

## ORIGINAL ARTICLE

# ETIOLOGICAL PROFILE AND CLINICAL PRESENTATION OF PATIENTS WITH ATRIAL FIBRILLATION FROM A RURAL AREA OF BIHAR

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**ABSTRACT**

**Objectives:** Atrial fibrillation (AF) is the most common sustained cardiac arrhythmia encountered in clinical practice. This study was conducted to find the etiological and clinical profile of persistent and permanent AF patients from rural Bihar.

**Methods:** This observational hospital based study was carried amongst indoor patients of AF of Department of Medicine, Darbhanga Medical College, Bihar. Data analysis was done using SPSS 14.0 version software. Results were presented using percentages

**Results:** Out of 66 patients of AF, majority of patients were aged between 51-60 years and were males. Valvular heart disease was found to be the most common cause of atrial fibrillation while palpitation was the most common presenting complaint encountered. Nearly 62.1% patients had their left atrial size more than 3.5 cm. Mitral stenosis was noted as most common cause of enlarged left atrium in 47% cases. About half of patients had their left ventricular ejection fraction < 50%.

**Conclusions:** This article has provided many insights on potential risk factors for the occurrence of atrial fibrillation and various presenting features of patients with atrial fibrillation. This would help in early diagnosis and prompt treatment of patients with AF especially in rural areas which remains a challenging problem.

**Key words:** Atrial fibrillation, etiological profile, clinical presentation

**INTRODUCTION**

Atrial fibrillation (AF) is the most common sustained cardiac arrhythmia encountered in clinical practice and requiring treatment. Atrial fibrillation is characterized by disorganized atrial activation and uncoordinated contraction. ECG demonstrate rapid fibrillatory waves with changing morphology and ventricular rhythm that is irregularly irregular.<sup>1</sup> This is clinically identified as irregularly irregular pulse with rates varying from normal to 200 and pulse deficit >10 beats. Atrial fibrillation should be suspected when the ECG shows ventricular complexes at an irregular rhythm and no obvious P wave.

Atrial fibrillation has been classified <sup>2,3</sup> 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).

The overall prevalence of AF in general population is estimated to be 0.4% to 1%.<sup>4</sup> 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.<sup>5</sup> The incidence and prevalence of atrial fibrillation both increases exponentially with aging.<sup>6</sup> The adjusted incidence and prevalence of AF is roughly double for each advancing decade of life,<sup>7-9</sup>and, at any given age, men have an ≈50% higher incidence of AF than women.<sup>7</sup> Based solely on the aging of the population, the prevalence of AF in the United States has been projected to increase from ≈2 to 5 million in 2000 to ≈6 to 12 million in 2050, with estimates reaching almost 16 million if the increase in age-adjusted AF incidence continues.<sup>8,10</sup> From the Framingham data the lifetime risk of developing atrial fibrillation after age of 40 has been found to be 26% for men and 23% for women. Established risk factors for AF include cardiac

conditions, such as systolic and diastolic heart failure, valvular heart disease, and myocardial infarction, and cardiovascular risk factors, such as hypertension, diabetes mellitus, obesity, and cigarette smoking.<sup>7,9,11,12,13</sup> Subclinical markers indicating increased AF risk include increased arterial stiffness<sup>14</sup> and echocardiographic evidence of structural heart disease, such as left atrial enlargement, left ventricular hypertrophy, and left ventricular systolic and diastolic dysfunction.<sup>15,16</sup> Recently identified novel markers associated with increased risk for AF include inflammatory and neurohumoral biomarkers,<sup>17,18</sup> obstructive sleep apnea,<sup>19</sup> and metabolic syndrome.<sup>20</sup>

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. 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.<sup>5,21</sup>

Although various studies have been conducted worldwide there is paucity of data in this region. Hence this study was undertaken with the aim to find etiological profile and clinical presentation of persistent and permanent AF patients from rural area of Bihar.

**MATERIALS AND METHODS**

This observational hospital based study was carried out in the Department of Medicine, Darbhanga Medical College, Bihar from June 2006 to December 2008 after taking ethical clearance from the institution. All patients admitted with persistent and permanent AF (having clinical and electrocardiographic evidence of AF) were included in this study. The patients with first episode of AF and paroxysmal episode of AF were excluded from the study. The diagnosis of AF was made on the basis of history, clinical examination, confirmation with 12 leads ECG and 2-D Echocardiography. Data analysis was done using SPSS 14.0 version software. Results were presented using percentages.

