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Original Article

Frequency of New Onset Atrial Fibrillation in Acute Myocardial Infarction Patients with high CHADS2 Score

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ABSTRACT

Objectives: This study was designed to find out the Frequency of new onset atrial fibrillation in patients with acute myocardial infarction having HIGH CHADS2 SCORE.

Material and Methods: This was a Cross Sectional Descriptive study. The study was carried out at the Department of Cardiology, Lady Reading Hospital Peshawar From 7th March to 6th September 2014. All Patients with acute myocardial infarction having CHADS2 SCORE 3 and above were enrolled. Patients were monitored for AF during their total hospital stay. Study end point was new onset atrial fibrillation that last for more than 30 seconds. Data analysis was done using SPSS version 16.

Results: We enrolled 186 patients of acute myocardial infarction patients having CHADS2 SCORE three or more at admission. The mean age was 56.55 years + 13.992SD years. Out of 186, 99(53.23%) were male and 87(46.77%) were female patients. Over all new onset atrial fibrillation was observed in 40(21.51%) patients having acute myocardial infarction patients with High CHADS2 SCORE while 146(78.49%) have not faced the new onset atrial fibrillation during the study period. About 20(23%) female patients presented with acute myocardial infarction patients having High CHADS2 SCORE, developed new onset atrial fibrillation as compared to 20(20.2%) male patients who developed new onset atrial fibrillation. However, this difference was statistically not significant.

Conclusion: Atrial fibrillation is one of the most common heart rhythm disorders, with a prevalence that is on the rise. Risk factors for the development of AF are very similar to those for developing coronary artery disease. AF is often associated with acute myocardial infarction in patients with High CHADS2 SCORE. Emphasis should be given on prevention, early detection and immediate management of atrial fibrillation in patients of acute myocardial infarction having High CHADS2 SCORE.

Key Words: Atrial Fibrillation, Acute Myocardial infarction, CHADS2 SCORE.

Introduction

New onset atrial fibrillation is common in patients hospitalized with an acute myocardial infarction (AMI), developing in 4.8% to 15%[1,2]. The incidence may be as high as 26% in acute myocardial infarction with killip class lll and lV, diabetes mellitus, hypertension and advanced age[3]. Onset of AF has been seen more with in inferior wall MI as compared to anterior wall MI in recent studies[4].

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New onset atrial fibrillation complicating acute myocardial infarction is associated with poor outcomes and is an important prognostic indicator for in-hospital and long-term morbidities and mortality[5]. MI and AF are closely related; MI may precede or complicate the clinical course of AF[6]. The presence of MI in AF patients creates a challenge in clinical management several studies have shown that new onset atrial fibrillation in acute myocardial infarction is associated with a worse prognosis for the patient[7]. New onset atrial fibrillation increases 30days mortality of acute myocardial infarction from 19.1% to 29.3% and 1 year mortality from 32.7%to 48.3%.[8] Atrial fibrillation also increases the risk of left atrial clot formation, left ventricular failure and stroke in patients with acute myocardial infarction, especially with acute anterior wall myocardial infarction[9].

The CHADS2, (congestive heart failure, hypertension, age ≥75 years, diabetes, prior stroke or transient ischemic attack) score is designed for risk stratification, prevention and management of thromboembolic stroke in patients with atrial fibrillation[10]. Recent studies demonstrate that a higher CHADS2 score is associated with a risk of recurrence after catheter ablation of AF [11,12]. There is a newly growing literature about testing the predictive power of CHADS2 scoring system to predict the occurrence of new onset atrial fibrillation in patients with acute myocardial infarction. Studies have shown that 14.3% patients developed new atrial fibrillation in acute myocardial infarction with CHADS2 SCORE 3 or more [13].

The aim of this study is thus to determine the frequency of new onset atrial fibrillation in acute myocardial infarction patients with HIGH CHADS2 SCORE.

