

# Incidence of Atrial Fibrillation in Acute ST-Elevation Myocardial Infarction

Azka Ishtiaq<sup>1</sup>, Ayesha Rasool<sup>2</sup>, Bakhtawar Khalil<sup>3</sup>  
1,2,3. House Officer Nishtar Hospital, Multan  
Corresponding Author: ayesharasool@gmail.com

## Abstract:

**Objective:** of our study was to evaluate the incidence of acute fibrillation developing in the context of acute myocardial infarction population. **Methodology:** This cross sectional study was carried out in department Cardiology Nishtar Hospital, Multan under supervision of senior cardiologists. Patients who were presented with acute myocardial infarction selected for study, duration April 2018 to February 2019. Data was entered and analyzed by using SPSS software, mean and SD representation was done for continuous data like age and frequency (percentages %) representation were done for categorical variables like gender, hypertension, DM, onset of old AF and new AF. chi square test was applied to see association between variables. P value less than or equal to 0.05 was considered as significant. **Results:** A total of 214 patients were enrolled in this study. There was association between new onset of AF and age ( $p=0.000$ ). Old AF found in 7.9% ( $n=17$ ) in patients. The main outcome of this study was new onset AF, in our study, it was found in 18.7% ( $n=40$ ) patients. **Conclusion:** New onset of atrial fibrillation is a common type of Arrhythmia which is highly associated with ST segment elevation myocardial infarction or acute myocardial infarction.

**Keywords:** Acute myocardial infarction, atrial fibrillation, prognosis, ST segment elevation.

**DOI:** 10.7176/JMPB/52-13

## Introduction:

Most common arrhythmia of acute ST segment elevation is atrial fibrillation; it is also frequent in acute coronary syndrome<sup>1</sup>. It is reported in previous literature that incidence of atrial fibrillation in AMI increased 13.3% in last few years. In setting G of AMI atrial fibrillation have bad impact with slow clinical outcomes and poor prognosis<sup>2</sup>. Outcomes of its treatment and prognosis can increased with better perfusion strategies which include use of angiotension enzyme inhibitors and PCI, statins, modern antithrombotic treatment and angiotensionreceptors blockers in acute myocardial infarction patients<sup>3,4</sup>.

Along with advance management of AMI there is a need of treatment of its new acute phase attacks, it could be with lifestyle modifications or dietary changes<sup>5</sup>. Predictors of new onset should inhibit. In 12% of AF cases can be encountered with thrombolytic agents or PCI. About 4.5% cases which are treated with primary PCI have arrhythmia in pre hospital time<sup>6</sup>. Incidence of AF found to be doubled when observed with long term implantable event loop in comparison with ECG monitoring<sup>7</sup>. Patients of AF with acute phase of AMI faces more badly condition when they are in their older age, hemodynamically unstable and increase in comorbidities<sup>8</sup>.

In a previous trial which was conducted on four thrombolytic regimens it was reported that patients of AF were mostly female of older age having high heart rate and low blood pressure, some other risk factors include previous history of myocardial infarction, hypertension<sup>9</sup>, compromised heart, low ejection fraction, coronary artery disease and triple vessel disease. Incidence of atrial fibrillation can be treated with beta blockers and aspirin, its advance management include digoxin, anti arrhythmics and warfarin<sup>10</sup>. Local evidences of AF in acute MI are much deficient, we decided to conduct this study, which will provide basis for future research on this very import subject

## Methodology

This cross sectional study was carried out department Cardiology Nishtar Hospital, Multan under supervision of senior cardiologists Patients who were presented with acute myocardial infarction selected for study, duration April 2018 to February 2019, age more than 18 years and raised troponin level were included in the study. Sampling technique used for this study was non probability consecutive. Sample size was taken after using CI of 95%, power 80% and onset of new atrial fibrillation of (p) 8%. Patients were also evaluated for prolonged ischemic signs and ST segment depression or elevation on ECG. Patients who were send to another institution for any procedure which is more than 24 hours prolonged, who did not give consent for inclusion in the study were excluded from the study. Patients detailed history for socioeconomic status, previous illness or comorbid disease and previous hospital admission and treatment was obtained. Blood samples were drawn taking all aseptic measures. Our main outcome variable is new onset of AF in time duration of AMI admission in hospital. It was considered as AF when it was recorded on 12 leads ECG for more than 30 seconds. Patient's biomarker, detailed history points, and new onset of AF were recorded.

