ORIGINAL RESEARCH PAPER
Volume - 12 | Issue - 06 | June - 2023 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

CHARACTERISTICS OF PATIENTS WITH ATRIAL FIBRILLATION AS OBSERVED THROUGH CLINICAL AND ECHOCARDIOGRAPHIC ASSESSMENTS

General Medicine

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ABSTRACT

Introduction: Atrial fibrillation (AF) is a common sustained cardiac arrhythmia that requires clinical intervention and is prevalent in the developed world. The onset of AF can be attributed to several risk factors, such as hypertension, coronary artery disease, and rheumatic valvular disease. ECG and echocardiographic risk factors are associated with atrial fibrillation. The aim of this study was to investigate the clinical and echocardiographic profile of patients with atrial fibrillation. **Methods:** The study design was a cross-sectional analysis of 100 patients diagnosed with atrial fibrillation in the Department of Internal Medicine at Shri Guru Ram Rai Institute of Medical & Health Sciences (SGRRIM&HS) and Shri Mahant Indresh Hospital (SMIH), Dehradun. Ethical approval and prior informed consent were obtained from all patients. A detailed history, physical examination, and ECG recordings were obtained for each patient. Statistical analysis was performed to determine the effective size and power of the study. **Results:** The mean age of the participants was 51.0±12.05 years. The most common symptoms reported were fatigue (46%), followed by palpitation (26%) and chest pain (16%). Echocardiographic parameters such as LA size and EF were within normal limits. **Conclusion:** This study provides important clinical and echocardiographic insights into patients with atrial fibrillation. The results suggest that echocardiographic parameters can be used to evaluate the severity of AF and guide clinical management. Further studies are needed to explore the potential of these parameters as prognostic markers in patients with AF.

KEYWORDS

INTRODUCTION

Atrial fibrillation (AF) is characterized by several symptoms including loss of atrial contraction, disordered, accelerated, and irregular atrial activation, and an erratic ventricular rhythm due to AV nodal conduction. AF is the most common sustained cardiac arrhythmia that requires clinical intervention, and is prevalent in the developed world. The likelihood of AF increases with age, with over 95% of patients being over 60 years old, and a prevalence rate of 10% in people aged 80 years or older. Men have a higher lifetime risk of AF than women, with a 25% risk for those aged 40 years. Additionally, AF is more common among white individuals than black individuals.

The onset of atrial fibrillation can be attributed to several risk factors, such as hypertension, coronary artery disease, rheumatic valvular disease, hypertrophic and dilated cardiomyopathy, congestive cardiac failure, pericarditis and myocarditis, congenital heart disease, sick sinus syndrome, and post-cardiac surgery. Apart from these, some non-cardiac risk factors that can lead to atrial fibrillation are age, hyperthyroidism, chronic obstructive pulmonary disease, obstructive sleep apnea, alcohol consumption, diabetes mellitus, smoking, drugs such as theophylline, and familial factors.(1)

Electrocardiographic risk factors such as left axis deviation, left ventricular hypertrophy, and ischemic changes, as well as echocardiographic risk factors such as left atrial enlargement, increased left ventricular wall thickness, and decreased left ventricular fractional shortening are associated with atrial fibrillation. Congestive heart failure is a common complication of this condition. In normal circumstances, atrial contraction contributes 20% of the left ventricular stroke volume at rest, but this is lost in atrial fibrillation, potentially leading to left ventricular dysfunction.(2)

Atrial fibrillation (AF) is an irregular depolarization of the atria that is caused by persistent wavelets of re-entry, as per electrophysiology. Various factors such as atrial dilatation, blockage of the nodal artery, damage to the sinoatrial node and internodal pathways, and others have been suggested as potential causes of AF. The ventricular rhythm in the presence of AF is highly irregular, and "P" waves may either be absent or appear as coarse fibrillary waves. Fast fibrillary waves are more common in recent-onset AF. With advances in 2D-Doppler ultrasonography technology, echocardiography has become a vital tool in the evaluation and management of patients with cardiac rhythm disturbances.(3)

AIMS AND OBJECTIVE

To study the clinical and echocardiographic profile of patients with atrial fibrillation

MATERIALS AND METHODS

The study design was a cross-sectional analysis of patient was carried out in the Department of Internal Medicine at Shri Guru Ram Rai Institute of Medical & Health Sciences (SGRRIM&HS) and Shri Mahant Indresh Hospital (SMIH), Dehradun.

Sample size: 100 cases

Ethical issues:
Approval from institutional ethics committee will be obtained before undertaking the study. Prior informed consent will be taken from all the patients.

Inclusion criteria:
All patients aged more than 18 years, diagnosed with atrial fibrillation, both clinically and confirmed by electrocardiogram.

