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"Clinical Profile of Right Ventricular Infarction in Patients with Inferior Wall MI-A Hospital Based Observational Cross Sectional Study"

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Abstract
Introduction: *Inferior wall MI is complicated by right ventricular infarction is present in about 50% of cases and associated with 20% of mortality.The hospital death rate are alsovery high and associated with major complications.* ***Objective:*** *To find out the Clinical Profile of Right Ventricular Infarction in Patients with Inferior Wall MI-A Hospital Based Observational Cross Sectional Study.* ***Methods:****The study was a hospital based observational cross sectional study using purposive sampling method. Study conducted in coronary care unit of Combined Military Hospital (CMH), Dhaka, Bangladesh from July 2019 to December 2019 as in-patient basis, consist of 60 cases of inferior wall MI. In patients with RVMI, the hospital death is high and major complications are greater. Right ventricular infarction leads to hemodynamic instability, atrio-ventricular conduction blocks, and in-hospital mortality in patients with inferior wall myocardial infarction.****Results:****This hospital based cross sectional observational study was conducted to assess the incidence and clinical profile of right ventricular infarction in acute inferior wall myocardial infarction patients and to study the effects of right ventricular myocardial infarction (RVMI) on clinical outcomes of inferior wall myocardial infarction (IWMI). The mean age of participants was 58 and maximum number of patients was in the age group of 40-60(43%) and consists of 81% males and 19% females. Among them 40% were hypertensive, 20% were diabetic, 51% smokers, 2% were alcoholics. In this study 58.33% of patients with RVMI and 2% of patients without RVMI were presented with hypotension at the time of admission.There is a significant association between IWMI and RVMI. RVMI is seen in about 20% of cases and most common complication encountered was hypotension followed by complete heart block.* ***Conclusion:*** *Involvement of the right ventricle in inferior wall myocardial infarction significantly affects the mortality and morbidity and complications.*

Keywords:*Clinical Profile, Inferior Wall MI (IWMI), Right Ventricular Infarction (RVMI).*

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I. Introduction

Cardiovascular diseases have becomes the leading cause of mortality in Bangladesh. In last two decades epidemiological characteristics have transitioned frominfectious diseases, under nutritionto non-communicable disease. Inferior wall MI is associated with about 30 to 50% of right ventricular myocardial infarction. The incidence of right ventricular MI in patients with inferior wall myocardial infarction was 10–50%. Isolated right ventricular infarction is extremely rare. Even though the RVMI is seen in much number of cases clinically but the incidence of RVMI is very less than seen at autopsy [1].The main reason for the above difference is the difficulty in diagnosing RVMI in living patients of atrio-ventricular synchronisation. These two events can result in a severe decrease in right and, secondarily left ventricular output [2].The demonstration of right ventricular dysfunction is important because it is often associated with a distinct clinical syndrome

requiring specific management. With the present study, author assessed the incidence of IWMI, its association with right ventricular infarction, function and its clinical outcome.

II. Objective

To find out the Clinical Profile of Right Ventricular Infarction in Patients with Inferior Wall MI -A Hospital Based Observational Cross Sectional Study.

III. Methods

The study was a hospital based observational cross sectional study using purposive sampling method. Study conducted in coronary care unit of Combined Military Hospital (CMH), Dhaka, Bangladesh from July 2019 to December 2019 as in-patient basis, consist of 60 cases of inferior wall MI. In patients with RVMI, the hospital death is high and major complications are greater. Right ventricular infarction leads to hemodynamic instability, atrio-ventricular conduction blocks, and in-hospital mortality in patients with inferior wall myocardial infarction. The main hemodynamic derangements associated with right ventricular infarction render the affected patients are sensitive to decreased preload. There is increased right atrial pressure (RAP) and increased right ventricular end diastolic pressure (RV EDP) in RVMI patients.

Operational Definitions:

Universal Definition of Acute MI: Acute myocardial injury with clinical evidence of acute myocardial ischaemia and with detection of a rise and/or fall of cTn values with at least one value above the 99th percentile URL and at least one of the following:

- Symptoms of acute myocardial ischaemia
- New ischaemic ECG changes (New ST/T wave changes on new LBBB);
- Development of new pathological Q waves;
- Imaging evidence of new loss of viable myocardium or new regional wall motion abnormality in a pattern consistent with an ischaemicaetiology;
- Identification of a coronary thrombus by angiography including intracoronary imaging or by autopsy.

