



# Clinical and etiological study of atrial fibrillation in elderly in upper Assam



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BMI (body mass index)  
CVA (cerebrovascular accident)

## ABSTRACT

The present study was a hospital based observational study carried out on 354 patients of atrial fibrillation 13 years and above who attended the outpatient department and/or were admitted in various units of the Department of Medicine and Cardiology, Assam Medical College and Hospital, Dibrugarh during a period of 1 year from June 2013 to May 2014. In this study the majority of the patients (78), i.e., 22.03% were in the age group of 61–70 years. Majority of the patients were female (58.19%). Males comprised of 41.81%. The common symptoms of atrial fibrillation in the patients were palpitation 85.31% and breathlessness 82.77%. Next common symptoms were fatigue 73.16%, PND 70.06% and swelling of dependant parts 68.93% respectively. Giddiness 57.91% and orthopnea 53.67% were the next common presenting symptoms. Chest pain was the presenting complaint in 22.32% cases and limb weakness or stroke in 7.34% cases. Involuntary movements 3.95% and sleep apnea 1.97% were among the least common symptoms observed, while 2.82% cases were asymptomatic. Among the clinical signs of atrial fibrillation, the most common signs were pulse deficit 77%, raised JVP 74%, pedal edema 68.9%, CCF 68.6%, (LV or RV) S3 52% respectively. Icterus 9.32%, cyanosis 8.47% and clubbing 4.24% were found as minor signs. Maximum 50.56% AF cases were found in the systolic BP ranging from 121 to 160, followed by 33.05% in 80–120 range. Least 16.38% patients were encountered in the systolic BP ranging from 161 to 200. Maximum 74.01% cases were found in the diastolic BP ranging from 71 to 100, followed by 50–70 range in 25.71% cases. As regard to pulse pressure maximum cases were found in the >40 group amounting to 72.88% cases. In the ≤40 group only 27.12% cases were there. Among the type of AF, persistent 46.9% type of atrial fibrillation was found to be most common followed by permanent 34.7%, paroxysmal 17.79% and lone 0.6% respectively. Most common etiology of AF was RHD in 43.5% cases, COPD in 8.75%, cardiomyopathy in 7.63%, IHD in 7.06%, cardiac surgery in 2.82%, hyperthyroidism in 1.97% cases respectively. Congenital heart disease amounted to 1.41%. There were no familial cases of atrial fibrillation observed. This is the first study conducted in upper Assam of North East region. Among the risk factors, hypertension accounted for 31.92%, smoking in 13.27%, DM in 5.93% and alcohol in 1.41%.

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## 1. Introduction

Atrial fibrillation is a supraventricular tachyarrhythmia characterized by uncoordinated, disorganized, rapid and irregular atrial activation. It affects approximately 2.3 million people in North America and 4.5 millions in Europe, particularly the elderly. In the United States, about 75% of individuals with AF are 65 years of age or older.<sup>1,2</sup> The overall prevalence of AF is 1%<sup>1,3</sup> in general population. The overall prevalence of atrial fibrillation increases with age. It is extremely unusual in children unless structural heart

disease or another arrhythmia is precipitating atrial fibrillation. The incidence of atrial fibrillation is age and gender related ranging from 0.1% per year before the 40 years and more than 1.5% per year in women and more than 2% per year in men older than 80 years. It is more common in white males.<sup>3</sup>

The indispensable part of atrial fibrillation having clinical importance are as follows: (1) loss of atrial contractility; (2) the inappropriate fast ventricular response; (3) the loss of atrial appendage contractility and emptying leading to risk of clot formation and subsequent thromboembolic event.<sup>4</sup>

During atrial fibrillation electrical activity of the atrium can be detected on the ECG as small, irregular baseline undulation of variable amplitude and morphology which is called “f” wave. The atrial rate varies from 300 to 600 beats per minute. There is also

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lack of organized atrial activity leading to irregular ventricular response. In untreated patients normal AV conduction is usually between 100 and 160 beats per minute. Atrial fibrillation is associated with a wide variety of predisposing factors. In the developed world most common causes of AF are hypertension<sup>5,6</sup> and coronary artery disease.<sup>6</sup> Congestive cardiac failure also plays an important risk factor for atrial fibrillation. In developing countries hypertension, rheumatic valvular heart disease, congenital heart disease, thyrotoxicosis etc. are more common conditions.<sup>7</sup>

Atrial fibrillation confers an increased risk of overall mortality. It is mainly due to stroke. The risk of stroke among patients with non rheumatic atrial fibrillation is approximately 5% per year, while the risk of stroke associated with rheumatic atrial fibrillation is increased approximately 17 fold, as reported by Wolf et al.<sup>8</sup>

