

## CLINICAL PROFILE, ANGIOGRAPHIC PROFILE, PREDICTORS OF MORTALITY AND OUTCOME OF PATIENTS WITH ACUTE ANTERIOR WALL MYOCARDIAL INFARCTION HAVING RIGHT BUNDLE BRANCH BLOCK AND RIGHT PRECORDIAL Q WAVES (QRBBB AWMI) IN A TERTIARY CARE CENTRE

D. Manikandan<sup>1</sup>, S. Pranesh<sup>2</sup>, J. Nambirajan<sup>3</sup>, D. Chakkravarthy<sup>1</sup>, J. Jegadeesh<sup>1</sup>, A.N. Senthil<sup>1</sup>, K. Sathish Kumar<sup>1</sup>,

<sup>1</sup>Assistant Professor, Department of Cardiology, Coimbatore Medical College and hospital, Tamil Nadu, India

<sup>2</sup>DM Cardiology Resident, Coimbatore Medical College and hospital, Tamil Nadu, India

<sup>3</sup>Professor, Department of Cardiology, Coimbatore Medical College and hospital, Tamil Nadu, India

Received : 07/12/2023  
Received in revised form : 21/01/2024  
Accepted : 06/02/2024

Keywords:  
AWMI, QRBBB, Mortality.

Corresponding Author:  
Dr. S. Pranesh,  
Email: drpraneshmmc@gmail.com

DOI: 10.47009/jamp.2024.6.1.222

Source of Support: Nil,  
Conflict of Interest: None declared

Int J Acad Med Pharm  
2024; 6 (1); 1119-1122



### Abstract

**Background:** Electrical conduction abnormalities are well recognized complications of acute myocardial infarction. They may be caused by either autonomic imbalance or ischemia or infarction involving the conduction system. Conduction defects caused by anterior wall myocardial infarction are less frequent but are more serious and the degree of arrhythmic complications is directly related to the extent of infarction. Many studies, especially in the pre-thrombolytic era, associated the presence of RBBB in presence of MI with higher mortality. Based on this aim of our study is to analyse the clinical profile, Angiographic profile and in hospital outcome of patients with Acute Anterior wall Myocardial Infarction having RBBB and right Precordial Q waves. **Materials and Methods:** This study was done as a prospective study at department of Cardiology, Coimbatore Medical College Hospital for one year in one hundred and fifty patients. Patients presenting with Acute Anterior wall myocardial infarction having RBBB and right Precordial Q waves were included in the study. ECHO is performed in all patients. Eligible and willing candidates are subjected to CAG. Based on CAG findings, CABG will be advised for those with TVD or >50% lesion in LMCA and in others stenting will be done if >70% lesion was detected and the outcome of these patients will also be analysed. **Result:** In our study of 150 patients, thrombolysis with streptokinase was done in 105 patients. Percutaneous transluminal coronary angioplasty (PTCA) was done in 111 patients. 81 patients had Proximal left anterior descending artery (LAD) disease. While 6 patients had left main coronary artery disease and 9 patients had triple vessel disease (TVD). While Mid LAD was affected in 10% of patients and in rest of patients ostial cut off was present. Coming to mortality 69 patients died during hospital stay while rest 81 got discharged. **Conclusion:** QRBBB AWMI carries high mortality as it signifies proximal occlusion of LAD. The mortality rate in the south Indian perspective has been documented only in few studies. This study analysed the various clinical characteristics, coronary angiographic findings, predictors of mortality and outcome of patients with QRBBB AWMI. Extreme deviation of QRS axis to the right and low EF are significant predictors of mortality. Sleep deprivation heightens the risk of QRBBB AWMI in our study especially in younger patients.

