



A Study Of Clinical And Echocardiographic Profile In Left Bundle Branch Block Patients

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Abstract

Introduction: Left bundle branch block is an electrocardiographic diagnosis that is significantly associated with a higher-than-normal risk of morbidity and mortality. Majority of the patients usually have antecedent hypertension, coronary artery disease or dilated non ischemic cardiomyopathy at the time of diagnosis.

Primary objective: To study the clinical and echocardiographic profile in left bundle branch block patients in a tertiary care institute.

Methods: The study was conducted in Department of Medicine, Madras Medical College, Chennai from January 2020 to September 2021. Patients with ECG changes of complete LBBB were included, while those with incomplete LBBB changes were excluded. It is a Single centre observational prospective study. Statistical method: SPSS Software is used for analysis of data.

Results: Out of 100 patients selected in our study, 59 patients were male and 41 were female. 29% were in 51 to 60 years age group, 35 % in 61 to 70 years age group and 18 % in 71 to 80 years age group. The most common presenting symptom was dyspnoea in 54 % and chest pain in 44%. The most common finding in echocardiography was Left ventricular hypertrophy in 39 patients. There is a strong association between Diabetes, Hypertension and Coronary artery disease with LVH.

Conclusion: The prevalence of Left bundle branch block increases with increasing age. Most common causes include hypertension and dilated cardiomyopathy. Most common presenting symptom is dyspnoea followed by chest pain. The most common finding in Echocardiogram is Left Ventricular Hypertrophy followed by Dilated Cardiomyopathy.

Keywords: NIL

Introduction

Left bundle branch block is an electrocardiographic diagnosis that is significantly associated with a higher-than-normal risk of morbidity and mortality. The risk is increased in all the patients with or without overt heart disease¹. Majority of the patients usually have antecedent hypertension, coronary artery disease or dilated non ischemic cardiomyopathy at the time of diagnosis of LBBB². It can also occur as an isolated abnormality in

asymptomatic patients. However, even in isolated LBBB, they will eventually go on to develop one of these cardiovascular abnormalities which translate into a higher mortality. The major causes of death are due to myocardial infarction, heart failure, and arrhythmias including high-grade AV block. In patients with heart failure and LBBB, they carry a poorer prognosis compared to those without LBBB. The prognosis in these patients depends on the duration of QRS complexes. Longer the QRS

duration, worse the prognosis.³ Based on this aim of our study is to evaluate the clinical and echocardiographic profile in left bundle branch block patients in a tertiary care centre

Materials And Methods

This study was done in Institute of Internal Medicine, Madras Medical College & Rajiv Gandhi Government General Hospital as a Single centre observational prospective study in collaboration with Institute of Cardiology, MMC& RGGGH, Chennai. Patients with ECG changes of complete LBBB were included in the study While patients with ECG showing Incomplete LBBB were excluded. Study was done after getting approval from ethical committee. Data analysed using statistical package - SPSS Software Version 22.0

A complete history was taken either from the patient or his/ her attendee including past history of Diabetes, hypertension, coronary artery disease, seizures, Jaundice, CVA, COPD, CKD. A complete physical examination was done with monitoring of vitals including temperature, pulse rate, respiratory rate and blood pressure. Detailed cardiovascular examination done. Electrocardiography findings were confirmed. The patients were then subjected to

detailed Echocardiographic examination. Treatment was started based on clinical and Echocardiographic presentation and patients were advised regular follow up.

Results

Out of 100 patients selected in our study, 59 patients were male and 41 were female. 29% were in 51 to 60 years age group, 35 % in 61 to 70 years age group and 18 % in 71 to 80 years age group. The median age group was 62.03 years. According to Framingham study conducted in 1979 (5,209 subjects, 55 with LBBB), the mean age of onset was around 62 years.

The most common presenting symptom was dyspnoea in 54 % and chest pain in 44%. 12 % of the patients were asymptomatic, palpitation was present in 9 patients, presyncope was present in 9 patients , and 12 were asymptomatic.

In our study 13% were known diabetic, 52 % hypertensive and 28 % had coronary artery disease. The Framingham Study also showed a clear association between LBBB and major cardiovascular diseases such as hypertension, cardiac enlargement and coronary heart disease. 35 patients were smoker and 29 patients were alcoholic in our study.

