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ORIGINAL ARTICLE

Prospective Evaluation and Assessment of the Clinical Characteristic of Acute Myocardial Infarction (MI) Patients with Bundle Branch Block: An Intricate Original Research Study

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ABSTRACT:

Background: One of the symptoms common to pathologies of various organs, including heart, lungs, stomach etc., includes 'Chest pain'.The management of patients with acute myocardial infarction complicated by bundle branch block is a significant clinical problem and represents 8% to 13% of patients with acute infarction. Under the light of above mentioned data, we planned the present study to logically assess the clinical profile of acute myocardial infarction (MI) patients with bundle branch block. **Materials & Methods:** Present study included assessment of clinical profile of patients reporting with chief complaint of acute MI. A total of 50 patients were included in the present study. After the admission, the standard 12- lead ECG was recorded and criteria given previously in the literature were used to define BBB (Left BBB and Right BBB). Follow-up record of all the patients was maintained upto one month time. Results were analysed by SPSS software. **Results:** Out of 50, 18 and 22 patients belonged to the age group of 41 to 60 years and 60 to 80 years. Significant results were obtained wile comparing the number of patients divided on the basis of their age. Significant results were obtained while comparing the occurrence of RBBB and LBBB in between males. **Conclusion:** Male patients within 60 to 80 years of age are at more risk for development of acute MI with BBB. Poor prognosis in these patients is associated with presence of other deliberating conditions like diabetes, hypertension or other systemic diseases

Key words: Clinical Profile, Bundle Branch, Myocardial Infarction.

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INTRODUCTION

One of the symptoms common to pathologies of various organs, including heart, lungs, stomach etc., includes 'Chest pain'.[1] Due to the high mortality and morbidity of coronary disease, in the event of chest pain, a GP will always consider the possibility of an acute myocardial infarction or unstable angina. Moreover, fast treatment — such as thrombolysis, percutaneous coronary intervention, or coronary artery bypass graft — can be life-saving and increase the patient's life expectancy and quality of life.[2-4] The management of patients with acute myocardial infarction complicated by bundle branch block is a significant clinical problem and represents 8% to 13% of patients with acute infarction.[5] As a defect in the cardiac conduction system, right bundle branch block (RBBB) is determined when electrocardiogram (ECG) shows a notched R wave typically displayed as an M-shaped rsr' complex, secondary ST-T change in lead V1, slurred S wave in lead I, and V6 with right axis deviation.[6-8] Under the light of above mentioned data, we planned the present study to assess the clinical profile of acute myocardial infarction (MI) patients with bundle branch block.

MATERIALS & METHODS

The present study included rational assessment of clinical profile of patients reporting with chief complaint of acute MI. Well formed informed written consent was obtained from all the subjects after explaining in detail the entire research protocol. Inclusion criteria for the present study included:

- Patients admitted within 48 hrs after the onset of symptoms with Bundle Branch Block (BBB) on the admission ECG,
- Patients admitted with new onset BBB during hospital stay in subsequent ECG,
- Patients without previous history of documented BBB,
- Patients with any known drug allergy

After meeting the inclusion criteria, a total of 50 patients were included in the present study. After the admission, the standard 12- lead ECG was recorded and criteria given previously in the literature were used to define BBB (Left BBB and Right BBB). Follow-up record of all the patients was maintained upto one month time. All the results were compiled on an excel sheet. Results were analysed by SPSS software. Chi- square test and student t test were used for assessment of level of significance. P-Value of less than 0.05 was taken as significant.