Diagnostic criteria for inferior wall myocardial infarction:

ST Segment elevation in inferior leadsandreciprocal ST segment depression in lateral and/or high lateral leads (1, aVL, V5, V6). Diagnostic criteria for right ventricular myocardial infarctionST segment elevation >1mm in atleast one of the right precordial (V4R, V3R)leads. Patients with chronic lung disease with corpulmonale, history of chest pain of more than 24 hours duration and subjects who did not provide consent for the study are excluded.

IV. Results

This hospital based cross sectional observational study was conducted to assess the incidence and clinical profile of right ventricular infarction in acute inferior wall myocardial infarction patients and to study the effects of right ventricular myocardial infarction (RVMI) on clinical outcomes of inferior wall myocardial infarction (IWMI). The mean age of participants was 58 and maximum number of patients was in the age group of 40-60(43%) and consists of 81% males and 19% females. Among them 40% were hypertensive, 20% were diabetic, 51% smokers, 2% were alcoholics. In this study 58.33% of patientswith RVMI and 2% of patients without RVMI were presented with hypotension at the time of admission.

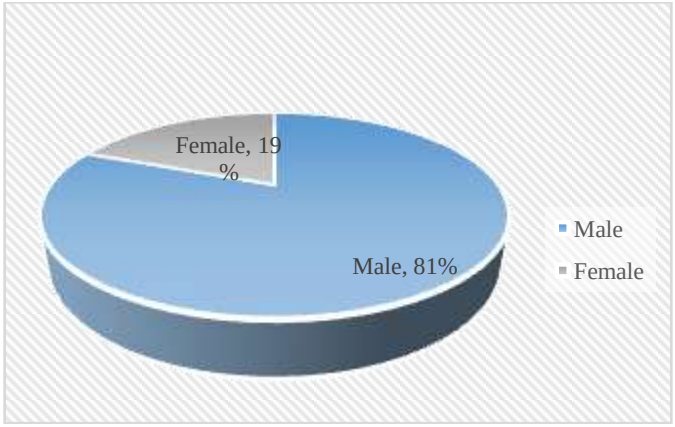

Figure-1: Sex distribution of the study population with IWMI.

Table-1: Among inferior myocardial infarction patients (n=60)

Comorbidities	Percentage
Hypertensive	40%
Diabetic	20%
Smokers	51%
Alcoholics	2%

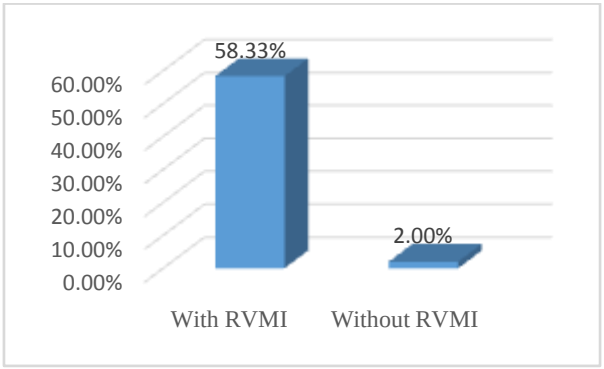

Figure-2: On admission hypotension with RVMI and withoutRVMI.

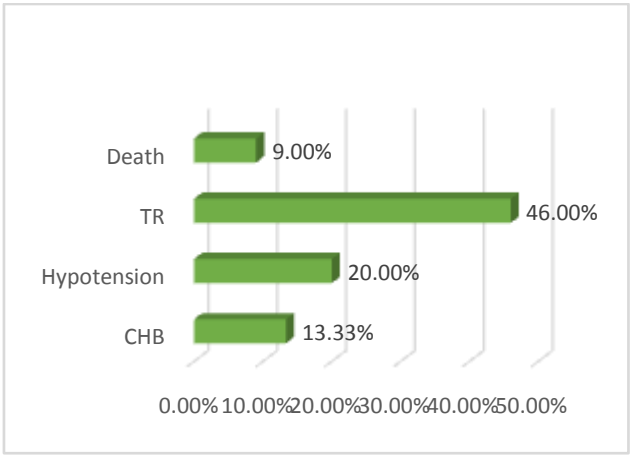

Figure-3: Complications of RVMI with IWMI.