## INTRODUCTION

Electrical conduction abnormalities are well recognized complications of acute myocardial infarction. They may be caused by either autonomic

imbalance or ischemia or infarction involving the conduction system. Conduction defects caused by anterior wall myocardial infarction are less frequent but are more serious and the degree of arrhythmic complications is directly related to the extent of

infarction.<sup>[1,2]</sup> The right bundle branch receives most of its blood supply from septal perforators from the LAD coronary artery. Left Anterior and mid septal fascicles are supplied by septal perforators of LAD and in about one half of subjects by the AV nodal artery. The Proximal portion of the Left posterior fascicle is supplied by the AV nodal artery and at times, by septal branches from the LAD. The distal portion has blood supply from both anterior and posterior septal perforating arteries. Main or proximal Left bundle branch is supplied by LAD particularly for the initial portion. The cause is almost invariably occlusion in Left Anterior Descending Coronary Artery resulting in necrosis of the Interventricular septum.

Second degree AV blocks in anterior infarction are usually Mobitz type II. Extensive septal necrosis may result in third degree AV block. The right bundle branch block caused by septal infarction is usually associated with Q wave in v1. The prevalence of right bundle branch block (RBBB) in the setting of acute myocardial infarction (MI) ranges from 1.6% to 10.9% (about 3–29% in pre-thrombolytic era). The presence of QRBBB is known to be associated with higher mortality rate.<sup>[3-5]</sup>

Many studies, especially in the pre-thrombolytic era, associated the presence of RBBB in presence of MI with higher mortality. The analysis of HERO-2 trial elegantly demonstrated that in the setting of acute coronary syndrome, presence of RBBB whatever the onset, is associated with high risk of death. Bifascicular block (RBBB and LAFB) can also occur in association with anterior wall myocardial infarction. Bifascicular block increases the risk of third-degree AV block. The risk is especially high if there simultaneous first-degree heart block (Trifascicular block).<sup>[6-8]</sup>

Based on this aim of our study is to analyze the clinical profile, Angiographic profile and in hospital outcome of patients with Acute Anterior wall Myocardial Infarction and conduction defect. Also to identify the clinical, Electrocardiographic, Echocardiographic predictors of mortality in patients with Acute Anterior wall Myocardial Infarction and conduction defect.

## MATERIALS AND METHODS

This study was done as a prospective study at department of Cardiology, Coimbatore Medical College Hospital for one year in one hundred and fifty patients. Patients presenting with Acute Anterior wall myocardial infarction having RBBB and right Precordial Q waves to the department of Cardiology, CMCH and more than 18 years of age were included in the study. Patients who did not give informed consent were excluded.

Baseline and clinical characteristics of these patients were documented. Killip classification and TIMI risk score will be applied in all patients at presentation. Those who presented within the window period of

<12 hours of onset of chest pain and with nil contraindications for thrombolysis will be thrombolysed with streptokinase or tenecteplase. Electrocardiograms are performed before and 90 min after the start of fibrinolytic therapy. Those who presented >12 hours of chest pain were treated with heparin and antiplatelets. ECHO is performed in all patients. Eligible and willing candidates are subjected to CAG. Based on CAG findings, CABG will be advised for those with TVD or >50% lesion in LMCA and in others stenting will be done if >70% lesion was detected and the outcome of these patients will also be analyzed. All statistical analysis was done using SPSS software Version 24.

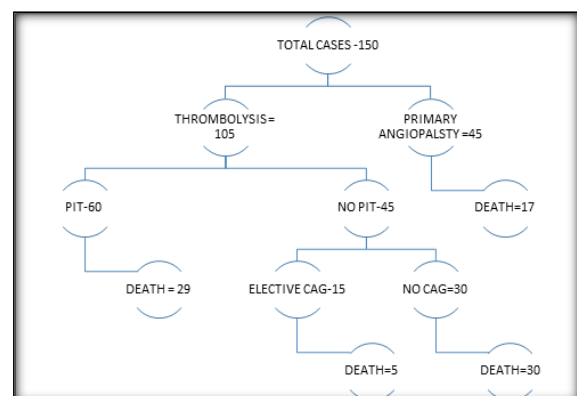
## RESULTS

In our study of 150 patients, 98% (n=147) were males. 2% (n=3) were females. Among our study population 90 patients were above 45 years of age group and rest 60 patients were below 45 years age group. Most common presenting complaint was chest pain in almost all patients followed by palpitation and giddiness.

