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STUDY OF CLINICAL PROFILE OF PATIENTS WITH ACUTE INFERIOR WALL MYOCARDIAL INFACTION, ASSOCIATED WITH RIGHT VENTRICULAR INFARCTION.

General Medicine

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ABSTRACT

BACKGROUND :

Myocardial infarction is major cause of the death and also morbidity throughout the world. Myocardial infarction may go undetected or may lead to catastrophic events leading to sudden cardiac death or causing severe haemodynamic derangements. A myocardial infarction may be the first manifestation of coronary artery atherosclerotic disease.[1] Myocardial Ischaemia is identified by history ,physical examination, and ecg findings and cardiac biomarkers. Depending on the walls of the heart effected it may be anterior ,posterior or inferior wall MI. Inferior wall MI has got some special features like right ventricular infarction and bradyarrythmias. So early identification helps in good outcome.

METHODOLOGY

This study was conducted during October 1st 2016 TO march 1St 2018 period . 110 consecutive patients admitted to the coronary care unit with a diagnosis of acute inferior wall infarction were included in the study. A total of 110 patients included in the study were subjected to ECG examination of V3R and V4R in addition to the conventional 12 leads. In addition, all patients were subjected to ECG examination of extended leads V7 to V9. Rhythm strips were taken in patients with arrhythmias. All patients were assessed clinically and electrocardiographically with special emphasis on presenting complaints, risk factors, vital signs, arrhythmias and mortality. Patients were followed up till discharge.

RESULTS

Incidence is higher in males than females, mean age is 56.6 years, most common symptom is retrosternal chest pain followed by breathlessness,palpitations.it is significantly associated with past history of diabetes mellitus, hypertension, coronary artery disease, alcohol intake and smoking. Evidence of right ventricle infarction seen in 23.7% posterior wall MI seen in 11% .

CONCLUSION

- All cases of inferior wall infarction should have right-sided leads during ECG examination and this should be done as early as possible.
- All cases with inferior wall myocardial infarction are looked for signs of hypotension , raised JVP , bradycardia and arrythemias & conduction blocks.
- If diagnosis of RVMI is correctly made and treated early, the prognosis is usually good.

KEYWORDS

acute inferior wall myocardial infarction, clinical presentation, risk factors, right ventricular infarction.

INTRODUCTION

The medical education plays an important role in evaluating the evidence related to clinical features, drugs , procedures for detection, management of the diseases and disease prevention. When properly applied the expert analysis of the data available and weighing there pros and cons of the therapies and procedures it will improve the out come of the patients. An organised and systemic approach to review of evidence results in the production of guidelines and criteria's that guide the clinicians to the best management therapies and good outcome of the patients.

Myocardial infarction is major cause of the death and also morbidity throughout the world . Atherosclerosis of coronary vessels is a chronic entity with stable and unstable periods. During these unstable periods with activation of inflammatory response in vascular wall patients develop myocardial infarction. Myocardial infarction may go undetected or may lead to catastrophic events leading to sudden cardiac death or causing severe haemodynamic derangements. A myocardial infarction may be the first manifestation of coronary artery atherosclerotic disease.[1]

The term myocardial infarction indicates the death of cardiac Myocytes cells due to ischaemia caused by decreased blood supply to cardiac Myocytes or increased demand of cardiac Myocytes which could not be met by the previously normal blood supply is called ischaemia heart disease .

Myocardial Ischaemia is identified by clinical symptoms and ecg findings .

Ischaemia heart disease is mainly due to occlusion of epicardial Coronary blood flow occlusion .IHD causes not only causing more deaths and morbidity but also incurs greater economic costs than any other disease in the world . Genetic factors, a high-fat and energy-rich diet, smoking, and a sedentary lifestyle are associated with the emergence of IHD. Insulin resistance,obesity ,diabetes mellitus are increasing and are powerful risk factors for developing IHD.

Patients with acute coronary syndromes (ACS) are classified into two groups to facilitate the management and evaluation, they are patients with acute myocardial infarction with ST segment elevation (STEMI) on ecg and those with no ST segment elevation on ecg (NSTE ACS).

The trend of NSTE is increasing because of increased incidence of diabetes mellitus and chronic kidney disease.

