FREQUENCY OF RIGHT VENTRICULAR INFARCTION IN PATIENTS WITH INFERIOR WALL MYOCARDIAL INFARCTION

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ABSTRACT

Objective:
To determine frequency of Right ventricular infarction in patients of inferior wall myocardial Infarction at cardiology department of various hospitals in Karachi.

METHODS: This multicenter cross sectional study was conducted in cardiology department of different hospitals in Karachi from 01/01/2016 to 31/12/2017 for a period of 02 years.A total of 303 patients who suffered from inferior wall myocardial infarction admitted to the hospitals included Abbasi Shaheed Hospital, Karachi Institute of Heart Diseases, National Institute of Cardiovascular Diseases and Civil Hospital Karachi were enrolled. All the study patients were analyzed primarily for the frequency of right ventricular myocardial infarction (RVMI) and secondarily associated risk factors like age, gender, hypertension, diabetes, smoking, chest pain and family history. A predesigned questionnaire used to collect data and the data was analyzed statistically.

RESULTS: The results of this study shows that the patients diagnosed with acute inferior wall myocardial infarction found to have n=94 (31.03%) frequency of developing right ventricular infarction, There were n=225 male patients (74.25%) and 78 female patients (25.75%). The mean age of the patients was 55.7 ± 12.9 and within this age group 40-60 years (n=233, 76.89 %), had high frequency of developing Right ventricular infarction.

The other risk factors found were as hypertension (n= 152, 50.16%), followed by smoking (n=120, 39.60%),the patients with typical cardiac chest pain (n=285, 94.05%), The 70% of Right ventricular infarction patients were smokers, while 47% were diabetics and 49% had positive family history of coronary artery disease .

CONCLUSION: Right ventricular infarction is present in near 1/3rd of the patients with inferior wall myocardial infarction. Early detection, along with rapid reperfusion therapy, and knowledge of the potential complications can help to improve the outcome of patients with Right ventricular infarction.

Key words:
Right ventricular infarction. Inferior wall myocardial infarction.

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INTRODUCTION

Coronary artery disease is the most common cause of *morbidity* and mortality around the world. A large data is known about isolated left ventricular myocardial infarction but around one-third of patients with acute inferior wall infarction, presents concomitantly with right ventricular infraction.[1, 2]

The occurrence of Acute right ventricular myocardial infarction (RVMI) is observed in 30–50% of patients suffering with acute inferior wall myocardial infarction (MI) and, occasionally, with anterior wall myocardial infarction. The clinical outcome varies from no hemodynamic variation to severe hemodynamic unstability developing severe hypotension and cardiogenic shock depending on the extent of right ventricular ischemia resulting poor clinical outome.[2,3]

The Right ventricular infarction (RVI) was first described by Cohn et al as clinical syndrome of right ventricular failure in patients of acute right ventricular myocardial

infarction (RVI), showing association with acute inferior wall myocardial in 1974[4].

Recognition of the syndrome of acute right ventricular myocardial infarction is important as it identifies a significant clinical entity, which is associated with considerable immediate risk mortality. Infarction of the right ventricle results in decreased right ventricular compliance, reduced filling, and decreased right ventricular stroke volume. In turn, these changes lead to diminished left ventricular filling and drop in cardiac output that could result in systemic hypotension and shock. Frequent complications may include atrial infarction, sinus bradycardia, atrial fibrillation, and atrioventricular block[5-9].

Khan et al(2013), reported 52% patients developed either single or multiple complications, like 30% suffered hypotension and 26% were in cardiogenic shock, 18% developed arrhythmia, 14% cardiac arrest and 12% showed complete AV dissociation; in hospital mortality was 12%.[10]

In Pakistan, the first major trial was done in 2004, by Khan et al reported a prevalence of right ventricular infarction around 34%[11] in patients admitted with acute inferior wall myocardial infarction while in another study it found right ventricular infarction was 27% among patients presenting with acute inferior myocardial infarction[12].

Since there is scarcity of current literature regarding epidemiology of right ventricular myocardial infarction in the Karachi Pakistan, this study was conducted with a goal of identifying associated or isolated acute right ventricular myocardial infarction in patients of acute inferior wall myocardial infarction.

METHODS:

This multicenter study was conducted on the hospitalized patients in the department of cardiology-in different hospitals of Karachi which included Abbasi Shaheed Hospital, Karachi Institute of Heart Diseases, National Institute of Cardiovascular Diseases and Civil Hospital Karachi from Ist Jan 2014 to 31stdec 2015.

It was the cross sectional study with enrollment of 303 patients both gender presented with acute inferior wall myocardial infarction; evident on electrocardiography (ECG) monitoring along with echocardiography.

The data was collected by predesigned questionnaire and analyzed on statistically designed software for social science (SPSS) version 17.0.

The descriptive statistics included mean ± standard deviation (SD) of continuous data, like age, chest pain, blood pressure at presentation. Frequencies and percentages were calculated from the categorical data, like gender, symptom at presentation and presence of right ventricular infarction. The data is presented in the form of table and graphs.

Results

In this study, 303 patients who suffered from Inferior wall Myocardial Infarction presenting to cardiology departments of different hospitals in Karachi were interviewed in Abbasi Shaheed Hospital, Karachi Institute of Heart Diseases, National Institute of Cardiovascular Diseases and Civil Hospital Karachi.