Coming to treatment part, thrombolysis with streptokinase was done in 105 patients. Percutaneous transluminal coronary angioplasty (PTCA) was done in 111 patients. CABG was done in 9 patients in our study.

Coronary angiogram was done in 120 patients and 81 patients had Proximal left anterior descending artery (LAD) disease. While 6 had left main coronary artery disease and 9 had triple vessel disease (TVD). While Mid LAD was affected in 9 patients and in rest 15 patients ostial cut off was present.

In our study population we did ECHO for all, 88% of patients had heart failure. After admission 62% of patients required ventilator support. Coming to mortality 46% patients died during hospital stay while 54% got discharged.



**Figure 1: Flowchart of management and outcome among our study participants.**

Duration of chest pain >6hrs, initial high TIMI score and KILLIP class, Right axis deviation, low EF, were all predictors of mortality. Among 73 patients died 56 had duration of chest pain more than 6 hours. Initial

high TIMI score was present in 60 of 73 deaths. Right axis deviation was present in 48 patients. Killip class IV was in 42 patients. EF less than 40% was present in almost all deaths. All these were statistically significant.

100% of patients had EF less than 40%. About 36% of patients had ventricular arrhythmias. Nearly 65% of patients had sleep duration of less than 6 hrs. 40% of patients were younger than 45 years of age. 20% had elevated homocysteine levels.

## DISCUSSION

The higher incidence of RBBB seen in patients with anterior AMI may be explained by septal ischaemia from a more proximal left anterior descending artery occlusion (before the large septal branch) and the course of the right bundle branch traversing the septum towards the apex in a study of done by Devan et al<sup>9</sup>, right bundle-branch block (RBBB) occurred in 3–29% of patients with acute myocardial infarction (AMI) and is more common in the elderly. In this study, 50% were diabetics and 62% were smokers. It was observed that the occurrence of RBBB is often accompanied by wide infarct size and lower level of LVEF, higher Killip class and a higher rate of cardiac failure and malignant arrhythmia. In this study LAD was involved in 81% of patients.

The occurrence of RBBB with AAMI is associated with higher incident of complete occlusion of infarct-related artery (IRA) and closer proximal occlusion of IRA than those without RBBB. Similarly, most patients in our study had proximal LAD occlusion. 40% of patients were younger than 45 years of age. 20% had elevated homocysteine levels.<sup>[8]</sup>

In a study done by Sathish kumar et al,<sup>[3]</sup> of the 330 patients 168(50.9%) had anterior wall MI. Out of the 168 patients with Anterior wall MI, 30 had qRBBB (17.8%). 14% had reversal of RBBB waves. Out of the 30 patients with qRBBB MI, 66% were aged more than 50 yrs and 90% were males. 46.6% patients were diabetic and 10% were hypertensives. 70% of patients was smokers and 16% were alcoholics. Average duration of hospital stay was 11.4 days, while compared to 5 days which was the average duration of hospital stay for MI patients in western population. Complete heart block developed in 4 patients in whom TPI was done. All patients with qRBBB had Left anterior descending artery disease. While 10% had left main coronary artery (LMCA) occlusion and 14% had triple vessel disease (TVD), 10% were sent for coronary artery bypass grafting (CABG). In our study 100% of patients had EF less than 40%. About 36% of patients had ventricular arrhythmias. Nearly 65% of patients had sleep duration of less than 6 hrs. 40% of patients were younger than 45 years of age. Thrombolysis with streptokinase was done in 58% of patients.

