

Various Risk Factors has Variable in Hospital Mortality Rate in Anterior Wall Myocardial Infarction with Right Bundle Branch Block

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ABSTRACT

Objective: To evaluate in hospital mortality rate associate with various risk factors in patients with anterior wall myocardial (AMI) infarction with right bundle branch block (RBBB).

Patients and method: From February 2011 to August 2011, a total of 70 consecutive patients fulfilling the inclusion and exclusion criteria, admitted in Emergency Department, Punjab Institute of Cardiology, Lahore were included in this study. Risk factors and effect modifiers such as hypertension, diabetes mellitus, hypercholesterolemia, and smoking were taken into account. Patients were monitored according to the hospital protocol and mortality was noted. In hospital mortality was considered as death of patients from admission, due to anterior wall MI with right bundle branch block.

Results: During 6 months of study period, out of 70 patients, 41 (58.6%) were male and 29 (41.4%) were female. Incidence of risk factors in these patients were, 19 (27.1%) diabetics, 36 (51.4%) with Hypertension, 29 (41.4%) smokers and 52 (74.3%) with hypercholesterolemia. Total in hospital mortality of patients from AMI with RBBB was 54.3%. Individual risk factor associated mortality were 12 (31.57%) diabetics, 25 (65.78%) hypertensives, 22 (57.89%) smokers and 32 (84.2%) patients with hypercholesterolemia.

Conclusion: Findings confirm that the presence of RBBB after AMI is an independent predictor of increased mortality. Moreover, associated risk factor adds fuel to the fire, with significant increase in mortality in patients with hypercholesterolemia within same group.

Keywords: Myocardial infarction, right bundle branch block, mortality

INTRODUCTION

Myocardial infarction (MI) is one of the most common diagnoses in hospitalized patients. Mortality rate of myocardial infarction is approximately 30%^{1,2}. Patients with right bundle-branch block (RBBB) during an anterior ST-segment elevation acute myocardial infarction (AMI) are known to have a high risk for mortality. In the Hirulog Early Reperfusion Occlusion (HERO-2) trial, RBBB was associated with 3-4 fold higher 30-day mortality rate than among patients with normal intraventricular conduction³.

As in other studies, patients presenting with RBBB and both ST segment elevation MI (STEMI) or Non ST segment elevation MI (NSTEMI), had a higher prevalence of previous myocardial infarction, diabetes and renal failure, and more often suffered cardiogenic shock. In the STEMI group of patients, with RBBB had more than double both in-hospital (26% vs. 11%, $p < 0.001$) and long-term (19%

vs. 9.2%, $p < 0.001$) mortality than patients without RBBB. After adjustment for differences in baseline characteristics, RBBB remained an independent predictor of increased mortality in this group of patients. In comparison, RBBB in patients with NSTEMI was not associated with increased in-hospital mortality after adjusting for baseline characteristics and admission findings⁴.

In hospital mortality of AMI with RBBB, and associated risk factors have not been studied extensively in Pakistani population. The rationale of this study is to find out frequency of in hospital mortality of AMI with RBBB and responsible factors. Various risk factors has variable in hospital mortality rate in anterior wall myocardial infarction with right bundle branch block. If frequency of mortality comes out to be high and by knowing the magnitude of leading factors, we can identify this high risk group so that prompt and different protocol can be implemented in various setting.

PATIENTS AND METHODS

A total of 70 consecutive patients fulfilling the inclusion and exclusion criteria, admitted in Emergency Department, Punjab Institute of Cardiology, Lahore were included in this study. Informed consent was obtained from all the patients.

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Risk factors and effect modifiers such as hypertension, diabetes mellitus, hypercholesterolemia, and smoking were taken into account. Patients were monitored according to the hospital protocol and mortality was noted.

In hospital mortality was considered as death of patients from admission, due to anterior wall myocardial infarction with right bundle branch block. Exclusion criteria include terminally ill patients and Patients having co morbid conditions like renal failure or serum creatinine >2.0 mg/dl, or chronic liver disease on available medical record and history. All these information was collected through prescribed Performa. The diagnosis of anterior wall myocardial infarction was confirmed in patients who fulfill both criteria.

1. Classical history of ischemic chest pain >30 minutes.
2. ECG finding ST segment elevation >2mm in precordial leads.

On E.C.G. RBBB was defined as a prolonged QRS duration 120 ms, with an rsr', rsR', or rSR' pattern in lead V1 or V2. If this was not present, the R wave in V1 has to be notched with a prolonged R wave peak time >50 ms in V1 and normal peak time in V5 and V6. Leads V6 and I has to show a QRS complex with a wide S wave (S duration > R duration or >40 ms). The QRS duration was measured with a caliper in the lead with the longest QRS duration. ST segment levels were measured at the J point.