DISCUSSION

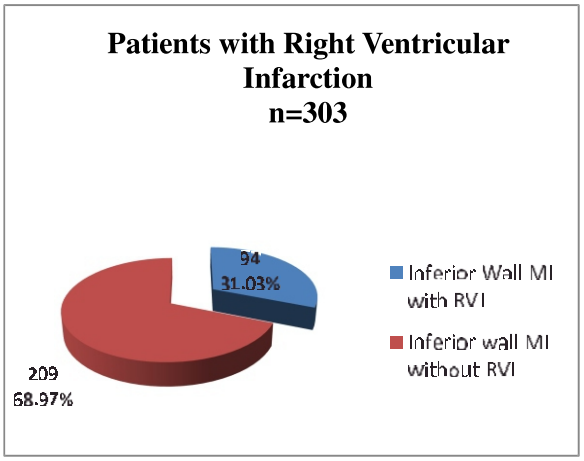
This multicenter study was conducted on the hospitalized patients in the department of cardiology-in different hospitals of Karachi which included Abbasi Shaheed Hospital, Karachi Institute of Heart Diseases, National Institute of Cardiovascular Diseases and Civil Hospital Karachi.

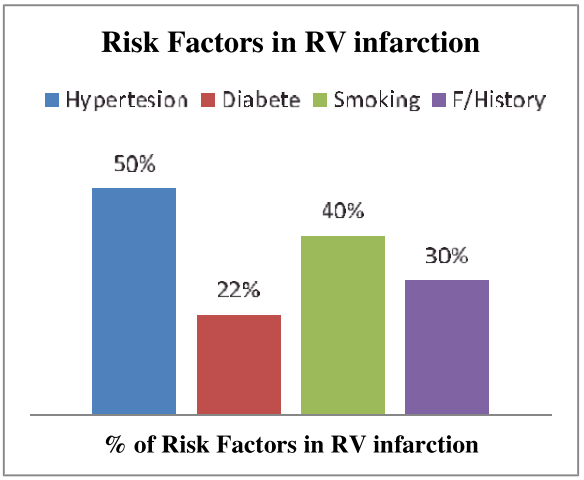
This study demonstrates that (31.03%) patients were found to have right ventricular infarction in the setting of acute inferior wall myocardial infarction. The result is similar to the previous studies conducted in Pakistan at various times in the past as Khan et al[10] (2004), reported a prevalence of 34%; while Iqbal et al[12] (2012), found that frequency of RVMI was 27%.

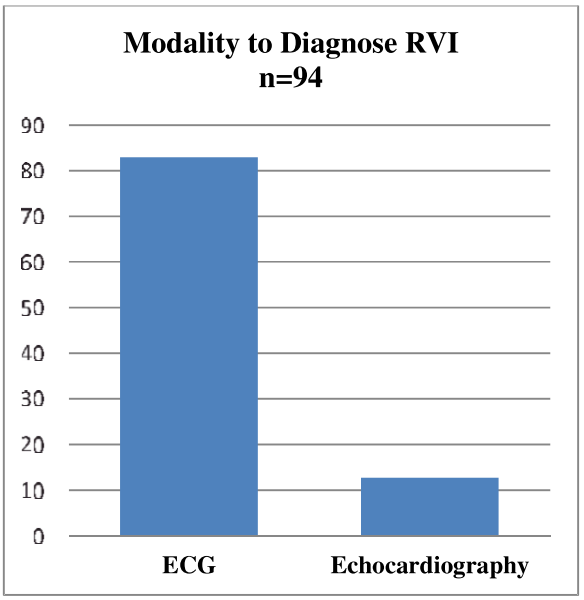
In respect comparison with international studies shows frequency RVI in acute inferior wall MI ranges from 14% to 84%[14-16]. Varun Kumar et al[2](2011) reported the incidence of right ventricular infarction around 32.9%; in patients presented with acute inferior wall MI in Kanpur india. In another study Orozovic et al[17] (2002) reported the incidence of right ventricular infarction was 23.7% of patients in

Table 1: Baseline Characteristics of 30 patients

Characteristic	Number, (%)	
Gender		
Male	225	(74.25%)
Female	78	(25.75%)
Age in years		
Minimum	29	
Maximum	79	
Mean	55.7 ± 12.9	
Age Groups		
<40(yrs)	39	(12.87%)
40 to 60 (yrs)	233	(76.89%)
Above 60 (yrs)	31	(10.23%)
Risk Factors		
Diabetes	66	(21.7 %)
Hypertension	152	(50.16%)
Smoking	120	(39.60%)
Previous history of angina	22	(7.26%)
Systolic	114 ± 36	
Diastolic	73 ± 18	







Graph: 1

The study results shows n= 94 patients (31.03%).with RVI and ;n= 209(68.97%) patients with acute inferior wall MI without RVI and

Graph:2

Hypertension was the most common co morbidity present as a risk factor. (n= 152, 50%), Diabetes (n=66, 22%), followed by smoking (n=120, 40%), family history of coronary artery disease (n=90, 30%),

Graph: 3

In this study out of 94 patients of RVI, n=78(82.9%) were diagnosed through Electrocardiography and n=12(12.7%) by echocardiography study.

diagnosed acute inferior wall MI.In another stud vinod kamana in jan 2018 observed about 1/3rd of patients presenting with inferior wall myocardial infarction develops acute right entricular infarction.[4]

In a similar ethnicity of Indian population Chhapra et al[18] (2013), had described many Indian studies, all of which have more or less similar reported incidence.

The percentage of patients diagnosed RVI by using the modality of electrocardiography and echocardiography were alike and similar to the results of few of the previous studies like Iqbal et al[19] (2012), who also reported hypertension and smoking as major co morbidities as risk factors like we have observed.

CONCLUSION

Right ventricular Infarction is available in close to one third of the patients with Inferior Wall Myocardial Infarction. With high mortality noted of 15% in such patients. Improvement of health logistics, education and then most importantly early detection, along with rapid reperfusion therapy, and knowledge of the potential complications can help to improve the outcome of patients with RVI in our health system.

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