Various complications were noted in the study, clinically the most common being the hypotension. TR is an Echo finding.

- Complete heart block (CHB) seen in 13.33% of IWMI patients.
- Hypotension seen in 20% IWMI patients RVMI group.
- Death 9% with RVMI and 2% without RVMI group.
- Right ventricular myocardial infarction seen in 20% of IWMI cases.
- TR is seen 46% of patients of IWMI with RVMI and 6% of patients of IWMI without RVMI.

V. Discussion

This is a hospital based observational cross sectional study conducted to assess the incidence and clinical profile of right ventricular infarction in acute inferior wall myocardial infarction.In the present study 20% of patients present with right ventricular myocardial infarction at the time of admission. Chock lingam A et al. had found 50(37%) out of 135 cases of IWMI to be having right ventricular involvement [4]. Iqbal A et al. observed that out of total 50 cases with inferior wall MI [5], 16 (32%) cases had evidence of RVMI while Ravikeerthy M et al. observed the incidence was 30%.The mean age of patients was 58 years with 4:1male preponderance which is in line with findings of previous similar studies [5]. It was observed in the present study 51% were smokers and 2% were alcoholic, with significant difference between male and female patients. This was similar to observations made by Khan IS et al. and Iqbal A et al.[3, 5].Complications such as hypotension, shock, arrhythmia, cardiac arrest, AV block and cardiac failure were observed to be significantly lower in patients with isolated IWMI as compared to the patients associated with RVMI except pulmonary edema. This is in concordance with the observations by Khan IS et al.,MemonAGet al.[3, 7].But it was not in line with the findings of Iqbal A et al. Total deathwere6 in the present study (9%) had associated with RVMI and 2% with

isolated IWMI, the difference being statistically significant[5,6]. Ravikeerthy M et al. studied a total of 50 cases of acute IWMI and found mortality rate to be 15% in patients with associated RV infarction (RVMI) and 3.33% in isolated inferior wall MI (IWMI)[6]. George et al. found mortality rate to be 12% in patients with inferior wall myocardial infarction and significantly higher at 28% in patients having right ventricular involvement in inferior wall myocardial infarction cases [8]. Memon AG et al. reported more than double in-hospital mortality in RVMI group as compared to without RVMI [7].

VI. Conclusion

Thus it can be concluded that involvement of right ventricle increases the rate of complications as well as the mortality in patients with inferior wall myocardial infarction.

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Reference

[1]. Bates ER, Clemmensen PM, Califf. Precordial ST segment depression predicts a worse prognosis in inferior infarction despite reperfusion therapy. J Am CollCardiol. 1990; 16:1538-1544.
[2]. Nasmith J, Marpole. Clinical outcomes after inferior myocardial infarction. Ann Intern Med. 1982; 96:22-26.
[3]. Khan S, Kundi A, Sharieff S. Prevalence of right ventricular myocardial infarction in patients with acute inferior wall myocardial infarction. Int J CliniPrac. 2004;58(4):354-7
[4]. Chockalingam A, Gnanavelu G, Subramaniam T, Dorairajan S, ChockalingamV.Right ventricular myocardial infarction: presentation and acute outcomes. Angiol. 2005; 56(4):371-6.
[5]. Iqbal A, Muddarangappa R, Shah SK, Vidyasagar S. A study of right ventricular infarction in inferior wall myocardial infarction. J ClinSci Res. 2013; 2:66-71.
[6]. Ravikeerthy M, Yogi SR. A study of right ventricular infarction in inferior wall myocardial infarction. Inter J Sci Res Pub. 2015; 5(4):120-4.
[7]. Memon AG, Shah MI, Devrajani BR, Baloch S. Incidence of right ventricular infarction in patients with acute inferior wall infarction. J Postgrad Med Institute Pesh-Pak. 2015; 29(3):189-92.
[8]. George S, Patel M, Thakkar A. Clinical profile and in-hospital outcome of patients with right ventricular myocardial infarction. Int J Clin Med. 2014; 5(08):459-63.

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