Clinical grounds for inclusion:
Age of the patients, sex, history of CAD, systemic hypertension, congenital heart Disease, cardiomyopathies, thyroid disorder, COPD, cerebrovascular accidents Will be taken into account. The following features would be noted:

1. Irregularly irregular pulse
2. Pulse deficit > 10 calculated by simultaneous counting of pulse rate and Heart rate by 2 observers.
3. Absent 'a' wave in jugular venous pulsation.
4. Variable intensity of first heart sound on auscultation.

Exclusion criteria:
Patients less than 18 years would be excluded from the study.

ECG Recording:
12 lead ecg was taken for all the cases with a standardization of 1mv= 10 mm, With the paper speed at 25mm/sec. The following features would be noted:

1. Absence of p wave
2. Atrial activity reflected by an irregularly corrugated deflection 'f' wave.
3. Atrial rate >350/min
4. Irregularly irregular R-R interval

In all patients who were included, a detailed history and physical examination was done.

Statistical analysis
Power analysis will be done. Effective size/power of the study will be determined by taking in to account the number of patients presenting with dengue and the duration of study. Data will be expressed as mean

and standard deviation, number and percentages.

RESULTS

Table 1:- Baseline Characteristic of the study participants. (n = 100)

Baseline	Mean ±SD
Age (years)	51.0±12.05
HT rate	116.94±8.06
INR	1.66±0.02
LA size (cm)	4.58±1.04
EF (%)	48%

Table 2 shows that mean± SD age was 51.0±12.05 years, HT rate was 116.94±8.06, INR was 1.66±0.02, LA size was 4.58±1.04 and EF was 48%.

Table 2 Assessment of symptoms

Symptoms	Yes	No
Fatigue	46	54
Palpitation	26	74
Chest pain	16	84
Syncope	27	73
Dyspnea	74	26

Table 2 shows that fatigue was seen in 46, palpitations in 26, chest pain in 16, syncope in 27 patients and dyspnea in 74 patients.

Table 3 LA size

Table 3: La Size Severity

LA SIZE	MALES(cm)	FEMALES(cm)
NORMAL	<4.1	<3.9
MILD	4.1-4.6	3.9-4.2
MODERATE	4.7-5.1	4.3-4.6
SEVERE	>5.1	>4.6

LA size	Number
Normal	10
Mild	29
Moderate	40
Severe	21

Table 3 shows that LA size was normal in 10, mild in 29, moderate in 40 and severe in 21.

Table 4 LVSD

LVSD	Number
Mild	28
Moderate	15
Normal	57

Table 4 shows that LVSD was mild in 28, moderate in 15 and normal in 57.

Table 5 LVDD

LVDD	Number
Grade 1	11
Grade 2	5
Nil	84

Table 5 shows that LVDD grade 1 was seen in 11, grade 2 in 5 and nil in 84.

Table 6 LVH

LVH	Number
Yes	29
No	71

Table 6 shows that LVH was present in 29 and absent in 71.

DISCUSSION

Atrial Fibrillation (AF) is one of the commonest arrhythmia seen in clinical practice.(4)The incidence is 0.5% in patients under 60 years of age and 10% in patients above the age of 80 years.(5)It is the commonest cause of mortality and morbidity in the young.

15% of all strokes are related to AF associated with thromboembolic events.(6)Electro- physiologically, AF represents disorganized atrial depolarization that results from chronic wavelets of re-entry.(7)

LA Size

In our study, LA size was normal in 10, mild in 29, moderate in 40 and severe in 21. Mahmood ul Hassan et al(8) noted in their study that the frequency of left atrial and appendage clots on trans-oesophageal echocardiography in patients with severe mitral stenosis is common and more frequent in patients with AF and LA size > or = 45 mm.

Left Ventricular Systolic Dysfunction

In our study, left ventricular systolic dysfunction (LVSD) was present in 43. LVSD was mild in 28 and moderate in 15 cases. Out of 39 females, mild LVSD was seen in 9, moderate in 10. Out of 61 males, mild was seen in 19, moderate in 5. Mahmood ul Hassan et al (8) found that most of their patients had left ventricular systolic dysfunction.

Left Ventricular Hypertrophy

In our study, left ventricular hypertrophy (LVH) was present in 29 patients. Of which it was seen in 15 females and 14 males. Out of 43 patients of CAD, LVH was present in 18. Out of 48 patients of RHD, LVH was present in 6. Out of 9 patients with DCMP, LVH was present in 5 patients. Teicholz et al (9) observed that LAE and LVH with normal EF are commoner in hypertensive patients with suggesting diastolic dysfunction.

CONCLUSION

As per the findings of this study, atrial fibrillation had a mean age of onset of 51 years, and it was observed more frequently in females than males. Dyspnea was the most commonly reported symptom at presentation, followed by fatigue. Additionally, a higher incidence of clot formation was noted on echocardiography in cases with left atrial enlargement.

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