Echocardiography

Echocardiography	Frequency	Percent
Normal	10	10
DCM-MILD LVSD	3	3
DCM MOD LVSD	5	5
DCM SEVERE LVSD	15	15
ISCHEMIC DCM MILD LVSD	2	2
ISCHEMIC DCM MOD LVSD	8	8
ISCHEMIC DCM SEVERE LVSD	16	16
LVH GRADE 1 DD	14	14
LVH GRADE 2 DD	17	17
LVH GRADE 3 DD	1	1
LVH MILD LVSD	4	4
LVH MOD LVSD	3	3

RHD SEVERE AR/MOD MR	1	1
RHD SEVERE AS/MOD MR	1	1
TOTAL	100	100

The most common finding in echocardiography was Left ventricular hypertrophy in 39 patients; 32 had diastolic dysfunction and 7 had systolic dysfunction. 26 of these patients had ischemic DCM with systolic dysfunction. 23 had non ischemic DCM. 2 patients had Rheumatic heart disease. 10 had normal Echocardiogram. How many of these develop cardiovascular disease on follow up remains to be seen. Left ventricular systolic dysfunction was identified in 56 patients; severe LVSD in 31 patients; moderate LVSD in 16 patients; mild LVSD in 9 patients.

Correlation study was done between clinical profile and Echocardiographic findings. Significant association was found between dyspnoea and DCM showing breathlessness as the chief presenting complaint in the setting of DCM. Association was also found between hypertension & coronary artery disease with DCM which shows these factors as main aetiological factors. There is a significant association between Left ventricular hypertrophy and age which reflects increasing age as a risk factor for LVH. There is also a strong association between Diabetes, Hypertension and Coronary artery disease with LVH. This suggests a possible role of the above factors in the aetiology of LVH.

Discussion

In our study 59 patients were male and 41 were female. 29% were in 51 to 60 years age group, 35 % in 61 to 70 years age group and 18 % in 71 to 80 years age group. The median age group was 62.03 years. According to Framingham study conducted in 1979 (5,209 subjects, 55 with LBBB), the mean age of onset was around 62 years. Our findings concur with epidemiological studies showing that BBB is associated with older age.⁴

The most common presenting symptom was dyspnoea in 54 % and chest pain in 44%. 12 % of the patients were asymptomatic, palpitation was present in 9 patients, presyncope was present in 9 patients, and 12 were asymptomatic. LBBB is often asymptomatic. However, if you have other heart

conditions in addition to LBBB, you are more likely to experience symptoms. Symptoms may include, Shortness of breath, Fatigue, Syncope

In our study 13% were known diabetic, 52 % hypertensive and 28 % had coronary artery disease. The Framingham Study also showed a clear association between LBBB and major cardiovascular diseases such as hypertension, cardiac enlargement and coronary heart disease⁵. Left bundle branch block can result from a number of heart conditions. These include Coronary artery disease, High blood pressure, Heart valve disease, Enlarged or weakened heart muscle (cardiomyopathy), Heart infection (myocarditis), Myocardial infarction, Congenital heart defects, Certain heart rhythm medicines, All of these conditions increase the risk for left bundle branch block.

The most common finding in echocardiography was Left ventricular hypertrophy in 39 patients; This wall thickening is the most important parameter, which helps in differentiating a viable from a non-viable septum. Presence of thickening also rules out a viable but ischemic & akinetic septum. 32 had diastolic dysfunction and 7 had systolic dysfunction. Patients with left bundle branch block, right ventricular volume overload, or even coronary artery disease all exhibit flat or paradoxical septal motion during ventricular ejection.⁶ However, in the presence of left bundle branch block, the distinguishing feature seems to be a specific pattern of motion at the very onset of electrical depolarization.

26 of these patients had ischemic DCM with systolic dysfunction. 23 had non ischemic DCM. 2 patients had Rheumatic heart disease. 10 had normal Echocardiogram. The prevalence of left bundle branch block (LBBB) is significantly higher in the heart failure (HF) population compared to the general population.⁷ LBBB is more often associated with structural heart disease especially dilated cardiomyopathy (DCM) of a non-ischemic origin. DCM patients with LBBB compared to those with normal intraventricular conduction are more likely to

exhibit increased left ventricular (LV) dilatation, depressed LV ejection fraction (LVEF), increased symptomatology and shorter survival. How many of these develop cardiovascular disease on follow up remains to be seen.⁸ Left ventricular systolic dysfunction was identified in 56 patients; severe LVSD in 31 patients; moderate LVSD in 16 patients; mild LVSD in 9 patients.

Correlation study was done between clinical profile and Echocardiographic findings. Significant association was found between dyspnoea and DCM showing breathlessness as the chief presenting complaint in the setting of DCM⁹. Association was also found between hypertension & coronary artery disease with DCM which shows these factors as main aetiological factors. There is a significant association between Left ventricular hypertrophy and age which reflects increasing age as a risk factor for LVH. There is also a strong association between Diabetes, Hypertension and Coronary artery disease with LVH. This suggests a possible role of the above factors in the aetiology of LVH.

Conclusion

The prevalence of Left bundle branch block increases with increasing age. Majority of patients had antecedent cardiovascular disease at the time of diagnosis. Most common causes include hypertension and dilated cardiomyopathy. Even isolated LBBB ultimately lands in major cardiovascular disease. Most common presenting symptom is dyspnoea followed by chest pain. The most common finding in Echocardiogram is Left Ventricular Hypertrophy followed by Dilated Cardiomyopathy.

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