Hypertension was considered in patient who were on antihypertensive or BP>140/90mmhg on two occasion. Diabetes were patients who were on hypoglycemics or FBS 126mg/dl and BSR>200mg/dl. Hypercholesterolemia: LDL>200mg/dl and Smoker >1 pack year.

In hospital mortality - death of patients from admission in hospital to remain admitted in hospital due to AMI with RBBB.

Collected information was transferred to SPSS version 15.0 computer software programme and analyzed accordingly. Continuous or interval-related variables are expressed as mean±SD. The study variables were age, sex and data were stratified for hypertension, diabetes mellitus, hypercholesterolemia and smoking. Descriptive statistics were calculated. Frequency and percentage were calculated for sex and in hospital mortality.

RESULTS

From February 2011 to august 2011, a total of 70 consecutive patients fulfilling the inclusion and exclusion criteria, admitted in Emergency Department, Punjab Institute of Cardiology, Lahore were included in this study. During 6 months of study

period, out of 70 patients, 41(58.6%) were male and 29(41.4%) were female. Incidence of risk factors in these patients were, 19(27.1%) diabetics, 36(51.4%) with Hypertension, 29(41.4%) smokers and 52(74.3%) with hypercholesterolemia (Table 1).

Table 1: Baseline characteristics (n=70)

Characteristics	Percentages
Mean Age	60.9±10.1
Male	41(58.6%)
Female	29 (41.4%)
Diabetes	19 (27.1%)
Hypertension	36 (51.4 %)
Smoking	29 (41.4%)
Hypercholesterolemia	52 (74.3%)

Total in hospital mortality of patients from AMI with RBBB was 54.3%. Individual risk factor associated mortality were 12(31.57%) diabetics, 25(65.78%) hypertensives, 22(57.89%) smokers and 32(84.2%) patients with hypercholesterolemia (Table 2).

Table 2: In-hospital mortality according to risk factors (n=38)

Characteristics	Percentage
Age	
<50 Years	8(21.05%)
>50 Years	30(78.9%)
Male	25(65.7%)
Female	13(34.2%)
Diabetes	12(31.57%)
Hypertension	25(65.78%)
Smoking	22(57.89%)
Hypercholesterolemia	32(84.2%)

DISCUSSION

Multiple studies undertaken before and after the introduction of primary reperfusion therapy have demonstrated higher in hospital and long-term mortality in patients with STEMI and RBBB.102,103,104 The high risk in these patients is often because of a large anterior wall myocardial infarction that also involves the interventricular septum, and the RBBB conduction defects reflects ischemia or necrosis of the right bundle transversing the septum⁵.

In another study, it was demonstrated that patients presenting with new RBBB at the time of AMI had a much poorer prognosis than those with documented old RBBB and in-hospital mortality was 38% vs.14%, respectively; p<0.05.

In study by Ricou et al., only patients with anterior myocardial infarction were included. Myocardial infarction was diagnosed as the presence of Q waves or QS complex and elevation of serum creatine kinase. The highest mortality was observed

in patients with RBBB and associated left ventricular failure, and new RBBB was also found to be an independent marker of increased in-hospital cardiac mortality. Overall, it was concluded that these were very high-risk patients and further diagnostic testing such as coronary angiography should be performed⁶.

Investigators of the OPTIMAAL trial considered both short- and long-term outcomes relative to the presence of BBB. In this group, 8% of patients demonstrated BBB patterns at initial presentation with 54% RBBB and 46% LBBB. Both patterns were associated with an increased risk of poor outcome; sudden cardiac death was seen more frequently in the RBBB patients. During the follow-up period, an additional approximately 5% of patients developed BBB with 44% being RBBB; these patients, again, experienced higher rates of poor outcome, including increased mortality⁷.

Various risk factors has variable in hospital mortality rate in anterior wall myocardial infarction with right bundle branch block. If frequency of mortality comes out to be high and by knowing the magnitude of leading factors, we can identify this high risk group so that prompt and different protocol can be implemented in various setting. The results indicate that AMI combined with RBBB suggests the severity of disease and poor prognosis.

CONCLUSIONS

Presence of right bundle branch block after anterior myocardial infarction is an independent predictor of increased mortality. Various risk factors has variable in hospital mortality rate, significant in patient with

hypercholesterolemia prompting different management protocols.

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