RESULTS

A total of 50 subjects were included in the present study. Out of 50, 18 and 22 patients belonged to the age group of 41 to 60 years and 60 to 80 years (**Table 1**). All the collected data were compiled logically and subjected to basic statistical analysis using SPSS statistical package for the Social Sciences version 21 for Windows. Significant results were obtained wile comparing the number of patients divided on the basis of their age (**P-value < 0.05**). Males were more commonly affected with MI in our study and the results were statistically significant (**P- value < 0.05**). RBBB occurred in higher frequency in the subjects of present study. Significant results were obtained while comparing the occurrence of RBBB and LBBB in between males (**P- value < 0.05**) (**Table 2**). Mean heart rate in the subjects with RBBB and LBBB was found to b e82.4 and 78.1 beats per minute as shown in **Graph 1.**

Table 1: Clinical details of subjects included in the present study

Parameter		Number of subjects	Percentage of subjects	p- value
Age group	**Less than 40 years**	3	6	0.01*
	41- 60 years	18	36	
	61- 80	22	44	
	More than 80 years	7	14	
Gender	**Male**	35	70	0.02*
	Female	15	30	

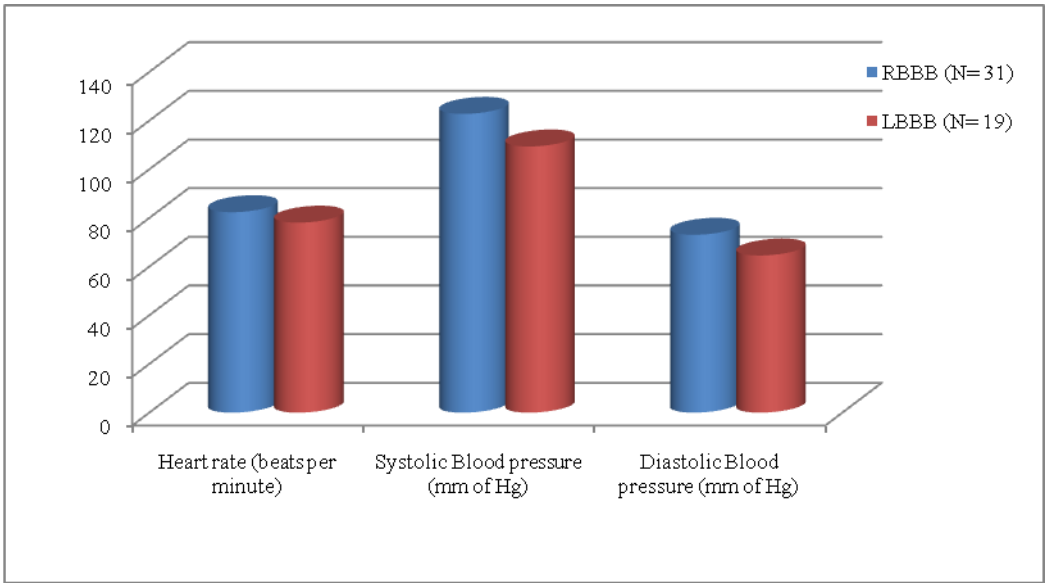
*: Significant

Table 2: Distribution of cases of BBB

Gender	BBB		p- value
	RBBB (n)	LBBB (n)	
Male	22	13	0.04*
Female	9	6	0.25
Total	31	19	0.01*