Material & Methods

This was a Cross Sectional Descriptive study. The study was carried out at the Department of Cardiology, Lady Reading Hospital Peshawar from 7th March to 6th September 2014. New onset atrial fibrillation was defined as an irregular narrow QRS complex rhythm with the absence of discrete P waves on the cardiac rhythm monitor (Nihon kohden)/ECG(Cardiofex) that lasted for more than 30 seconds in patients with acute myocardial infarction without past evidence of atrial fibrillation[13]**.** A simple clinical scheme to risk stratify patients on the basis of the major risk factors is the CHADS2 (cardiac failure, hypertension, age, diabetes, stroke) score. Each of the first four risk factors is worth 1 point, and a prior stroke or transient ischemic event is worth 2 points. HIGH CHADS2 SCORE was defined as a total calculated score of 3 or more. Sample size was 186 using 14 %[13] proportion of new onset AF after acute myocardial infarction, with 95% confidence level and 5% margin of error under WHO software for sample size determination.

Patient of all ages and both genders were included in the study. Patients with acute myocardial infarction having CHADS2 SCORE 3 and above were enrolled. Patients with high CHADS2 SCORE is a group of patients found to be at highest risk of future complications, so we excluded patients with low CHADS2 SCORE 2 or below. Patients having Acute MI with CHADS2 SCORE 2 or less, Past history of atrial fibrillation, History of Thyrotoxicosis, Preexisting valvular heart disease or Chronic obstructive airway disease were excluded from the study.

Patients were monitored for AF during their total hospital stay. Study end point were new onset atrial fibrillation that last for more than 30 seconds. All the above mentioned information including demographic features were recorded in a pre-designed proforma. Strictly exclusion criteria were followed to control confounders and bias in the study results. Data were analyzed using SPSS software version 16. Mean ± and Standard Deviations were calculated for quantitative variables like age. Categorical variables like new onset AF were presented as frequencies and percentages. p-value was calculated using chi square test. New onsets AF were stratified among age and gender to see the effect modifications. Final results were presented in the form of tables and diagrams.

Results

In this study, 186 patients with acute myocardial infarction patients with HIGH CHADS2 SCORE were observed, in which 99(53.23%) were male and 87(46.77%) were female patients. Patient's age was divided in five categories, out of which most common age group for acute myocardial infarction patients with HIGH CHADS2 SCORE was 51–65 years. Average age was 56.55 years + 13.992SD.

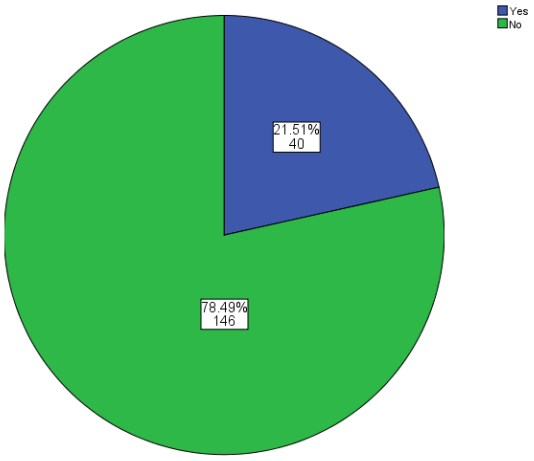

Figure No.1:
Distribution of New Onset AF in acute Mi patients with high Chads2 Score

New onset atrial fibrillation was observed in 40(21.51%) patients having acute myocardial infarction patients with HIGH CHADS2 SCORE while

Table No.1:
Age Wise Distribution of New Onset Of In Acute MI Patients With High CHADS2 Score

