



A STUDY ON ETIOLOGY AND CLINICAL PROFILE OF PATIENTS WITH ATRIAL FIBRILLATION

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ABSTRACT **Aim:** To evaluate and co-relate the etiology and clinical profile of patients with acute (first episode), recurrent (two or more episodes), paroxysmal (terminates within 7 days) and chronic (persistent and permanent)atrial fibrillation which is unevaluated.

Materials Methods: In the present study, 55 patients of AF were evaluated based on various parameters such as age, sex, gender, etiology, types of AF. Parameters were co-related to test for significance of association using Chi-square testing method.

Results: The maximum patients in this study belonged to the age group of 51-70 years. There was a female predominance. Dyspnoea (81.8%) was the most common presenting complaint, followed by palpitations (74.5%) and pedal edema (32.7%). Stroke as a presenting feature was seen in only (11%) cases in present study but it was an important cause of functional limitation. In this study, 5.5% of the cases were asymptomatic. The most common etiology for atrial fibrillation was RHD (40%), followed by IHD (21.8%) and HTN (12.7%). The persistent (38.2%), permanent (25.5%) and first time detected AF (23.6%) types of AF were the major types seen as compared to the others which are paroxysmal (9.1%) and recurrent (3.6%). The LA size in maximum number of patients (43.6%) was less than 4cm, and more than 5cm in (20%) cases and RHD was the most important cause for enlarged LA. Significant co-relation was found between dyspnoea with Lone AF; palpitations with HTN and Lone AF; chest pain with IHD and DCM; dizziness with DCM and Lone AF; syncope with DCM and asymptomatic cases with Lone AF.

Conclusion: The study concludes that AF is common in elderly with female preponderance. Dyspnoea is commonest complaint followed by palpitations and pedal edema and then stroke. Commonest etiology was supposed to be RHD, IHD and HTN. Persistent type AF is more common.

KEYWORDS :

INTRODUCTION

Atrial fibrillation (AF) is the most common sustained cardiac arrhythmia encountered in clinical practice and requiring treatment.¹ AF predisposes patients to the development of thrombi and a markedly increased risk of thromboembolic stroke leading to functional limitation of such patients. The clinical features that predict higher risk of stroke in AF are prior stroke, hypertension, advancing age, diabetes, and congestive heart failure. Mortality rate of stroke related to AF is twice as high as that of stroke unrelated to AF.²⁻⁶ In patients 65 years or older, opportunistic screening by pulse palpation, followed by an ECG in those with an irregular pulse, is important to detect AF prior to the first stroke. The overall prevalence of AF in general population is estimated to be 0.4% to 1%. The incidence of AF is 0.1% per year in the population below forty years and this increases to 2% in those over 80 years. Women are significantly more likely than men to have valvular heart disease as a risk factor for atrial fibrillation. In addition to intrinsic cardiac causes such as valve disease and congestive heart failure, risk factors for cardiovascular disease also predispose to atrial fibrillation. Diabetes mellitus also increases risk of AF.¹²⁻²⁴ Various mechanism of the same is autonomic remodeling, electrical remodeling, structural remodelling and insulin resistance. Modification of risk factors for cardiovascular disease may have the added benefit of diminishing the incidence of atrial fibrillation.¹²⁻¹⁵

CLASSIFICATION :

Atrial fibrillation has been classified by American Heart Association/ American college of Cardiology/European Society of cardiology into first detected episode, recurrent (two or more episode), paroxysmal (terminates within 7 days), persistent (persist for more than 7 days) and permanent (sustained for more than 1 year or has failed cardio version).²⁵⁻³³

Persistent AF - Require either pharmacologic or electrical intervention to terminate.³³⁻⁴²

Permanent AF - Continuous AF, that has failed cardioversion, or where cardioversion has never been attempted.⁴³⁻⁵¹

AIMS AND OBJECTIVES

To evaluate and co-relate the etiology and clinical profile of patients with various types of Atrial Fibrillation