In a study done by Ganesan et al,<sup>[10]</sup> in total 30 patients, 83% had anterior wall MI. Majority of patients were at KC II (76%), about 7% of patients

were in KC III and 4 patients (15%) of patients at KC IV. Left ventricular ejection fraction was lower in majority of patients with QRBBB average of about 44%. Left coronary artery is found to have significant stenosis in 60% of patients. Significant osteo-proximal lesion noted in 20%, proximal LAD astriding S1 seen in 32% of patients, proximal LAD cut-off in 8% of patients. Majority of patients with LAD disease had significant lesion at the proximal segment (87%). Associated mid LAD and distal LAD lesion were seen in 36% and 8% of study group respectively. Lesions of LCX and RCA were seen in 32%, 16% respectively. Five patients (20%) had double vessel disease; two had TVD (8%). Statistical significant association was found between the presences of QRBBB and associated osteo-proximal/proximal LAD lesion. In our study percutaneous transluminal coronary angioplasty (PTCA) was done in 111 patients. 46% patients died during hospital stay while 54% got discharged. 81 patients had Proximal left anterior descending artery (LAD) disease. While 9 had left main coronary artery disease and 9 had triple vessel disease (TVD). 88% of patients had heart failure. 62% of patients required ventilator support.

## CONCLUSION

QRBB AAMI carries high mortality as it signifies proximal occlusion of LAD. The mortality rate in the south Indian perspective has been documented only in few studies. This study analysed the various clinical characteristics, coronary angiographic findings, predictors of mortality and outcome of patients with QRBBB AAMI. Extreme deviation of QRS axis to the right and low EF are significant predictors of mortality. Sleep deprivation heightens the risk of QRBBB AAMI in our study especially in younger patients.

## REFERENCES

1. Godman MJ, Lassers BW, Julian DG. Complete bundle-branch block complication in acute myocardial infarction. *N Engl J Med* 1970;282: 237–40.
2. Roos JC, Duning AJ. Right bundle-branch block and left axis deviation in acute myocardial infarction. *Br Heart J* 1970; 32:847–51.
3. Anterior Wall Myocardial Infarction With Conduction Defect And It's Outcome During Hospital Stay -Dr. Sathishkumar Dr.Rajesh Dr.Balasubramaium- IJAR
4. Scheinman M, Brenman B. Clinical and anatomic implication of intraventricular conduction block in acute myocardial infarction. *Circulation* 1972; 46:753–60.
5. Scheidt S, Killip T. Bundle-branch block complicating acute myocardial infarction. *JAMA* 1972; 222:919–24.
6. Sgarbossa EB, Pinski SL, Topol EJ et al. Acute myocardial infarction and complete bundle branch block at hospital admission: clinical characteristics and outcome in the thrombolytic era. *J Am Coll Cardiol.* 1998; 31:105-10.
7. Abidov A, Kaluski E, Hod H et al. Influence of conduction disturbances on clinical outcome in patients with acute myocardial infarction receiving thrombolysis (results from the ARGAMI-2 study). *Am J Cardiol.* 2004; 93:76-80.
8. Satoshi Kurisu, Ichiro Inoue, Takuji Kawagoe et al. Right bundle-branch block in anterior acute myocardial infarction in

- the coronary intervention era: Acute angiographic findings and prognosis International Journal of Cardiology. 2007; 116:57-61.
9. Clinical profile and outcome of RBBB with anterior wall myocardial infarction -R Devan, R Sampath Kumar, R Arun and K Kannan IJAR 2020; 6(5): 166-169
10. QRBBB in acute coronary syndrome: Does it matter in modern era? Angiographic correlation -S. Ganesan \*, K. Kannan, Ashok Victor, K. Tamil Selvan, R. Arun, J. Cecily Mary Majella, R. Sampath Kumar, A. Aravind, N. Viswanathan, Rudrappa – Indian heart journal (2015) , s17-s48.