

# Study of 100 cases of acute inferior wall myocardial infarction admitted to K.R. Hospital, Mysore with special reference to conduction disturbances and right ventricular infarction

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## Abstract

Coronary heart disease (CHD) remains the major killer of mankind, even though a lot of developments in the diagnosis, management and prevention of risk factors have taken place. Aim of the study is to study right ventricular involvement with various conduction disturbances occurring in 100 cases of acute inferior wall myocardial infarction with or without right ventricular myocardial infarction. Smoking was the commonest risk factor followed by hypertension, diabetes, hypertension, hyperlipidemia, etc. Chest pain was the commonest form of clinical presentation. Other symptoms like sweating, breathlessness, palpitation, nausea and vomiting were also noted. Right ventricular infarction is a common clinical entity in patients with inferior wall myocardial infarction. Hypotension, rised JVP, Kussmaul's sign and RV S3/S4 are important diagnostic signs of right ventricular infarction. The patients with RV infarction have high incidence of complications like high degree heart blocks, ventricular arrhythmias, cardiogenic shock and have high in-hospital mortality. Therefore presence of right ventricular infarction is a poor prognostic indicator in patients with acute inferior wall myocardial infarction which needs more attention and intensive therapy.

**Keywords:** Coronary heart disease (CHD); Inferior wall myocardial infarction (IFMI); Right ventricular infarction (RVI), Hypertension (HTN); Diabetes mellitus, (DM); Dyslipidemia (DYL); Smoking (SM); Cerebrovascular accident (CVA).

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increased at least two fold in last twenty years in both rural and urban populations of India. In the urban adult population between 25 and 65 years of age, the prevalence of CHD appears to be about 90/1000. CHD is 3-4 times less common in rural population compared with urban subjects.

## MATERIALS AND METHODS

This study was carried out in intensive coronary care unit (ICCU) of Krishna Rajendra (K.R.) Hospital. Mysore. The material of study consisted of 100 consecutive patients of acute inferior wall myocardial infarction, admitted to ICCU of K.R. Hospital from January 2015 to June 2015. Only patients who satisfied World Health Organisation (WHO) definition for the diagnosis of acute myocardial infarction were selected for the study.

### Inclusion Criteria

Patients satisfying WHO definition for diagnosis of

## INTRODUCTION

Coronary heart disease (CHD) remains the major killer of mankind, even though a lot of developments in the diagnosis, management and prevention of risk factors have taken place. Population surveys carried out in the last few decades indicates that the prevalence of CHD has

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myocardial infarction were included in the study. Diagnosis was based on the presence of at least two of the following three criterias:

1. A clinical history of ischemic type of chest discomfort.
2. Changes in serially obtained electrocardiographic tracings.
3. A rise and fall of serum cardiac markers.

#### **Exclusion Criteria**

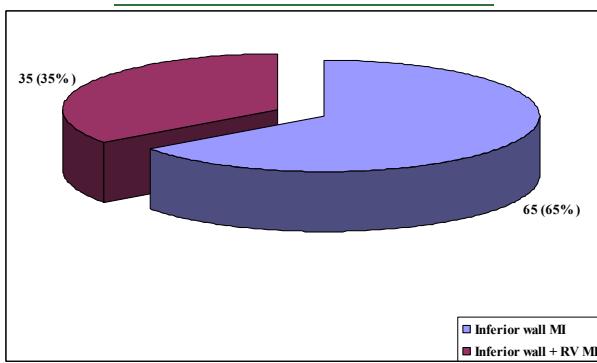
A detailed history was taken in all the patients and a thorough physical examination was done as per the proforma. The first EGG along with right sided chest leads was recorded at the earliest after admission and subsequently at 8 hourly intervals on first day, daily EGG for the duration of the stay in ICCU and thereafter as per need. If thrombolytic therapy was given, 12 lead ECG was recorded with right ventricular leads before and after 2 hours of the thrombolytic therapy.

## **OBSERVATIONS AND RESULTS**

Hundred consecutive cases of inferior wall myocardial infarction admitted to ICCU of K.R. Hospital, Mysore, from January 2015 to June 2015 were studied. The following are the observations made from this study.