*: Significant

Graph 1: Descriptive value of cardiac parameters in RBBB and LBBB patients



DISCUSSION

AMI occurs when sudden blockade of the coronary artery stops blood perfusion to the myocardium. Most AMIs is caused by coronary artery disease, in which the rupture of an unstable atherosclerotic plaque plays an importance role.[9] Since the pre-thrombolytic era, observational studies have been conducted to investigate the association of RBBB and the prognosis in AMI, but the results remains uncertain.[10- 12] Hence; we planned the present study to assess the clinical profile of acute myocardial infarction (MI) patients with bundle branch block. In the present study, we observed that males of 40 to 80 years of age group are at a higher risk for development of acute MI with BBB (**P- value < 0.05**). Xiang L et al assessed the effect of right bundle branch block (RBBB) on mortality outcome in patients with acute MI. Embase, PubMed, and Cochrane databases were searched through January 2015 using the keywords "RBBB", "mortality", "AMI", "Coronary Heart Disease", and "cardiovascular". An odds ratio (OR) of RBBB on mortality endpoints was calculated using random-effects models. RBBB was associated with significantly increased overall mortality in patients with AMI. The OR of RBBB for deaths was 1.56. Moreover, RBBB showed a considerable effect on both in-hospital mortality and long-term mortality. RBBB is associated with an increased risk of all-cause mortality and indicates a poorer prognosis in patients with AMI.[13] Xiong Y et al assessed the association between RBBB (in general population and patients with heart disease) and risk of all-cause mortality, cardiac death, acute myocardial infarction (MI), and heart failure (HF). PubMed, EMBASE, and the Cochrane Library up to February 2015 were searched for prospective cohort studies that reported RBBB at baseline and all-cause mortality, cardiac death, MI, and HF at follow-up. A meta-analysis of published data was undertaken primarily by means of fixed-effects models.Nineteen cohort studies including 201 437 participants were included with a mean follow-up period ranging from 1 to 246 months. For general population with RBBB, the pooled adjusted hazard ratio (HR) for all-cause mortality was 1.17 (95% confidence interval [CI]: 1.03-1.33) compared with no BBB. General population with RBBB had an increased risk of cardiac death. For patients with RBBB and acute MI, the pooled risk ratio was 2.31 for in-hospital mortality, 2.85 for 30-day mortality, and 1.96 for longer-term mortality. For acute HF patients, the pooled risk ratio of all-cause mortality was 1.11, and for chronic HF patients it was 1.75. Right bundle branch block is associated with an increased risk of mortality in general population and patients with heart disease.[14] Wong CK et al assessed the prognostic differences between different types of bundle branch block during the early phase of acute myocardial infarction, stressing on the insights from the Hirulog and Early Reperfusion or Occlusion (HERO)-2 trial. The HERO-2 trial recruited 17 073 patients with ischaemic symptoms lasting >30 min and either ST elevation with or without right bundle branch block (RBBB) or presumed-new left bundle branch block (LBBB). Electrocardiograms were performed before and 60 min after the start of fibrinolytic therapy. Using patients with normal intraventricular conduction as a reference, odds ratios (ORs) for 30-day mortality were calculated for different BBB types (LBBB, RBBB with anterior AMI, and RBBB with inferior AMI) present at randomization and/or 60 min, with adjustment for recruitment region, pre-infarction characteristics, time to randomization, hemodynamics, and Killip class. At randomization, the 873 patients (5.11%) with BBB had worse baseline characteristics than patients without BBB. In patients presenting with LBBB (n=300), the ORs for 30-day mortality were 1.90 (95% CI 1.39-2.59) before and 0.68 (0.48-0.99) after adjustment for other prognosticators. In patients presenting with RBBB (n=415) and anterior AMI, the ORs were 3.52 (2.82-4.38) before and 2.48 (1.93-3.19) after adjustment. In patients presenting with RBBB and inferior AMI (n=158), the ORs were 1.74 (1.06-2.86) before and 1.22 (0.71-2.08) after adjustment. Within 60 min, 143 patients (0.92%) developed new BBB. The adjusted ORs for 30-day mortality were 2.97 (1.16-7.57) in the 25 patients with new LBBB, 3.84 (2.38-6.22) in the 100 with new RBBB and anterior AMI, and 2.23 (0.54-9.21) in the 18 with new RBBB and inferior AMI. RBBB accompanying anterior AMI at presentation and new BBB (including LBBB) early after fibrinolytic therapy are independent predictors of high 30-day mortality. These electrocardiographic features should be considered in risk stratification to identify high-risk patients.[15]

CONCLUSION

In MI patients, poor prognosis is associated with presence of other deliberating conditions like diabetes, hypertension or other systemic diseases. So proper handling of such patients should be done for improving the prognosis of treatment.

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