 12%.[2] Atrial Fibrillation is a complex arrythmia characterized by both abnormal automatic firing and presence of multiple interacting re-entry circuits looping around the atria. Episodes of Atrial Fibrillation, are usually initiated by rapid burst of ectopic beats arising from conducting tissue in the pulmonary veins or from diseased atrial tissue.[3] In India the epidemiological data on Atrial Fibrillation is very limited. In Europe it is 1-2% of total population. Atrial Fibrillation is mostly asymptomatic but due to improper flow of blood and the appearance of blood clots, it has acute risk factors such as stroke. The most frequent stroke type in Atrial Fibrillation patients is Ischemic stroke, which is having poor prognosis.[4] The other tachyarrhythmias are Supraventricular

Tachycardia, Atrial Flutter, and Ventricular Tachycardia. The Bradyarrhythmia's are Sick sinus syndrome, Av Blocks and Av dissociation. Atrial Fibrillation is characterized by irregular pulse. The serious complications like Hypotension, Myocardial Ischemia, Heart Failure and Stroke will occur when the ventricular rate is too rapid.[5]

The common cause of Atrial Fibrillation includes Coronary Artery disease, Hypertension, Rheumatic Heart Disease with Mitral Stenosis and Mitral Regurgitation, Ventricular septal defect, Dilated cardiomyopathy, Myocarditis and Non cardiac causes includes Hyperthyroidism, Chronic Obstructive Pulmonary disease, Pneumonia, there is one entity called lone atrial fibrillation which occurs in old age people (>70 years). The common clinical features are fatigue, shortness of breath, palpitations and syncope. Atrial Fibrillation is the only common arrythmia in which the ventricular rate is rapid and rhythm is very irregular. Because the varying stroke volumes resulting from fluctuating periods of diastolic filling, not all ventricular beats produce a palpable peripheral pulse. The difference between the

apical rate is the "pulse deficit". The difference is greater when the ventricular rate is high.[6] Atrial Fibrillation has been divided clinically into 2 types. 1 is paroxysmal AF, defined as episodes that start and stop spontaneously. 2 is persistent AF has a longer duration, exceeds 7 days, and in many cases will continue unless cardioversion is performed. The risk of a blood clot can be assessed using the CHA$_2$DS$_2$-VASc score and the treatment for blood clots and stroke prevention is done using oral anticoagulation (OAC) treatment. Most commonly used OAC drugs in the treatment of detected AF are Vitamin K Antagonists (VKA) or New Oral Anticoagulants (NOAC). Overtreatment (taking OAC treatment without needing it, CHA$_2$DS$_2$-VASc score 0 or 1) and undertreatment (not taking OAC treatment when needing it, CHA$_2$DS$_2$-VASc score > 1) are frequent. Undertreatment with OAC drugs on the longer term causes severe and costly complications, such as stroke. Overtreatment can also have severe and costly consequences such as bleeding. Overall, AF patients have a fivefold higher risk of developing stroke. The most frequent stroke type in AF patients is ischemic stroke (IS), which is connected to higher death rates or worse prognosis at higher cost.
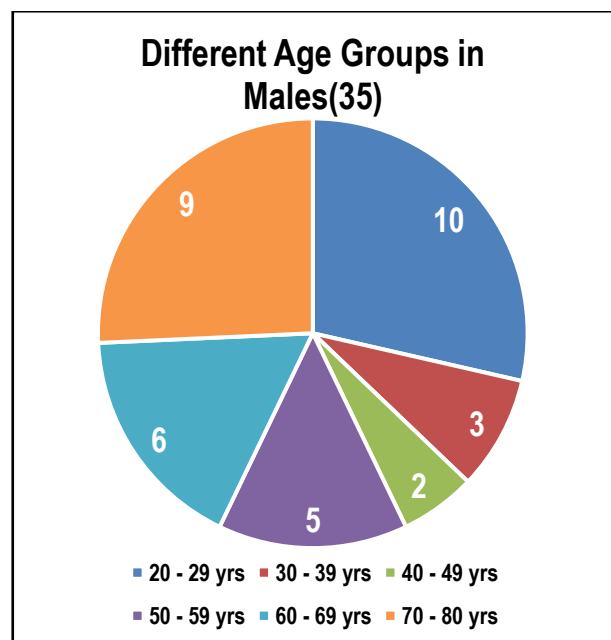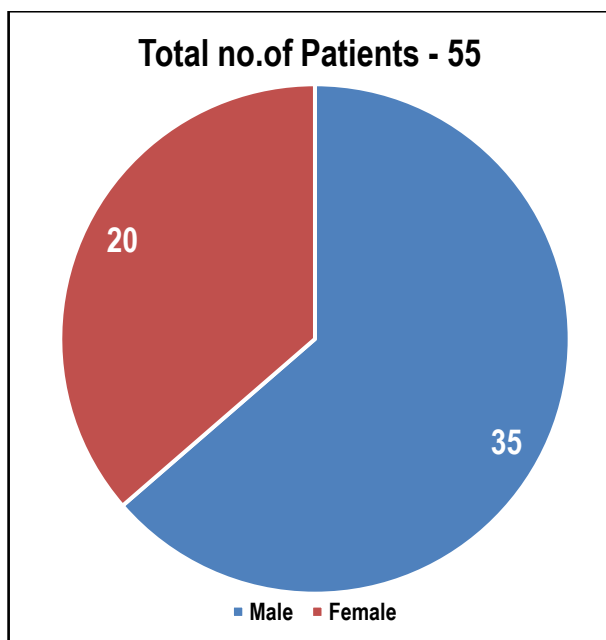
MATERIALS AND METHODS