**RESULTS**

Out of 66 patients of AF studied, majority of patients were aged between 51-60 years (48%) and were males (54.5%). (Table 1) Structural heart disease was found in 86.36% of cases and non-structural heart disease in 10.6%. Among the structural heart disease, valvular heart disease was seen in 51.51% cases as a cause of AF while among the non structural heart disease Thyrotoxicosis (4.54%) and chronic obstructive airway disease (6.06%) were most important causes found. (Table 2) Palpitation (33.33%) was the most common presenting complaint encountered followed by dyspnoea (24.2%), chest pain (21.2%) and stroke (12.12%). (Table 3) Nearly 62.1% patients had their left atrial size more than 3.5 cm. Valvular heart disease, in

particular mitral stenosis was noted as most common cause of enlarged left atrium in 47% cases. About half of patients had their left ventricular ejection fraction < 50%. (Table 4)

**Table-1: Age and gender wise distribution of patients**

Characteristics	No. of patients (%)
Age (in yrs)	
16-20	3 (4.54)
21-30	7 (10.60)
31-40	12 (18.18)
41-50	12 (18.18)
51-60	20 (30.30)
61-70	10 (15.15)
71-80	2 (3.03)
Sex	
Male	36 (54.54)
Female	30 (45.46)

**Table-2: Clinical presentation of patients with AF**

Clinical Presentation	Patients (%)
Valvular heart Disease	34 (51.51)
Dilated Cardiomyopathy	10 (15.15)
Ischemic heart Disease	8 (12.12)
HTN with or Without Type II DM	5 (7.57)
Chronic airway Disease	4 (6.06)
Thyrotoxicosis	3 (4.54)
Lone AF	2 (3.03)

**Table-3: Clinical Presentation of the Patients**

Signs and Symptoms	Patients (%)
Palpitation	22 (33.33)
Dyspnoea	16 (24.24)
Chest pain	14 (21.2)
Loss of consciousness (stroke)	8 (12.12)
Hypotension	4 (6.06)
Asymptomatic	2 (3.03)

**DISCUSSION**

Most of the patients belonged to the age group of 41 to 60 years. The age distribution of patients in this study with mean age of 47.0 is consistent with most Indian studies but differ from western studies due to low prevalence of rheumatic heart disease in their population.<sup>22,23</sup> A higher proportion (54.54%) of the patients were males as compared to females (45.46%). Similar observations were made by other studies.<sup>24,25,7</sup>

Structural heart disease was found in 86.36% of cases and non-structural heart disease in 10.6% of cases in this study. Among the structural heart disease, valvular heart disease was seen in 51.51% cases as a cause of AF. Thyrotoxicosis (4.54%) and chronic obstructive airway disease (6.06%) were most important causes among non structural heart disease in this study. The

etiological profile of our patients is almost similar to those reported by previous studies.<sup>26</sup>

**Table-4: Echocardiographic Observations of the Patients**

Clinical Conditions	LA Size		LVEF		LA Clot	
	<3.5cm (%)	>3.5cm (%)	<50% (%)	>50% (%)	Not present (%)	Present (%)
Valvular heart disease	3 (4.54)	31 (46.96)	15 (22.72)	19 (28.78)	27 (40)	7 (10.6)
Dilated cardiomyopathy	4 (6.06)	6 (9.09)	9 (13.63)	1 (1.51)	10 (15.15)	0
Ischemic heart disease	6 (9.09)	2 (3.03)	4 (6.06)	4 (6.06)	8 (12.12)	0
Hypertension	4 (6.06)	1 (1.51)	4 (6.06)	1 (1.51)	5 (7.57)	0
Chronic airway disease	3 (4.54)	1 (1.51)	1 (1.51)	3 (4.54)	4 (6.06)	0
Thyrotoxicosis	3 (4.54)	0	0	3 (4.54)	3 (4.54)	0

LA = Left Atrium

Palpitation was the most common presenting complaint encountered followed by dyspnoea, chest pain and stroke. These observations are similar to a previous reported study by Fuster et al.<sup>2</sup>

62.1% had their left atrial size more than 3.5 cm. valvular heart disease, in particular mitral stenosis was noted as most common cause of enlarged left atrium in 31(47%) cases. Dilated cardiomyopathy was found in 6(9.09%) cases as cause of enlarged left atrium. These findings are consistent with those reported by ALFA study.<sup>27</sup> About half of patients had their left ventricular ejection fraction < 50% in the current study which is higher than that reported by previous studies<sup>27</sup>.

**CONCLUSION**

This article has provided many insights on potential risk factors for the occurrence of atrial fibrillation, such as valvular heart disease, hypertension, cardiomyopathy, ischemic heart disease and various presenting features of patients with atrial fibrillation. This would help in early diagnosis and prompt treatment of AF especially in rural areas which remains a challenging problem.

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