



CLINICAL PROFILE OF ATRIAL FIBRILLATION PATIENTS IN A TERTIARY CARE CENTRE, A PROSPECTIVE OBSERVATIONAL STUDY

General Medicine

Dr. Shivasharan Sangolgi*

Senior Resident, Department of Medicine, Dr. V.M.G.M.C Solapur *Corresponding Author

Dr. Vithal N. Dhadke

Professor and Head of Department of Medicine, Dr. V.M.G.M.C Solapur.

Dr. Dipak Gaikwad Assistant Professor and Cardiologist Department of Medicine, Dr. V.M.G.M.C Solapur.

ABSTRACT

Atrial fibrillation (AF) is the most frequently encountered cardiac arrhythmia. AF, the commonest clinical arrhythmia is increasing in incidence and prevalence, is associated with substantial morbidity and mortality. Cerebrovascular complications are further important cause of functional limitation of such patients. AF presents a persistent challenge in healthcare due to its complex and multifactorial pathophysiology, requiring a thorough diagnostic and therapeutic strategy. The aim of the study on the clinical profile of AF is to comprehensively understand this prevalent cardiac arrhythmia by examining its epidemiology, symptoms, and associated risk factors.

KEYWORDS

Atrial Fibrillation, Stroke, Rheumatic Heart Disease, CHA2DS2-VASc Score.

INTRODUCTION

Atrial fibrillation is defined as a supraventricular tachyarrhythmia resulting from uncoordinated atrial activation. This results in irregular atrial contractions and an irregularly irregular ventricular response, which can lead to a range of clinical manifestations from asymptomatic to severe hemodynamic instability². The global prevalence of AF is estimated to be around 1-2% in the general population, and this figure increases with age. In individuals over 80 years old, the prevalence rises to approximately 10%³. The lifetime risk of developing AF is about 1 in 4 for adults over 40 years of age⁴. AF is a rapid (300-500 bpm), and irregular atrial rhythm, AF often stems from waves of electrical activity originating from ectopic action potentials most commonly generated in the pulmonary veins (PVs) of the left atrium (LA)⁵, or in response to re-entrant activity promoted by heterogeneous conduction due to interstitial fibrosis⁶. Cardiac remodelling, particularly of atria, results in structural and electrical changes that eventually become the cause of deranged rhythm in AF⁷. Paroxysmal AF is defined as a pattern of AF episodes that occur spontaneously and terminate with a relatively short duration, most commonly defined as 7 days or less. Persistent AF refers to AF that occurs continuously for >7 days but <1 year, whereas long-standing persistent AF refers to AF that has been persistent for >1 year. many patients experience a wide variety of symptoms, including palpitations, dyspnea, fatigue, dizziness, angina, and decompensated heart failure. In addition, AF can be associated with hemodynamic dysfunction, tachycardia-induced cardiomyopathy, and systemic thromboembolism. Common causes of AF include Elderly, Hypertension, Diabetes Mellitus, Ischemic Heart Disease, Valvular Heart Disease like Mitral Stenosis, Mitral Regurgitation of Rheumatic etiology, Cardiomyopathies Various Respiratory Conditions like Chronic Obstructive Pulmonary Disease, Obstructive sleep apnea, Endocrinopathies like hyperthyroidism or rarely without any apparent cause like LONE AF. Basic Investigations include Electrocardiography (ECG), Chest Xray, 2-D Echocardiography, routine blood investigations and Thyroid Function Test. More Advanced investigations include Electrophysiological Studies although availability is a concern. The treatment and management of the patient with AF focuses on three aims: (1) control of patient symptoms through a strategy of rate control and/or rhythm control; (2) appropriate mitigation of thromboembolism risk; and (3) addressing modifiable risk factors for progression of AF⁸. In the acute onset of AF, if significant hemodynamic compromise, pulmonary edema, or evidence of coronary ischemia is present, emergent cardioversion is recommended⁹. The risk of stroke appears to be most accurately predicted by the presence of underlying risk factors known to increase stroke risk. The CHA2DS2-VASc scoring system is a widely used tool to estimate stroke risk¹⁰. Anticoagulation is currently recommended in the United States for patients with a score of ≥ 1 , unless the lone risk factor is female gender¹¹.

MATERIALS AND METHODS

The study was conducted in Intensive Care Unit (ICU) under the department of General medicine in tertiary care hospital.

Design and Duration of Study:-

The study was an observational descriptive type, undertaken for a period of 24 months, in Intensive Care Unit (ICU) under the department of General Medicine, after obtaining approval from Institutional Ethics Committee.

Research Study Population Source:-

All cases diagnosed with atrial fibrillation or clinical features signs, history, basic ECG, chest Xray, 2 D ECHO, Cardiac Biomarkers suggestive of atrial fibrillation.

Sample Size:-

All the patients of atrial fibrillation coming to tertiary care centre during study duration will be included in study. This study was conducted among 120 patients, admitted in intensive care unit (ICU), under the department of General medicine, with the diagnosis atrial fibrillation in tertiary care hospital.

Inclusion Criteria:-

All patients aged >14 years with definitive diagnosis of atrial fibrillation in tertiary care centre during study duration will be included in study.

Exclusion Criteria:-

Patients < 14 years of age will be excluded from the study.