MATERIAL AND METHODS

This observational hospital based study was carried out at tertiary care hospital from January 2015 to June 2016 taking ethical clearance from the institution. All patients were enrolled after taking written informed consent and they were investigated historically and clinically to find out etiology and clinical profile of atrial fibrillation as per the questionnaire. The diagnosis of AF was made on the basis of history, clinical examination, examination of previous ECGs and confirmation with 12 leads ECG and 2-D Echocardiography. Subjects were clinically evaluated to establish a clinical diagnosis using other possible laboratory and radiological investigations (Chest Xray). Laboratory investigations included Complete blood count, Thyroid function Tests, Lipid Profile, FBS, PPBS, HBA1C. Data was recorded manually for analysis of individual parameters using graphs and tables and test for significance using chi-square test was applied for correlating the various parameters.

Inclusion Criteria :

The principal inclusion criteria was clinical diagnosis of patients of >18 yrs of age with first episode, recurrent episode, paroxysmal episode and persistent and permanent (chronic) atrial fibrillation (having clinical and electrocardiographic evidence of AF) but not further evaluated.

Single episode AF without previous ECG evidence was taken as first detected AF.

Exclusion Criteria :

Patients with other arrhythmias were excluded from the study.

STATISTICAL ANALYSIS :

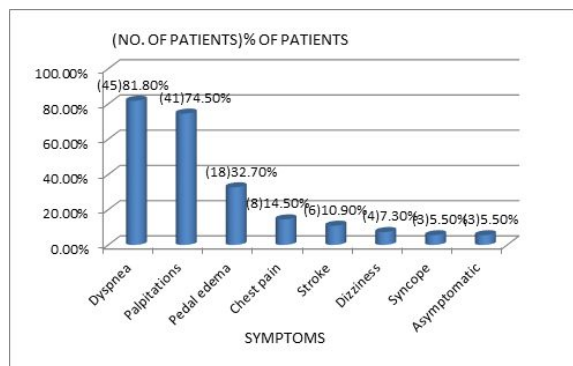
In the present study, 55 patients of AF were evaluated based on various parameters such as age, sex, gender, etiology, types of AF and LA size and statistically presented in the form of graphs and charts. Subsequently these parameters were co-related to test for significance of association using Chi-square testing method.

Results and discussion

Table - 1 (Age wise distribution)

Age	No. of patients	Percentage (%) of patients
21 to 30	4	7.3%
31 to 40	8	14.5%
41 to 50	10	18.2%
51 to 60	12	21.8%
61 to 70	13	23.6%
more than 70	8	14.5%

Maximum patients belonged to the age group of 51 to 70 years which is 45.4%; 60% were female and 40% were male showing a female predominance.

**Graph – 2 type of symptoms.**

Dyspnoea (81.8%) was the most common presenting complaint, followed by palpitations (74.5%) and pedal edema (32.7%).

In the present study that the most common etiology for atrial fibrillation is RHD (40%); followed by IHD (21.8%) and HTN (12.7%). The rest in order of COPD, DCM, Lone AF, Thyrotoxicosis and HOCM comprised (25.5%) of the cases.

The maximum number of patients had persistent AF (38.2%); followed by permanent AF (25.5%) and first detected AF (23.6%); while the rest two that is paroxysmal and recurrent AF comprised (9.1%) and (3.6%) respectively. Maximum 43.6% cases had LA size < 4 cm followed by 4-5 cm that is 36.4% and 20% cases had LA size > 5 cm.

