



PROGNOSIS OF ACUTE INFERIOR WALL MI; COMPLICATED BY ATRIOVENTRICULAR BLOCKS.

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ABSTRACT... Introduction: Atrioventricular (AV) block is a common complication of acute Myocardial Infarction (MI). In pre-thrombolytic era, high (second or third degree) AV block was seen in approximately 5-7% of patients presenting with acute MI. In setting of Inferior MI, this was even as high as 28%. Although, the advent of thrombolytic therapy has substantially decreased the mortality associated with acute MI, the incidence of AV block, particularly in the setting of inferior MI, remains high. AV block in the setting of inferior MI is also associated with high in-hospital mortality, however, its effect on long-term mortality is uncertain. **Objectives:** To compare the in-hospital mortality of acute inferior wall myocardial infarction with and without complete Atrioventricular block. **Settings:** Department of Cardiology Faisalabad Institute of Cardiology, Faisalabad. **Duration of Study:** Six months From: 01-05-2014 to 30-11-2014. **Study Design:** Cohort study. **Results:** In our study, out of 80 cases(40 in each group) 42.5%(n=17) in Group-A and 37.5%(n=15) in Group-B were between 20-50 years of age while 57.5%(n=23) in Group-A and 62.5%(n=25) in Group-B were between 51-70 years of age, mean \pm sd was calculated as 52.58 \pm 9.83 and 55.43 \pm 8.06 years respectively, 40%(n=16) in Group-A and 47.5%(n=19) in Group-B were male while 60%(n=24) in Group-A and 52.5%(n=21) in Group-B were females, comparison of in-hospital mortality in both groups was done showing 32.5%(n=13) in Group-A and 7.5%(n=3) while 67.5%(n=27) in Group-A and 92.5%(n=37) had no findings of in-hospital mortality, Relative Risk was calculated as 4.33 while P value:0.005. **Conclusion:** We concluded that in-hospital mortality is significantly high in acute inferior wall myocardial infarction complicated by atrioventricular block.

Key words: Acute inferior wall myocardial infarction, complete Atrioventricular block, in-hospital mortality.

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INTRODUCTION

Impairment of blood flow in coronary arteries presents with clinical features of acute coronary syndrome.¹ Despite the advance management, ACS is one of leading cause of mortality.² 16.7 million deaths worldwide and one million deaths annually in Pakistan are related to ACS.³ This high mortality of ACS is related to increasing prevalence of risk factors of ischaemic heart disease.⁴

Acute occlusive thrombus formation in the coronary artery results in ST-segment elevation myocardial infarction which is one of major manifestations of ACS.⁵ Complications of myocardial infarction are ischemic, mechanical, arrhythmic, thromboembolic and others.⁷ New

onset conduction defects after acute myocardial infarction is associated with increase mortality. The most commonly observed conduction defects after acute myocardial infarction include Atrioventricular nodal blocks (1st, 2nd and 3rd degree blocks) and Intraventricular conduction defects.⁸

Complete Atrioventricular block complicates inferior wall myocardial infarction in 11-15% of cases. It is usually seen in conditions indicative of poor clinical status, such as right ventricular infarction, cardiogenic shock and atrial fibrillation. It is associated with large infarct size.⁹ This complication is associated with high in-hospital mortality.¹⁰

In-hospital mortality of acute inferior myocardial infarction with complete Atrioventricular block has not been studied in Pakistan. The rationale of this study is to find prognosis of acute myocardial infarction complicated by complete Atrioventricular block, so that the patients can be stratified according to the risk. This will help in early recognition and treatment.

OBJECTIVE

To compare the in-hospital mortality of acute inferior wall myocardial infarction with and without complete Atrioventricular block.

OPERATIONAL DEFINITIONS

In-Hospital Mortality

Mortality during hospital stay (each patient remained admitted for 5 days).

Acute Inferior Wall Myocardial Infarction

Diagnostic criteria is:

Elevation of cardiac biomarkers (Troponin-I value greater than 0.30ng/ml). plus one of the followings

1. Symptoms of ischemia like chest pain
2. ECG changes (Elevation of ST segment of 1mm in leads II, III and avF)

COMPLETE ATRIOVENTRICULAR BLOCK

Defined as:

1. P waves with regular P to P interval.
2. QRS complex with a regular R to R interval.
3. Variable PR interval (no apparent relationship between P waves and QRS complexes).