OBSERVATION AND RESULTS:

Showing Overall Age-wise Distribution of the Study Participants with Atrial Fibrillation (AF)-

Age (years)	No. of patients	Percentage (%)
20-29	4	3.33%
30-39	10	8.33%
40-49	22	18.33%
50-59	17	14.16%
60-69	32	26.66%
70-79	23	19.16%
>80	12	10%

Symptoms in Patients with Atrial Fibrillation-

Symptoms	No. of patients	Percentage (%)
Breathlessness	52	43.33%
Chest Pain	16	13.33%
Fatigue	8	6.66%
Palpitations	40	33.33%
Syncope	4	3.33%
Grand Total	120	100%

Distribution of Etiology of AF Among Study Participants-

Etiology	No of patients	Percentage(%)
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COPD	8	6.66%
DCMP	4	3.33%
Degenerative Valvular Heart Disease	12	10%
Diabetes Mellitus	4	3.33%
HTN	12	10%
Ischemic Heart Disease	4	3.33%
RHD	72	60%
Thyrototoxicosis	4	3.33%

Valvular Abnormality Among Study Participants with AF Having RHD-

Valvular Abnormality	Percentage (%)
MR	8 (11.11%)
MS	20 (27.77%)
MS + AR	8 (11.11%)
MS + MR	15 (20.83%)
MS + MR + AR	11 (15.72%)
MS + MR + AS	10 (13.88%)

Showing CHA2DS2-VASc Score Among Study Participants with AF.

CHADVaSc SCore	Patients	Percentage
0	15	12.50%
1	39	32.5%
2	23	19.16%
3	28	23.33%
4	13	10.83%
5	2	1.66%

Complications Among Study Participants with AF-

Complications	No of patients (%)
Cardioembolic stroke	12 (10%)
Cardiogenic Shock	4 (3.33%)
Congestive cardiac failure	4 (3.33%)
NO Complications	100 (83.33%)

Short Term Outcome Among Study Participants with AF-



DISCUSSION

In this descriptive observational study, which is conducted for 24 months at a tertiary care hospital's intensive care unit (ICU), 120 patients diagnosed with atrial fibrillation (AF) were analysed based on specified inclusion and exclusion criteria. The study provided a detailed demographic profile, revealing a predominance of female patients (67%) compared to males (33%). Age distribution showed a significant proportion of patients aged 60-80 years (52.50%), followed by those aged 40-59 years (32.50%), with fewer patients falling into younger and older age categories.

Symptomatology among AF patients varied, with breathlessness being the most prevalent complaint (43.33%), followed by palpitations (33.33%), chest pain (13.33%), fatigue (6.66%), and syncope (3.33%). Etiologically, rheumatic heart disease (RHD) emerged as the leading cause of AF (60%), followed by degenerative valvular heart disease and hypertension, among others. Interestingly, among RHD cases, there was no significant gender correlation ($p>0.05$).

Echocardiographic findings highlighted that a majority of patients had preserved left atrial size (68% with sizes of 4-5 cm), while valvular abnormalities, predominantly mitral stenosis (MS) and mixed valvular diseases, were common among RHD cases. Most patients demon-

strated normal ejection fractions ($>50\%$), and nearly all showed no regional wall motion abnormalities (97%). CHA2DS2-VASc scores indicated that 45% of patients were at low to intermediate risk (score 0-1) and 55% were at high risk (score ≥ 2), with the most common scores being 1 (32.50%), 3 (23.33%), and 2 (19.16%).

Complications observed during the study were relatively low, with 83.33% of patients experiencing no complications, while others encountered cardioembolic stroke (10%), cardiogenic shock, or congestive cardiac failure (each 3.33%). In terms of outcomes, the vast majority of patients (93%) were discharged, underscoring the success of ICU management, though a small percentage (7%) unfortunately succumbed to their condition.

This study provides a detailed information of the clinical characteristics, echocardiographic findings, complications, and outcomes of AF patients in a tertiary care setting, highlighting the complex interplay of demographic factors, etiology, and clinical management in this prevalent cardiac condition.

CONCLUSION

The findings of this observational study provide valuable insights into the clinical profile, risk stratification, and outcomes of patients with AF admitted to a tertiary care ICU. Atrial fibrillation, characterized by irregular atrial activity and a rapid ventricular response, represents a significant health challenge due to its association with increased risks of stroke, thromboembolism, and heart failure, particularly as the population ages. This study confirms the global trend where rheumatic heart disease (RHD) remains a prominent etiological factor in developing countries like India, contrasting with Western regions where RHD has become less prevalent.

Regarding patient demographics, a notable predominance of females was observed among AF patients, consistent with previous studies indicating a higher incidence of AF in women. The age distribution revealed a substantial proportion of patients aged 60-80 years, underscoring AF's association with advancing age. Symptoms such as breathlessness, palpitations, and chest pain were prevalent among study participants, aligning with reported symptomatology in AF patients across various studies.

The study also highlighted the diverse etiological spectrum of AF, with RHD emerging as the leading cause, followed by degenerative valvular heart disease, hypertension, and other comorbidities. Echocardiographic assessments showed that most patients had preserved left ventricular function, with a significant majority exhibiting no regional wall motion abnormalities.

The consistent distribution of CHA2DS2-VASc scores across both studies suggests a reliable pattern in assessing patient risk levels. This highlights the CHA2DS2-VASc score's utility in stratifying patients by risk, aiding clinicians in making informed decisions regarding the management of atrial fibrillation.

In terms of clinical outcomes, the majority of patients were discharged successfully, reflecting effective management strategies in the ICU setting. However, a small but noteworthy percentage experienced mortality, emphasizing the critical nature of AF management and the need for continuous monitoring and intervention to reduce adverse outcomes.

Comparisons with similar studies underscored consistency in findings related to demographics, symptoms, etiology, and outcomes, further validating the study's observations within the broader literature on AF.

In conclusion, this study contributes valuable data to enhance understanding of AF's clinical spectrum and outcomes in a tertiary care setting. It highlights the importance of tailored management strategies based on comprehensive risk assessment and underscores the ongoing challenges in managing this complex arrhythmia effectively to optimize patient outcomes and quality of life.

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