DISCUSSION

Comparison of clinical features with other studies : In the present study, dyspnoea (81.8%) was the most common presenting complaint, followed by palpitations (74.5%) and pedal edema (32.7%). This was comparable to the study by Kannel et al where dyspnoea was the most common presentation (74%) followed by palpitation (57%) and was associated with significant overlapping of symptoms.⁹⁴⁻⁹⁸ Tischer et al reported dyspnoea in 62% of patients and palpitations in 33% patients.⁹⁹⁻¹⁰⁸ Stroke as a presenting feature was seen in only 11% cases in present study but it is an important cause of functional limitation in patients with AF. In non-valvular AF, it is 2-7 times more than those in sinus rhythm whereas in valvular AF, it is 17 times more than controls as seen in studies by Wolf PA et al.⁶⁹¹ Mortality rate of stroke related to AF is twice as high as that of stroke unrelated to AF.¹¹⁷ In patients 65 years and older, opportunistic screening by pulse palpation, followed by an ECG in those with an irregular pulse, is important to detect AF prior to the first stroke.¹¹⁸ Some patients can present with a combination of symptoms like palpitation, shortness of breath, lethargy, dizziness, fainting, chest pain and symptoms of stroke.¹¹¹ In the present study 5.5% of the cases were asymptomatic, comparable to studies reported Nanda V et al and Kumar T et al which showed the rates of asymptomatic presentations to be 2% and 14% respectively.^{93,95}

Comparison of etiology with other studies : In the present study, the most common etiology for atrial fibrillation is RHD (40%), followed by IHD (21.8%) and HTN (12.7%). This is comparable to a recent survey in public and private institutes in India, in which RHD is the most frequent cause of AF. However as the population is aging, many patients with AF have associated hypertension (HTN) and ischaemic heart disease (IHD).¹⁸ In western countries, IHD is the commonest cause of AF.¹⁹ In an Indian study by Nanda et al, structural heart disease is seen in 86.36% cases and non-structural heart disease in 10.6%

cases. Among the structural heart disease, valvular heart disease was seen in (51.51%) cases as a cause for AF. Chronic obstructive airway disease (COPD) in (6.06%) was the most important cause among non-structural heart diseases.⁹⁵ RHD, IHD, HTN and cor-pulmonale are most commonly found conditions in patients with AF.⁹⁸ In another Indian study by Singh G et al, RHD was reported in (37.87%), cardiomyopathy in (13.6%), HTN in (3%), IHD in (3.03%), thyrotoxicosis in (9.05%) and lone AF in (1.5%).¹⁰² Kumar et al reported RHD in (39%), IHD in (29%), HTN in (54%), cardiomyopathy in (4%), COPD in (3%) and thyrotoxicosis in (5%) of their patients.¹⁰³ Ischaemic heart disease (IHD) was the second most common cause of AF in the present study comprising (21.8%) of the cases. A recent study by Li K et al established the fact that AF is more commonly associated in patients with acute myocardial infarction (MI) and is associated with increased long term mortality.¹⁰⁸ MI is significantly associated with the development of AF in men.¹¹³ Apart from the etiology, there are certain cardiovascular risk factors that increase the propensity to cause AF. Established cardiovascular risk factors include hypertension, diabetes mellitus, cigarette smoking and obesity.^{10,80,81,82,83} Some of these have not been included in the present study. Subclinical markers indicating increased AF risk include increased arterial stiffness.⁸⁴ Recently identified novel markers associated with increased risk of AF include inflammatory and neurohumoral biomarkers,^{87,88} obstructive sleep apnoea⁸⁹ and metabolic syndrome.⁹⁰

Symptoms versus Types of AF co-relation : Test for significance using chi-square testing was applied for co-relating symptoms versus types of AF. In the present study, significant co-relation was found between dyspnoea with first detected AF and permanent AF; palpitations with first detected AF and persistent AF; pedal edema with first detected AF and persistent AF; dizziness with recurrent AF and asymptomatic cases with first detected AF. No other studies could be found for co-relation.

Etiology versus Types of AF co-relation : Test for significance using chi-square testing was applied for co-relating etiology versus types of AF. Significant co-relation was found in the present study between RHD with first detected AF and permanent AF; COPD with persistent AF and Lone AF with recurrent AF. No other studies could be found for co-relation.

Etiology versus LA size : Test for significance using chi-square testing was applied for co-relating etiology versus LA size. Significant co-relation was found in the present study between RHD and LA size >4cm. No other studies could be found for co-relation.

Conclusion: In elderly population, opportunistic screening by pulse palpation and ECG recording of those with irregular pulse should be followed. Incidence and prevalence of AF doubles for each advancing decade of life. Modification of risk factors for cardiovascular disease can diminish risk of Atrial fibrillation

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