This myocardial ischaemia may develop in any part of the heart like anterior wall ,posterior wall or inferior wall depending on the artery occluded .then the territory supplied by the artery gets infarcted which can be detected by various methods like ECG , coronary angiogram . The right coronary artery supplies the inferior wall (leads II, III and aVF) and the posterio-lateral wall of the LV (special leads V7-V9). The right coronary artery is the only artery that supplies the right ventricular free wall(leads V3R to V6R)

Left circumflex artery (LCX) : The left circumflex artery supplies the anterolateral (leads I, aVL, V5 and V6) and the posterolateral (leads V7-V9) walls of the LV. In about 10%-15% of patients, it also supplies the inferior wall of the Left ventricle.[2]

Left anterior descending artery (LAD) : The left anterior artery supplies anterior, anteroseptal or anterolateral wall of the LV (V1-V6, I, and aVL leads).

The patients with myocardial infarction presents with clinical features like chest pain , radiation of chest pain to various areas like left arm ,left shoulder,neck ,jaw etc. they amay also complain of breathlessness, sweating ,palpitaions, syncope.

Myocardial infarction is detected by history,physical examination, ECG , cardiac biomarkers etc.

Depending on the walls of heart effected it may be anterior ,posterior or inferior wall myocardial infarction.

Inferior wall infarction has got some special features like association with right ventricular infarction and bradyarrhythmias especially sinus bradycardia ,first degree AV block and second degree AV block. Right Ventricular infarction is different from that of the left ventricle in the acute presentation, therapy and long term prognosis. So early identification of right ventricular infarction helps in early intervention and good outcome . Which can be done with intravenous fluid administration. several studies have validated the usefulness of volume loading for ischaemic RV dysfunction.(3,4,5)Involvement of right ventricle may be due to occlusion of right coronary artery territory. Clinical presentation of right ventricular infarction is detected by raised JVP , right sided third or fourth heart sound , kussumaul sign positive ,hypotension , hepatomegaly etc. ecg may not be helpful in identification of the right ventricle infarction. A 1 mm ST elevation in right precordial Leads is 93% sensitive and 95% specific. The change is transient. In one series, 48% of the patients had resolution of ECG changes within 10 hours of the onset of symptoms. Early revascularization leads to an immediate recovery of RV function; conversely, late revascularization is associated with higher RV dysfunction and complications.[6,7]

Timely usage of thrombolytics and anticoagulants, the necessity of TPI may be markedly reduced so as the complications.AV block following acute IWMI is more common in diabetics and average is 4 days.[8]
Inferior wall myocardial infarction with right ventricular infarction is carefully watched to prevent patients going into shock ,arrythemias.

MATERIALS & METHODS

This study was conducted during October 1st 2016 TO march 1St 2018 period . 110 consecutive patients admitted to the coronary care unit with a diagnosis of acute inferior wall infarction were included in the study. All the patients included in the study were subjected to ECG examination of V3R and V4R in addition to the conventional 12 leads. In addition, all patients were subjected to ECG examination of extended leads V7 to V9. Rhythm strips were taken in patients with arrhythmias. ECGs were examined at the time of admission, second day and on the day of discharge. Only those cases with hyperacute inferior wall infarction were included in the study. Patients with slope elevation of ST segment in leads, II, III and aVF were taken as having hyperacute inferior wall infarction. Right ventricular infarction was diagnosed if there was ST elevation equal to or more than 1 mm in V4R. Posterior wall myocardial infarction was diagnosed if there was ST segment elevation equal to or more than 1 mm in extended leads V7 to V9,with tall 'R', ST segment depression, upright 'T' in leads V1,V2. All patients were assessed clinically and electrocardiographically with special emphasis on presenting complaints, risk factors, vital signs, arrhythmias and mortality. Patients were followed up till discharge.

Patients who presented after 24 hrs of onset of chest pain were excluded, as the ST changes in right ventricular infarction may be transient. Patients with history of chronic lung disease, previous MI, rheumatic heart disease, pericardial disease or LBBB were excluded because diagnosis of right ventricular infarction is not possible in these cases when ECG is used as the criteria.

STATISTICALANALYSIS

All data recorded in proformas that are predesigned and uploaded to Microsoft excel spread sheet . Microsoft word and excel are used to generate tables and graphs . Data presented as frequency distribution and percentages. Descriptive statistics like mean calculated for continuous variables. All data analysed using SPSS 21.0 software .

Chi square test done for categorical variables and statistical significance is taken as p value < 0.05

RESULTS

Observations in 110 patients with acute inferior wall myocardial infarction is presented in this section of results in tabular and descriptive form.

Among 110 patients 72 (65.5%) are MALES , 38 (34.5%) are FEMALES.