This study has been conducted for 1 year 3 months from June 2020 to October 2021, In the department of General Medicine in Geethanjali Medical College. We have taken the consent, by giving consent forms in their local languages. After taking detailed history, we have examined all the patients and advised investigations like complete blood picture, RBS, Blood urea, Serum creatinine, Serum electrolytes, X-ray chest, electrocardiogram, 2D Echo cardiography. After collection of complete data, computerised and analysed systematically by using MS Office.

Table 1: Different Age Groups

S.NO	AGE IN YEARS	TOTAL NO. OF PATIENTS (M-35)	TOTAL NO. OF PATIENTS (F-20)
1	20 – 29	10 (28.5%)	6(28.5%)
2	30 – 39	3 (8.6%)	3(14.3%)
3	40 – 49	2 (5.7%)	1(4.8%)
4	50 – 59	5 (14.28%)	3(14.3%)
5	60 – 69	6 (17.14%)	4(18.6%)
6	70 – 80	9 (25.8%)	3(14.3%)

Table 2: Different Causes

S.NO	CAUSES	TOTAL NO. OF PATIENTS (M-35)	TOTAL NO. OF PATIENTS (F-20)
1	Rheumatic Heart Disease	12(34.28%)	6(26.6%)
2	Coronary Artery Disease	9(25.8%)	5(22.4%)
3	Cardiomyopathy	7(20.1%)	4(18.5%)
4	Hypertension	4(11.51%)	3(14.3%)
5	Atrial Septal Defect	1(2.8%)	1(4.2%)
6	Others	2(5.6%)	1(4.2%)

Different Age Groups in Females(20)