Various studies have been conducted regarding the clinical and etiological factors responsible for atrial fibrillation and has been studied globally,<sup>9–12</sup> and various national level studies on atrial fibrillation have been conducted. It is observed that many patients are admitted in the Assam Medical College and Hospital, which is a tertiary center with various complications like CVA, RHD, congestive cardiac failure,<sup>13</sup> etc. But so far our knowledge goes a methodical study of the clinical and etiological aspects of atrial fibrillation and was not conducted yet in this part of North East region of India. Moreover the population group of this region is of ethnic in origin. Therefore, considering the above facts the present study was conducted with the following aims and objectives:

- To study the clinical profile of atrial fibrillation attending or admitted in Medicine and Cardiology department, Assam Medical College and Hospital, Dibrugarh.
- To evaluate the etiology of atrial fibrillation.

## 2. Materials and methods

### 2.1. Materials

The present study was a hospital based observational study carried out on 354 patients of atrial fibrillation, who attended the outpatient department and or were admitted in the various units of Department of Medicine and Cardiology, Assam Medical College and Hospital, Dibrugarh during a period of one year from June 2013 to May 2014. All patients aged 13 years and above, presenting with the diagnosis of atrial fibrillation were included in the study after considering the inclusion criteria and exclusion criteria.

### 2.2. Method

A detailed clinical history, physical examination and investigations were done in all the patients and filled in a predesigned proforma. Informed consent was taken from all the patients or their guardians. The detailed history and clinical examination were done to find out the etiologies of atrial fibrillation. The investigations were also done to confirm the same.

Weight was measured (in kg) using a bathroom weighing scale; measurement of height, measurement of length and measurement of BMI were calculated as per norms.

### 2.3. Investigations

Routine examination of blood, renal function tests, serum electrolytes, thyroid function tests, fasting lipid profile, liver function tests, serum electrolytes, routine examination of urine, chest X-ray, electrocardiogram and echocardiography were done in all patients. CT brain, Holter monitoring, PFT (pulmonary

function test) and treadmill tests were done in some cases as per requirement. ASO titer was done only in patients suspecting recurrent rheumatic activity.

The standard 12-lead ECG was done in all the patients; 2D echocardiography, M mode and color Doppler examination were done.

## 3. Results and observations

### 3.1. Age and sex distribution

It was seen that majority of the cases (78 cases) of atrial fibrillation were in the age group of 61–70 years, i.e., 22.03%; 76 cases were in the age group of 41–50 years, i.e., 21.47%; 67 cases, i.e., 18.93% were in the age group of 51–60 years; 45 cases, i.e., 12.71% were in the age group of 31–40 years; 31 cases, i.e., 8.76% were in the age group of 71–80 years; 31 cases, i.e., 8.76% were in the age group of 21–30 years; 13 cases, i.e., 3.67% were in the age group of 31–20 years and finally 12 cases, i.e., 3.39% in >80 years. In the present study the age range was from 13 to 90 years with mean age of  $52.64 \pm 16.7$  years. It was also observed that majority of the patients, i.e., 206 cases were female (58.19%). Males comprised of 148 cases (41.81%). The female:male ratio in the study was 1.39.

Table 1 shows that palpitation (85.31%) and breathlessness (82.77%) were the most common symptoms.

Table 2 shows that pulse deficit (77%) and raised JVP (74%) were the most common signs.

Tables 3 and 4 shows that mean systolic BP was  $134 \pm 25.23$  and mean diastolic BP was  $78.94 \pm 9.98$ .

Table 5 shows that persistent AF (46.9%) was the most common type of AF.

Table 6 shows fast ventricular rate was the most common ECG finding.

Table 7 shows cardiomegaly was the most common chest X-ray finding.

Table 8 shows that mean BMI was  $21.95 \pm 3.21$  kg/m<sup>2</sup>.

Table 9 shows that RHD (43.5%) and hypertension (31.92%) were the most common etiology of AF. No familial cases of atrial fibrillation were observed.

**Table 1**  
Symptoms of atrial fibrillation.

Symptoms	Percentage
Palpitation	85.31%
Breathlessness	82.77%
Fatigue	73.16%
PND	70.06%
Swelling of dependent parts	68.93%
Giddiness	57.91%
Orthopnea	53.67%
Chest pain	22.32%
Limb weakness/stroke	7.34%
Involuntary movements	3.95%
Sleep apnea	1.97%
Asymptomatic	2.82%

**Table 2**  
Clinical signs of atrial fibrillation.

Pulse deficit	77%
Raised JVP	74%
Pedal edema	68.9%
CCF	68.6%
LV/RV S3	52%
Icterus	9.32%
Cyanosis	8.47%
Clubbing	4.24%

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