MATERIAL AND METHODS

Settings

Department of Cardiology Faisalabad Institute of Cardiology, Faisalabad

Duration of Study

Six months From: 01-05-2014 to 30-11-2014

Study Design

Cohort study

Sample Size

By using WHO sample size calculator for two proportions,

- P1=26%¹²
- P2=05%¹²
- Power of study=80%

Level of Significance is = 5%

Sample size =80(40 patients in each group)

Sample Selection

Sampling Technique

Non-Probability Consecutive sampling

Inclusion Criteria

1. Age 20-70 years
2. Either sex
3. Presents within 12 hours of onset of clinical features and thrombolysed.
4. With inferior wall myocardial infarction with complete Atrioventricular block (exposed group) and without complete Atrioventricular block (un-exposed group).

Exclusion Criteria

1. Clinical features of cardiogenic shock (systolic blood pressure < 90 mmHg with signs of tissue hypoperfusion like sweating, cold peripheries, mental obtundation and urine output less than 30 ml per hour).
2. Patients developing mechanical complications of myocardial infarction like ventricular septal rupture, acute mitral regurgitation and ventricular free wall rupture.
3. Patients who are not thrombolysed.
4. Patients having co-morbid conditions like renal failure and chronic liver disease on available medical record and history.

Data Collection Procedure

After approval from hospital ethical committee, a total of 80 patients (40 in exposed group and 40 in un-exposed group) including both genders fulfilling the inclusion criteria were collected by myself from department of Emergency, Faisalabad institute of Cardiology, Faisalabad. Informed consent was obtained from all the patients. Risk factors for cardiovascular disease such as

hypertension, diabetes mellitus, hyperlipidemia, and smoking were noted by myself. 5ml of blood was taken for the routine blood investigations like complete blood count, blood sugar, blood urea, serum creatinine and cardiac enzymes for each patient. All patients received standard medications of myocardial infarction, including thrombolysis by Streptokinase. The patients were classified in following groups. Group A with acute inferior wall myocardial infarction complicated by complete Atrioventricular block (exposed group) and Group B without this complication (unexposed group). All the patients remained admitted in hospital for minimum 5 days. All the patients were monitored and mortality was noted by myself. All these information were collected through prescribed Performa. All the expenses of the study was funded by the hospital.

Data Analysis

All the collected information was transferred to SPSS version 10 and analyzed accordingly. Descriptive statistics were calculated. Mean and standard deviation was calculated for age. Frequency and percentage was calculated for sex, hypertension, diabetes mellitus, hyperlipidemia, smoking and in-hospital mortality. Chi-square test was used to compare in-hospital mortality between two group. Relative risk was calculated. Confounding variables like age, sex, hypertension, diabetes mellitus, hyperlipidemia and smoking were controlled by stratification. Post stratification chi-square test was applied. Significant P value was less 0.05. Relative risk was calculated.

RESULTS

A total of 80 cases fulfilling the inclusion/exclusion criteria were enrolled.

Age distribution of the patients was done which shows that 42.5% (n=17) in Group-A and 37.5% (n=15) in Group-B were between 20-50 years of age while 57.5% (n=23) in Group-A and 62.5% (n=25) in Group-B were between 51-70 years of age, mean \pm sd was calculated as 52.58 \pm 9.83 and 55.43 \pm 8.06 years respectively. (Table-I)

Age (in years)			Group-B (n=40)	
	No. of patients	%	No. of patients	%
20-50	17	42.5	15	37.5
51-70	23	57.5	25	62.5
Total	40	100	40	100
Mean \pm sd	52.58 \pm 9.83		55.43 \pm 8.06	

Table-I. Age distribution (n=480)

Patients were distributed according to gender showing that 40% (n=16) in Group-A and 47.5% (n=19) in Group-B were male while 60% (n=24) in Group-A and 52.5% (n=21) in Group-B were females. (Table-II)

Gender	Group-A (n=40)		Group-B (n=40)	
	No. of patients	%	No. of patients	%
Male	16	40	19	47.5
Female	24	60	21	52.5
Total	40	100	40	100

Table-II. Gender distribution (n=480)

Frequency of diabetes mellitus was recorded in 67.5% (n=27) in Group-A and 60% (n=24) in Group-B while 32.5% (n=13) in Group-A and 40% (n=16) in Group-B had no findings of diabetes mellitus.