- ■ 20 - 29 yrs ■ 30 - 39 yrs ■ 40 - 49 yrs
- ■ 50 - 59 yrs ■ 60 - 69 yrs ■ 70 - 80 yrs
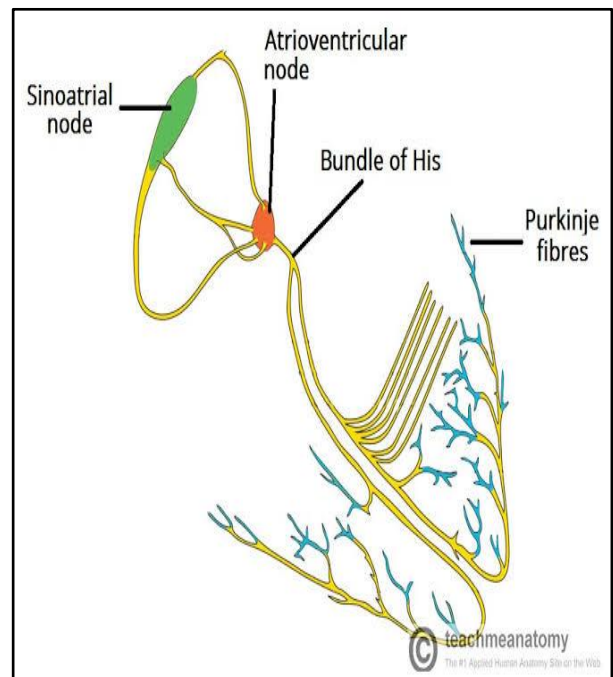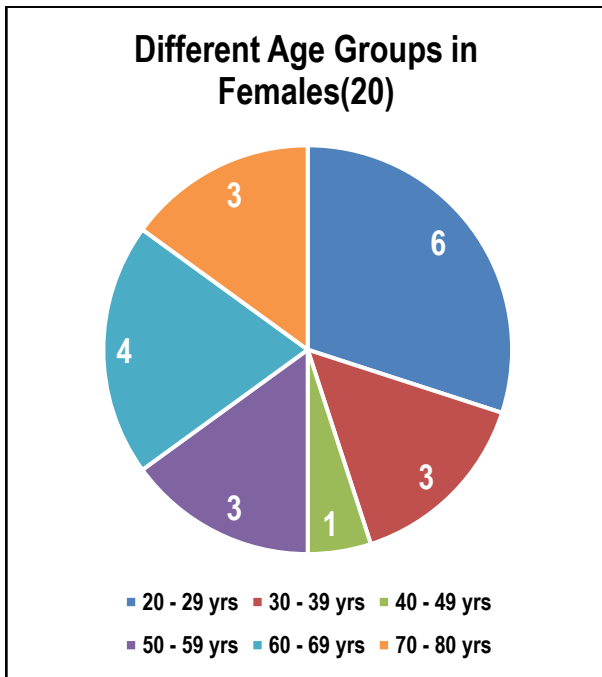
Fig 1: Conducting System of the Heart. Accessed from:
https://teachmeanatomy.info/thorax/organs/heart/conducting-system/
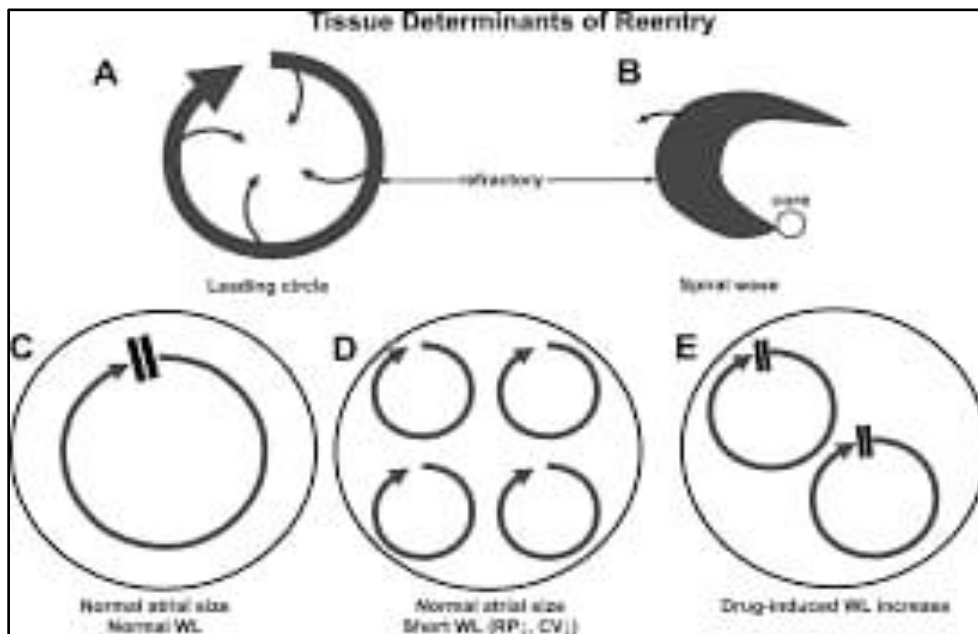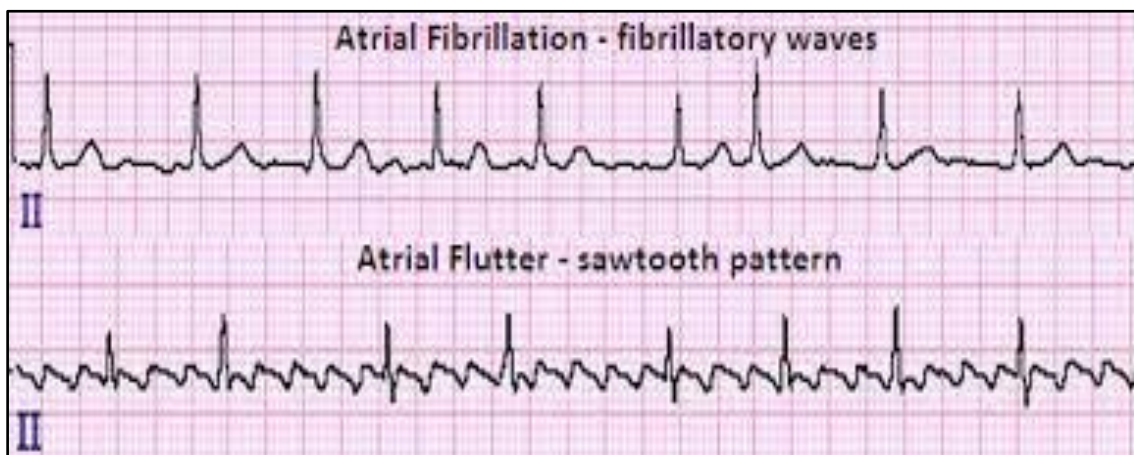