Mean age for males is 54.7 , mean age for females is 59.97.

Peak incidence is found in two groups , one with mean age 53.47 ,other with mean age 62.8 .

Mean age of presentation is 56.6 yrs.

Variable	No of patients	%
Angina	101	91.80%
Radiation	48	43.60%
Sweating	57	51.80%
Palpitations	48	43.60%
Breathlessness	69	62.70%
Vomitings	11	10%
Syncope	8	7.30%

BREATHLESSNESS is seen in 62.7% patients, SWEATING is seen in 51.8% , PALPITATIONS

are seen in 43.6%, vomiting in 10% , syncope in 7.3%.

RISK FACTORS - 61 patients had history of hypertension,46 had history of diabetes mellitus ,24

patients had history of coronary artery disease.



Pallor is seen in 29 (26.4%) patients.
21 (19.1%) patients had bradycardia, 8 (7.3%) patients had tachycardia.

Raised JVP is seen in 34 patients, hypotension is found in 33 (30%) patients.

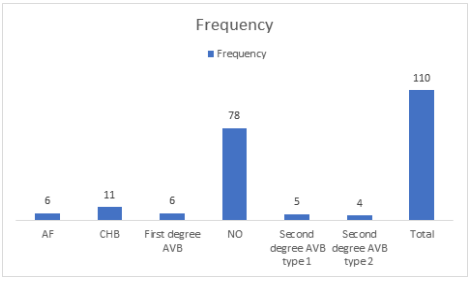
Right sided third or fourth sound is seen in 15 patients.hepatomegaly is seen in 14 (12.7%) .all the patients had shown evidence of right ventricular infarction on ECG.

32 (29.0%) had ecg evidence of arrhythmias.

Variables	No of patients	%
Anaemia	29	26.40%
Raised JVP	34	30.90%
PR <60	21	19.10%
PR >100	8	7.30%
BP < 100mm Hg	33	30%
Right sided S3 / S4	15	13.60%
	110	

ECG evidence of right ventricular infarction is present in 26 (23.7%) patients . True posterior wall infarction as evidenced by tall R in V1 with ST depression and upright 'T' wave ,was observed in in 20 (18.2%) patients.

4 patients (3.6%) expired in hospital.all of them showed right ventricular infarction.



SUMMARY

1. The incidence of Acute Inferior Wall Myocardial Infarction is much higher in males (65.5%) than in females (34.5%) .
2. Mean age of presentation is 56.6 years.
3. Peak incidence is seen in two age groups 50 – 59 years & 60-69 years.
4. Lowest age of presentation is 30 year old male , highest age of presentation is 81 year old male.
5. In males, there is a distinct increase in the incidence after age of 50 years in this study.
6. Typical retrosternal chest pain lasting for more than 30 minutes associated with sweating was seen in almost all patients.
7. Next common presentation is breathlessness seen in 62.7%, palpitations are seen in 43.6% , 10% patients had vomitings , syncope is seen in 7.3% cases.
8. The onset of symptoms in majority of the patients (60%) was between 6 am – 12 noon.
9. Among 110 patients of study population past history of hypertension is seen in 55.8% , Diabetes mellitus seen in 41.8% , previous history of coronary artery disease seen in 21.8% . 45.5% of the cases are smokers , 33.6% cases are alcoholics.
10. On clinical examination bradycardia seen in 19.1% , tachycardia in 7.3% ,raised JVP seen in 30.9% of cases and 30% are presented with hypotension.
11. Ecg evidence of Right ventricular infarction in this study was 23.7%.
12. Syncope or presyncope was a prominent symptom in patients with right ventricular infarction.
13. Triad of raised JVP, Hypotension and clear lung fields were seen in 15 patients (31%).
14. Incidence of true posterior wall myocardial infarction in this study was 11%.p
15. complications like first degree AV block seen in 5.5% of cases , second degree AV block is seen in 8.1% of cases , complete heart block is seen in 10% and atrial fibrillation shown by 5.5%.
16. Mortality in this study is 3.6% and all of them showed right ventricular infarction.

CONCLUSION

- All cases of inferior wall infarction should have right-sided leads during ECG examination and this should be done as early as possible.
- All cases with inferior wall myocardial infarction are looked for signs of hypotension , raised JVP , bradycardia and arrythemias & conduction blocks.
- If diagnosis of RVMI is correctly made and treated early, the prognosis is usually good.
- Mortality is higher in patients with right ventricular infarction when compared with those without this complication.

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