Frequency of hypertension was recorded in 60% (n=24) in Group-A and 67.5% (n=27) in Group-B while 40% (n=16) in Group-A and 32.5% (n=13) in Group-B had no findings of hypertension.

Frequency of dyslipidemia was recorded in 60% (n=24) in Group-A and 52.5% (n=21) in Group-B while 40% (n=16) in Group-A and 47.5% (n=19) in Group-B had no findings of dyslipidemia.

Frequency of smoking was recorded as 37.5% (n=15) in Group-A and 30% (n=12) in Group-B while in no smoking was recorded as 47.5% (n=19) in Group-A and 70% (n=28) in Group-B.

Comparison of in-hospital mortality in both groups was done showing 32.5% (n=13) in Group-A and 7.5% (n=3) while 67.5% (n=27) in Group-A and 92.5% (n=37) had no findings of in-hospital mortality, Relative Risk was calculated as

4.33 while P value: 0.005. (Table-III)

Mortality	Group-A (n=40)		Group-B (n=40)	
	No. of patients	%	No. of patients	%
Yes	13	32.5	3	7.5
No	27	67.5	37	92.5
Total	40	100	40	100

Table-III. Comparison of in-hospital mortality in both groups (n=480)
Relative Risk: 4.33 P value:0.005

Stratification for age, sex, and diabetes mellitus was done and presented in Table-IV to VI.

AGE: 20-50 years				
Group	In-hospital mortality		P value	
	Yes	No		
A	6	11	0.22	
B	2	13		

AGE: 51-70				
Group	In-hospital mortality		P value	
	Yes	No		
A	7	16	0.02	
B	1	24		

Table-IV. Stratification for in-hospital mortality with regards to age

GENDER: MALE				
Group	In-Hospital Mortality		P value	
	Yes	No		
A	8	8	0.02	
B	3	16		

GENDER: FEMALE				
Group	In-Hospital Mortality		P value	
	Yes	No		
A	5	19	0.05	
B	0	21		

Table-V. Stratification for in-hospital mortality with regards to gender

DIABETES MELLITUS: YES				
Group	In-hospital mortality		P value	
	Yes	No		
A	8	19	0.08	
B	2	22		

DIABETES MELLITUS: NO				
Group	In-Hospital Mortality		P value	
	Yes	No		
A	5	8	0.06	
B	1	15		

Table-VI. Stratification for in-hospital mortality with regards to diabetes mellitus

DISCUSSION

Although we are living in advanced cardiac treatment era, primary PCI has been started even in developing countries resulting in reduction of MI associated complications. However AV blocks is high risk complication of inferior MI. In-hospital mortality of acute inferior myocardial infarction with complete atrioventricular block has not been studied in Pakistan population. This is the objective of this study.

In our study, out of 80 cases (40 in each group) comparison of in-hospital mortality shows 32.5% (n=13) in Group-A and 7.5% (n=3). While high risk people was elderly, male and diabetics. Our findings are in accordance with a study who recorded that in-hospital mortality in patients of acute inferior wall myocardial infarction with complete Atrioventricular block was 26% compared to 5% in patients without complete, Atrioventricular block.¹⁰

How the AV block influences the mortality is not completely understood. AV blocks are associated with large infarct area resulting more incidences of Heart Failure, both of these are contributors of high mortlity.^{11,12,13} The electrical instability associated with ischaemia is another major contributer.¹⁴ However Behar recognized the complete AV block as an independent risk factor of increased mortality in these patients.¹⁵ In-hospital mortality in different studies are documented from 8 to 45%.¹⁶

As our findings are primary in our setup, some other studies are required to validate our findings, however, our results are helpful in early recognition and treatment.

CONCLUSION

We concluded that in-hospital mortality is significantly high in acute inferior wall myocardial infarction complicated by atrioventricular block.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

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1	Dr. Naeem Asghar	Data collection + Final Proof	
2	Dr. Hafiz M. Faiq Ilyas	Literature review	
3	Dr. Touseef Anwar	Manuscript writing drafting	