Fig 2: Mechanism of Atrial Fibrillation

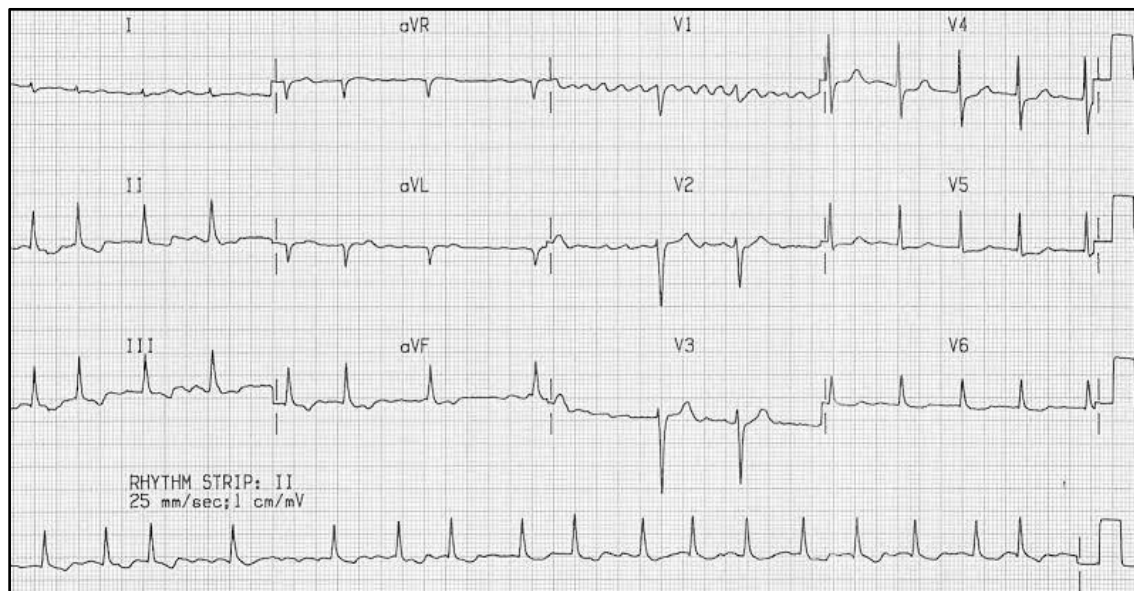**Fig 3: ECG in Atrial Fibrillation**

Fig 4: ECG in Atrial Fibrillation

RESULTS AND DISCUSSION

We have included total number of 55 patients in this study. Out of these 55 patients Males were 35 and Females were 20. The age group involved is between 20 years and 80 years. In our study we observed that Atrial Fibrillation is common in Males than Females. Atrial Fibrillation is very common in younger age group and old age patients (> 70 years). In developing countries Rheumatic heart disease is still common than western countries. In India Rheumatic heart disease is still common cause of Atrial Fibrillation. In males it is nearly 30% and in females nearly 25%. In a study in rural Haryana, prevalence of Rheumatic heart disease was found to be 2.2/1000 in 5 to 30 years old population.[7] ICMR conducted three school-based surveys in children 5 to 14 years in age over a 40-year period between 1970 – 2010. The data suggested a progressive decline in RHD from 5.3 to 2.9 to below 1.0/1000 between 1970 to 2010.[8] The study conducted by Sharma et al shows that the prevalence of Atrial Fibrillation in aged population (> 70 years) is 0.64%.[9] The common causes in our study are Rheumatic heart disease 34.28% in males, 26.6% in females; coronary artery disease 25.8% in males and 22.4% in females; cardiomyopathy was noticed in 20.1% in males and 18.5% in females; hypertension is seen in 11.5% in males and 14.3% in females. The studies conducted by T. Wilke et al shows that RHD is the cause of atrial fibrillation 19.2% in males and 21.5% in females; cardiomyopathy was seen in 16.2% of males and 22.3% of females and hypertension was in 4.5% of males and 7.2% of females.[10] The common clinical features seen in Atrial Fibrillation are palpitations, fatigue, shortness of breath, syncope. Atrial Fibrillation in general causes a five-fold risk in developing stroke. It is mostly associated with Ischemic stroke which brings more complications and poor prognosis than other types of stroke.[11]