		New Onset Atrial Fibrillation		Total	p-value
		YES	NO		
age (in year)	<= 20.00	1 16.7%	5 83.3%	6 100.0%	**0.129**
	21.00 - 35.00	2 15.4%	11 84.6%	13 100.0%	
	36.00 - 50.00	3 7.7%	36 92.3%	39 100.0%	
	51.00 - 65.00	22 25.0%	66 75.0%	88 100.0%	
	66.00+	12 30.0%	28 70.0%	40 100.0%	
TOTAL		**40** **21.5%**	**146** **78.5%**	**186** **100.0%**	

146(78.49%) have not faced the New onset atrial fibrillation during the study period. (Figure 1)
Age wise distribution of new onset atrial fibrillation shows that majority of the new onset atrial fibrillation 12(30%) were found in more than 66 years of age. New onset atrial fibrillation increased with age although it was insignificant with p-value=0.129. (Table 1).
In the female group 20(23%) patients with acute myocardial infarction with HIGH CHADS2 SCORE developed new onset atrial fibrillation while 20(20.2%) male patients developed new onset atrial fibrillation during their stay in hospital with a p-value=0.644.

Table No. 2: Gender Wise Distribution Of New Onset Af In Acute Mi Patients With High Chads2 Score

		New onset atrial fibrillation		Total	P-value
		Yes	No		
Gender	Male	20 20.2%	79 79.8%	99 100.0%	**0.644**
	Female	20 23.0%	67 77.0%	87 100.0%	
TOTAL		**40** **21.5%**	**146** **78.5%**	**186** **100.0%**	

Discussion

Atrial fibrillation (AF) is a common complication of myocardial infarction (MI) with an incidence of between 5 and 23%.[14-17] It is associated with worse in-hospital and long-term outcomes and more in-hospital complications.[17-20]
Atrial fibrillation is a common arrhythmia and a major risk factor for ischemic stroke. AF is associated with a 5-fold increase in the risk of acute myocardial infarction patients with HIGH CHADS2 SCORE.[10] Advanced age is the biggest risk factors for developing new onset of AF. The incidence and prevalence rises with age (>60 years: 1%; >80 years: 5–15%)[21-26]. AF occurs in patients with cardiac disorders (hypertensive heart disease, coronary artery disease, valvular heart disease, pericarditis, congenital heart disease and acquired cardiomyopathies) as well as in patients with no apparent cardiac abnormalities (lone AF)[27].
In our study, 21.5% patients were noted to have AF as a complication of MI. A previous study has shown that the overlap between AF as a complication and AF at baseline was about 18%. This underscores that when AF is noted as a clinical complication, it is generally, but not always, new onset AF.
Rate of new onset AF increases with increasing age. Khan H et al did a study in Peshawar on 211 patients with stroke and they found new onset of atrial fibrillation in 3.31% of subjects which is quite lower than my results.[28] They include patients with

age group of 25 years and more. Muhammad Rashid studied 458 patients in Karachi with cerebral infarction and 41.48% of subjects had atrial fibrillation which is higher than my results, the age group they studied was between 50-80 years.[29] Advance age might be responsible for these higher percentages of AF.

In my study, out of 40 patients with new onset of AF 20 (20.2%) were males while 20 (23%) were females with male to female ratio of 1:1, whereas male to female ratio for acute myocardial infarction patients with HIGH CHADS2 SCORE was 1.13:1. This slightly high female to male prevalence in new onset of AF group is possibly because of high mean age as prevalence of new onset of AF increases with increase age.[30,31]

Conclusion

Atrial fibrillation is one of the most common heart rhythm disorders, with a prevalence that is on the rise. Risk factors for the development of AF are very similar to those for developing coronary artery disease, so it is no surprise that AF is often associated acute myocardial infarction patients with HIGH CHADS2 SCORE. It is common for AF to be triggered by MI, and the immediate and chronic prognosis in the post-MI setting is worse in patients with AF. Emphasis should be given on prevention, early detection and immediate management of atrial fibrillation in patients of acute myocardial infarction having High CHADS2 SCORE.

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C. Analysis/Interpretation/Discussion
D. Manuscript Writing
E. Critical Review
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