Data was entered and analyzed by using SPSS software, mean and SD representation was done for continuous data like age and frequency (percentages %) representation were done for categorical variables like gender,

hypertension, DM, onset of old AF and new AF. chi square test was applied to see association between variables. P value less than or equal to 0.05 was considered as significant.

#### Results:

A total of 214 patients were enrolled in this study, both genders. Gender distribution showed there were 57.9% (n=124) males and 42.1% (n=90) females. The mean age of the patients was 63.24±3.03 years. Hypertension noted in 70.1% (n=150) patients. While, DM was found in 76.2% (n=163) patients. There was association between new outset AF and age (p=0.000). Old AF found in 7.9% (n=17) in patients. The main outcome of this study was new outset AF, in our study, it was found in 18.7% (n=40) patients. (Table. 1-3).

**Table-1: Demographic characteristics**

Variable	Frequency	Percentage
Gender	M=124, F=90	M=57.9%, F=42.1%
Hypertension	150	70.1
DM	163	76.2
Age (years)	63.24±3.03	

**Table-2: Onset of old and new Atrial Fibrillation**

Variable	Frequency	Percentage %
Old AF	17	7.9 %
New outset AF	40	18.7 %

**Table-3: Association of new outset AF with effect modifiers**

Effect Modifiers		New outset AF		Total	P-value
		Yes	No		
Gender	Male	20	104	124	0.259
	Female	20	70	90	
Total		40	174	214	
Stratified Age	38-50 Years	4	94	98	0.000
	51-82 Years	36	80	116	
Total		40	174	214	
Hypertension	Yes	32	118	150	0.129
	No	8	56	64	
Total		40	174	214	
DM	Yes	32	131	163	0.528
	No	8	43	51	
Total		40	174	214	
Old AF	Yes	5	12	17	0.237
	No	35	162	197	
Total		40	174	214	

### Discussion:

It was seen in previous literature that onset of new AF is associated with reflex automatic heart rate control especially in those patients who were diagnosed with acute myocardial infarction. In our main outcome of our study was new onset AF and it was found in 18.7% of patients. This may be due to hemodynamic changes which are observed in most of STEMI patients.

In a study conducted by Lehto M et al<sup>11</sup> reported 12% atrial fibrillation and among them 7.2% patients were those who develop new onset after acute myocardial infarction. Mostly AF was observed after AMI which leads to heart failure and may be death. This study is comparable with our study but onset of new AF was less than ours. This incidence may be varying from area to area of living style.

In another study conducted by Køber L et al<sup>12</sup> on this topic in 2006 and reported 37% incidence of current AF in previous AMI patients which is a high ratio as compared to almost all previous studies conducted on this topic. In another study by Jons C et al<sup>13</sup> reported that incidence of new onset of AF is after MI is high about 16% was reported, he also claims that this incidence rate is higher in first two months after MI and then decreases with time. Cerit L<sup>14</sup> et al conducted a study in 2017 and reported that AF is highly associated with AMI and in cases of MI arrhythmias are common, among them AF is most common type of arrhythmia. In a study conducted by Lopes RD et al<sup>15</sup> and reported incidence of new onset of AF after MI 6.3%. It is not a too much high percentage and also similar ratio was reported. This study is also comparable with our study.

In our study we observed that incidence of new onset of AF in MI patients is also associated with age, with passage of time risk of this incidence also increases. In a study conducted by Vukmirović M et al<sup>16</sup> reported 6% incidence of AF after AMI and also reported that new onset of AF is associated with age. Arrhythmias are common in older age. Pedersen OD et al<sup>17</sup> also reported that atrial flutter and fibrillation is common in after AMI in older ages.

In a study conducted by Pizzetti F et al<sup>18</sup> reported 7.8% incidence of AF after AMI and reported that AMI patients shows worse prognosis after AF. Another study by Crenshaw BS et al<sup>19</sup> also reported similar findings. This study is comparable with our study. In other studies similar findings were reported and it is a calibrated fact that new onset of AF after AMI is common arrhythmia and found to be fatal and high incidence of mortality associated with it<sup>20</sup>.

### Conclusion:

New onset of atrial fibrillation is a common type of Arrhythmia which is highly associated with ST segment elevation myocardial infarction or acute myocardial infarction.

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