Atrial Fibrillation is a chronic and common arrythmia. The heart is endowed with a special system for generating rhythmical electrical impulses to cause rhythmical contraction of the heart muscle and conducting these impulses rapidly through the heart. Initially the impulses generated in the Sinus node, then spread to AV node via internodal pathway and from AV node, the impulses spread to atria and all parts of ventricles via AV bundle and left and right

branches of Purkunjie fibres.[12] Atrial muscle mass is separated from the ventricular muscle mass by fibrous tissue, so fibrillation often occurs in atria without ventricular fibrillation. A frequent cause of Atrial Fibrillation is atrial enlargement resulting from heart valve lesions that prevent the atria from emptying adequately into ventricles, The dilated atria well provide ideal conditions of a long conductive pathway as well as slow conduction, both of which predispose to atrial fibrillation.[13] Most studies of Atrial Fibrillation focus on white population in North America or Europe. Less is known about prevalence, Etiology and treatment pattern of AF in India. Prevalence of Atrial Fibrillation increases with age, according to some studies it is 3% in 8th decade.[14] In India Rheumatic heart disease is still common, RHD included as one of the common causes for Atrial Fibrillation. The studies conducted by IHRS AF Registry and Narasimhan et al shows that Rheumatic Heart Disease cause of Atrial Fibrillation in the Indian population was found to be 61% and 42% respectively. This explains RHD with mitral valve disease is common in females than males. These findings are contrary to reports form the western world, where predominately males were found to have AF.[15,16] Clinical features of Atrial Fibrillation include palpitations fatigue, dizziness, shortness of breath, weakness. Atrial Fibrillation is classified as 1. Paroxysmal, in which symptoms are temporary lasting for few minutes to few hours or sometimes last for few days. Treatment is not necessary for these patients. 2. Persistent, Atrial Fibrillation in which the rhythm doesn't go back to normal on its own, treatment is necessary for these patients. 3. Permanent, In this type of Atrial Fibrillation, the irregular heart rhythm can't be restored. Treatment is needed to control the heart rate and to prevent the embolic episodes.[17] The common causes of Atrial Fibrillation are Rheumatic heart disease, coronary artery disease, cardiomyopathy, atrial septal defect, Hypertension and non-cardiac causes like Hyperthyroidism, COPD, Pneumonia and lone atrial fibrillation, which occurs commonly in elderly people. Stroke and heart failure are common complications associated with Atrial Fibrillation. Atrial Fibrillation in general causes a 6-fold risk in stroke. Because of Thromboembolism, it causes Ischemic stroke, which brings more complications and poorer prognosis than other types of strokes. The main stay of treatment includes the drugs to

control rate, rhythm and oral anticoagulant and rarely cardioversion is needed in Atrial Fibrillation.

The growth in prevalence of AF is another topic of resemblance. By the year 2050, the number of people suffering from AF is expected to increase by three times in USA and by two times in Europe. A study by Krijthe et al. reports a lower prognosis of AF prevalence in the Netherlands compared with EU in general. The number of individuals with AF will more than double, to a peak of about 553,700 in the year 2050, and then decrease slightly to 547,700 in the year 2060 reflecting 3.2% of the Dutch population. An explanation to this alarming prevalence prognosis estimate is connected to the aging of the population over the age of 55. This aspect is of real importance since with the growing number of cases the burden of managing the AF medical condition becomes even higher.

As a general trend, patients suffering from AF face increased risk of stroke and more severe and costly complications. In UK, FR, and NL the stroke incidence estimates are between the lowest 10 in Europe. It is hypothesized that the lowest level of stroke, which is reported in France, is connected to diet and lifestyle. Although the incidence of stroke is also reflected in the level of mortality due to stroke, we believe that these cases could be prevented or diminished through better AF case identification and in time treatment with OAC drugs.

CONCLUSION

Atrial Fibrillation is a common arrythmia, sometimes it is asymptomatic. Males are commonly affected than Females, Rheumatic heart disease is very common cause. Stroke and heart failure are common complications. Oral medications should be used to control the rate, rhythm and embolic phenomenon.

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