**Table 1:** Showing the incidence of right ventricular infarction

Site of infarction	Number of patients	Percentage
Inferior wall MI	65	65
Inferior wall + RV MI	35	35



**Figure 1:** Showing the incidence of right ventricular infarction

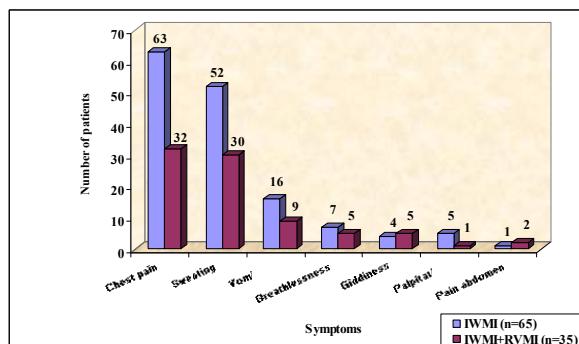
Right ventricular infarction diagnosed by ECG criteria was seen in 35 patients out of 100 patients with acute inferior wall Myocardial Infarction, which showed an incidence of 35%.

In the present study, the minimum age of the patient was 28 years and the maximum age was 84 years. The maximum numbers of patients were in between 41-60

years, constituting 58% of all patients. The age group of the patients with RV infarction was not much different from the group without RV infarction.

**Table 2:** Showing the Symptoms at the onset of presentation

Symptoms	IWMI		IWMI+RVMI		Total	
	No.	%	No.	%	No.	%
Chest pain	63	96.9	32	91.4	95	95
Sweating	52	80	30	85.7	82	82
Vomiting	16	24.6	9	25.7	25	25
Breathlessness	7	10.7	5	14.2	12	12
Giddiness	4	6.1	5	14.2	9	9
Palpitation	5	7.6	1	2.8	6	6
Pain abdomen	1	1.5	2	5.7	3	3



**Figure 2:** Showing the Symptoms at the onset of presentation

Chest pain was the most common mode of presentation; it was present in 95 of the 100 patients (95%). It was associated with perspiration (sweating) in 82% patients. Vomiting was present in 25%, breathlessness in 12%, giddiness in 9% patients. 6% had palpitations and 3% had pain abdomen. The symptoms in patients with RVMI were not much different from those without RVMI in IWMI, except for breathlessness, giddiness and pain abdomen, which were more common in RVMI group.

#### **Duration of Chest Pain**

**Table 3:** Showing the time interval between onset of chest pain and hospitalization

Time interval (hrs)	IWMI		IWMI+RVMI		Total	
	No.	%	No.	%	No.	%
<6	24	39	16	56.2	42	44.2
7-12	13	20.6	6	18.7	19	20
13-24	10	15.8	7	21.8	17	17.8
> 24	12	19	5	15.6	17	17.8

In the present study, most of the patients we presented within 12 hours (65%) of the onset of chest pain. Majority of patients with RVMI presented within 6 hours of the onset of chest pain (56.2%) compared to isolated IWMI group (39%).

#### **Killip's Class**

**Table 4:** Showing the cardiac status according to Killip's classification at the time of duration

Killip's class	IWMI		IWMI+RVMI		Total	
	No.	%	No.	%	No.	%
Class I	52	80	20	57.1	72	72
Class II	7	10.7	4	11.4	11	11
Class III	-	-	1	2.9	1	1
Class IV	6	9.2	10	29.5	16	16

In the present study most of the patients were in class I (72%) and class II (11%) of Killip's classification. 16% were in class IV in which majority were in RVMI group (29.5%) compared to isolated IWMI group (9.2%).

### Physical Signs

**Table 5:** Showing various physical signs at the time of presentation

Physical signs	IWMI		IWMI+RVMI		Total	
	No.	%	No.	%	No.	%
Tachycardia	13	20	6	17.1	19	19
Bradycardia	10	15.3	11	31.4	21	21
Hypotension	11	15.9	16	45	27	27
Raised JVP	11	15.9	21	60	32	32
Kussmaul's sign	-	-	18	51.4	18	18
RV S <sub>3</sub> /S <sub>4</sub>	11	15.9	26	74.2	37	37
Pericardial rub	2	3.0	4	11.4	6	6

As per the observations from the above table, it is evident that the physical findings were more common in the RVMI group compared to isolated IWMI group, except for the Tachycardia, in which there was no much difference between the two groups.

