Clinical Profile of Right Ventricular Infarction in Patients with Inferior Wall MI
Dr. Arun. V1*, Dr. Pradeep Prajapati2

1Junior Resident, Gajra Raja Medical College, Gwalior, India
2Assistant Professor, Gajra Raja Medical College, Gwalior, India

INTRODUCTION
Cardiovascular diseases have become the leading cause of mortality in India. In the last two decades, epidemiological characteristics have transitioned from infectious diseases, undernutrition to 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.

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 patient sensitive to decreased preload and loss of atrioventricular 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 and function and its clinical outcome.

METHODS
The study was a hospital based observational cross sectional study. Conducted in intensive care unit, on an in-patient basis, consist of 60 cases of inferior wall MI.

OPERATIONAL DEFINITIONS
Diagnostic Criteria of acute MI
Detection of rise or fall of serum cardiac enzymes (CK-MB or Troponin-T) with at least one of the following

Symptoms of ischemia
New or presumed new significant ST-T changes
New onset Left bundle branch block.
Development of new pathological q waves in ECG.
Imaging evidence of new loss of viable myocardium or new regional wall motion abnormality

Diagnostic criteria for inferior wall myocardial infarction
St Segment elevation in inferior leads
Reciprocal ST Segment depression in lateral and/or high lateral leads (1 avl v5 v6). Diagnostic criteria for right ventricular myocardial infarction

ST segment elevation in >1mm in atleast one of the right precordial leads

All other cases of which may cause abnormally oriented ST vector in the right precordial leads such as Acute Inferior Wall MI other than Inferior Wall MI, Acute Pericarditis, Bundle Branch Blocks, Patients with chronic lung disease with cor pulmonale, History of chest pain of more than 24 h duration and Subjects who do not provide consent for the study are excluded

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 outcome of Inferior wall myocardial infarction (IWMI). The mean age of participants was 58.33 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% was hypertensive, 20% were diabetic, 51% smokers, 30% were alcoholic. In this study 58.33% of patients with RVMI and 2% of patients without RVMI were presented with hypotension at the time of admission.

Various complications were noted in the study, the most common being the hypotension.
- Complete heart block seen in 13.33% of IWMI patients
- Hypotension seen in 20% IWMI patients RVMI group
- Right ventricular myocardial infarction seen in 20% of IWMI cases
- TR is seen 66% of patients of IWMI with RVMI and 4% of patients of IWMI without RVMI.

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. Chockalingam 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 at 30%.

The mean age of patients was 58.33 years with 4:1 male preponderance which is in line with findings of previous similar studies [11, 17-19]. It was observed in the present study 51% were smokers and 30% 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 patients associated with RVMI except pulmonary edema. This is in concordance with the observations by Khan IS et al. Memon et al. [3, 7].

But it was found not in line with findings of Iqbal A et al. of the total 4 deaths in the present study (6%) 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].

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

Funding: No funding sources Conflict of interest: any declared Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCE
1. Bates ER, Clemmensen PM, Califf. Precordial ST segment depression predicts a worse prognosis in inferior infarction despite reperfusion therapy. J Am Coll Cardiol. 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 Clin Pract. 2004;58(4):354-7

4. Chockalingam A, Gnanavelu G, Subramaniam T, Dorairajan S, Chockalingam V. 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 Clin Sci 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, Devrajaoni 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.