### Echocardiography

**Table 6:** Showing the findings of echocardiography

Parameters	IWMI (n=16)	IWMI+RVMI (n=14)	Total (n=30)
Mitral regurgitation	50%	35.7%	43.3%
EF ± SD	50.75±13.43	56±10.4	-
Right ventricular dilatation	12.5%	21.4%	16.6%
Right ventricular dysfunction	-	7.1%	3.3%
Wall motion abnormalities	75%	78.5%	76.6%

It is evident from the above table that most common ECHO finding was wall motion abnormalities (76.6%), in the inferior and/or post-wall hypokinesia/akinesia was noted. Followed by mitral regurgitation in about 43.3%

and it was more common with IWMI group (50%). Ejection fraction (LV) was normal in both the groups. RV dysfunction and dilatation were noted more in RVMI group. The limitation of the above observation is due to the lack of ECHO findings in all the patients, due to technical difficulties. Hence final conclusion cannot be drawn in this regard. As per the above table, from the observations, it is evident that arrhythmias and cardiogenic shock were more common with RVMI group than with isolated IWMI group.

### DISCUSSION

This prospective study was conducted on 100 cases of acute Inferior wall myocardial infarction with or without Right ventricular infarction, admitted to ICCU of K.R. Hospital, Mysore, between January 2015 and June 2015. The observations made on the study were discussed here and the results have been compared with other studies. The total numbers of in-patient medical admissions to the K.R. Hospital, during the study period was 16,056. The total numbers of ischemic heart disease patients were 1320, which formed 8.22% of total medical admissions. The total numbers of acute myocardial infarction cases admitted to ICCU during the study period were 521, which formed 39.4% of total ischemic heart disease patients. Total number of acute inferior wall myocardial infarction with or without Right ventricular myocardial infarction admitted during the study period were 182 cases. This formed 1.13% of total medical admissions and 13.78% of total ischemic heart disease patients and 34.9% of total acute myocardial infarction cases admitted to ICCU. Out of 182 cases 100 consecutive cases were taken up for this study. In this study 33% of patients had hypertension. Meher *et al.* (1991) reported its incidence as 27.4%. Bueno *et al.* (1998) as 39% and Khan *et al.* (2002) as 39.89%. These findings correlate with the present study. 19% of the patients were found to have diabetes mellitus in the present study. The incidence of diabetes in other studies like Bueno *et al.* (1998) was 23% and Khan *et al.* (2002) 21.84% which are comparable with the present study. 28% of the patients had hyperlipidemia in this study. Bueno *et al.* (1998) reported its incidence as 31%, Yoshino *et al.* (1998) as 29%. There was not much difference in the incidence of hyperlipidemia in both the groups. Hence our observations are in correlation with the above studies. In the present study, the higher incidence of the bradycardia was seen in IWMI with RVMI group (31.4%) when compared to only IWMI group (15.3%). High incidence of bradycardia in RVMI group have been reported by Jha *et al.* (1988) 26.6%, Zehender *et al.* (1993) 9.3% and Bueno *et al.* (1998) 14%. There was no much difference in the incidence of tachycardia between the two groups.

In the present study, 8.5% of the patients in RVMI group had atrial fibrillation v/s 3% in IWMI group. Jha *et al.* (1988) reported atrial fibrillation in 6.66% in RVMI group and 4% in IWMI group, and Rechavia *et al.* (1992) reported AF in 19% in RVMI group and 4% in IWMI group, Our study finding correlates with the study of Jha *et al.* (1988).

## CONCLUSIONS

- Right Ventricular infarction is common clinical entity in patients with inferior wall myocardial infarction.
- Hypotension, raised JVP, Kussmaul's sign and RV S<sub>3</sub>/S<sub>4</sub> are important diagnostic signs of right ventricular infarction.
- The patients with RV infarction have high incidence of complications, like high degree heart blocks, ventricular arrhythmias cardiogenic shock and have high in-hospital mortality.
- Therefore presence of right ventricular infarction is a poor prognostic indicator inpatients with acute inferior wall MI, which needs more attention and intensive therapy.

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