EUROPEAN JOURNAL OF BIOMEDICAL AND PHARMACEUTICAL SCIENCES
http://www.ejbps.com

ISSN 2349-8870
Volume: 4
Issue: 8
629-643
Year: 2017

STUDY OF CLINICAL PROFILE OF PATIENTS WITH MYOCARDIAL INFARCTION

[1]*Tahmina Sultana, [2]Dr. P. Amulya Reddy, [3]Urooj Fatima, [4]Dr. Aliya Parveen, [5]Sushma Attuluri and [6]Amtul Aziz Afia

[1,3,5,6]Assistant Professor, Department of Pharmacology, Nizam Institute of Pharmacy, Deshmukhi (V), Pochampally (M), Behind Mount Opera, Yadadri Bhuvanagiri (Dist)-508284, Telangana, India.
[2,4]Assistant Professor, Department of Pharma. D, Nizam Institute of Pharmacy, Deshmukhi (V), Pochampally (M), Behind Mount Opera, Yadadri Bhuvanagiri (Dist)-508284, Telangana, India.

***Corresponding Author: Tahmina Sultana**
Assistant Professor, Department of Pharmacology, Nizam Institute of Pharmacy, Deshmukhi (V), Pochampally (M), Behind Mount Opera, Yadadri Bhuvanagiri (Dist)-508284, Telangana, India.

Article Received on 16/06/2017 **Article Revised on 06/07/2017** **Article Accepted on 26/07/2017**

ABSTRACT
Myocardial Infarction is the irreversible damage of myocardial tissue caused by prolonged ischemia and hypoxia. Without prompt treatment, this can lead to damage to the affected part of the heart. Every case of MI is different and treatments may vary depending on the situation. The most important goal of drug therapy is to improve oxygen demand and demand rate for the heart. The present article emphasizes on quantitative prospective study for Myocardial Infarction with patients to study the clinical profile, assessing the risk factor along with the management of medication.

KEYWORDS: Myocardial Infarction, Diabetes, Hypertension, Clinical Profile, Pharmacist.

MYOCARDIAL INFARCTION

INTRODUCTION

Myocardial infarction[1] is major health problem throughout the world because of its high prevalence and association with increased risk of cardiovascular collapse.

DEFINITION

1) Myocardial infarction or acute myocardial infarction (AMI) is a medical term for an event commonly known as heart attack.[1]
2) It is the irreversible necrosis of heart muscle due to prolong ischaemia.[2]
3) It is now being termed as ST Elevation myocardial infarction[3] (STEMI) in the modern medical terminolgy

PREVALANCE

1) The world health organization[1] estimated in 2004, that 12.2% of world wide deaths were from myocardial infarction.
2) More than 3million people have STEMIs and 4million have NSTEMIs.[3]
3) In India MI had become the leading cause of death by 2010, accounting deaths
4) It was found that about 44% of the world's population[4] is diagnosed with myocardial infarction.
5) From the above population 69% were found to be from male gender
6) 31% were from female gender.
7) Smoking appears to be the cause of about 36% cases.
8) Obesity the cause of 20% of coronary artery disease.
9) Lack of exercise[1] has been linked to 7-12% of cases.
10) Job stress appears to play a minor role, accounting for about 3% of cases.

Socioeconomic[4] factors such as shorter education and lower income shows few cases of myocardial infarction.

MYOCARDIAL INFARCTION

Myocardial infarction or acute myocardial infarction[1] (AMI) is a medical term for an event commonly known as heart attack. it happens when blood stops flowing properly to part of the heart and the heart muscle is injured due to not receiving enough oxygen.

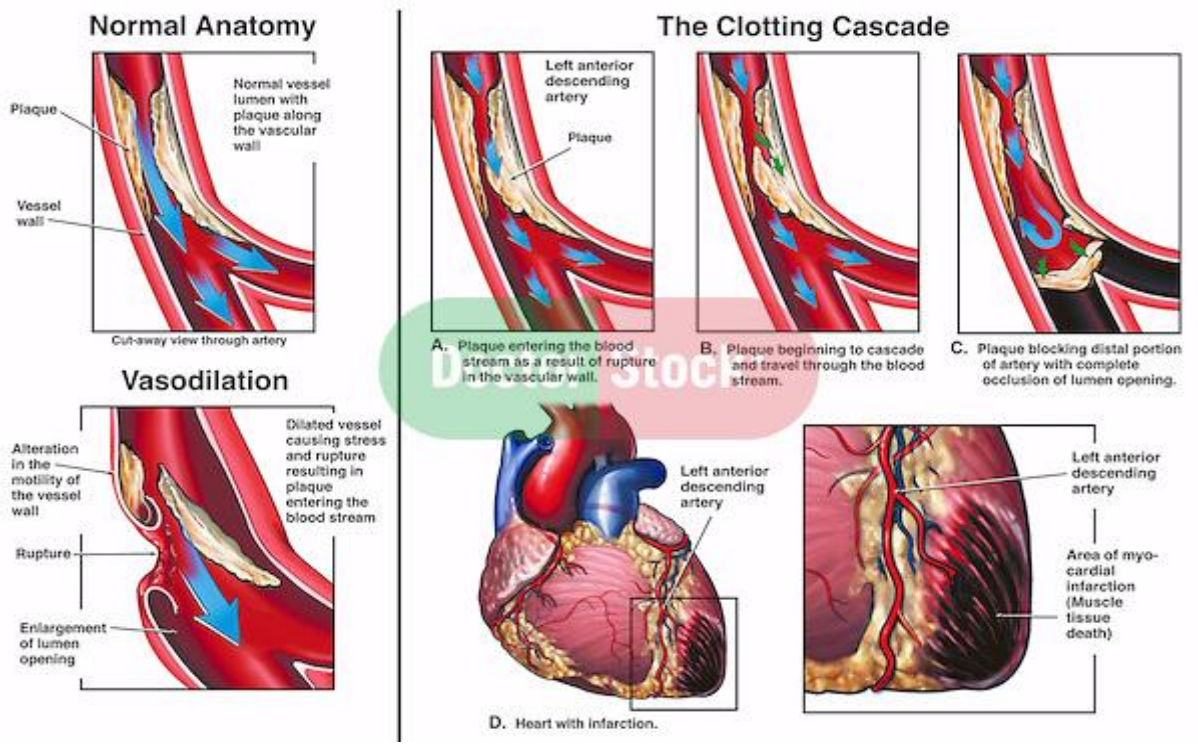

Fig No. A) Normal Anatomy, Vasodilation and the Clotting Cascade of Coronary artery.

SIGNS AND SYMPTOMS

The on set of symptoms in myocardial infarction is usually gradual, over several minutes and rarely instantaneous.[5] Chest pain is the common symptom of acute myocardial infarction and is often described as a Sensation of tightness, pressure or squeezing.[1,5] Pain radiates most often to left arm, but may also radiate to the lower jaw, neck, right arm, back and epigastrum.[3] Rough diagram of pain zones in myocardial infarction; dark red: most typical area, light red: other possible areas

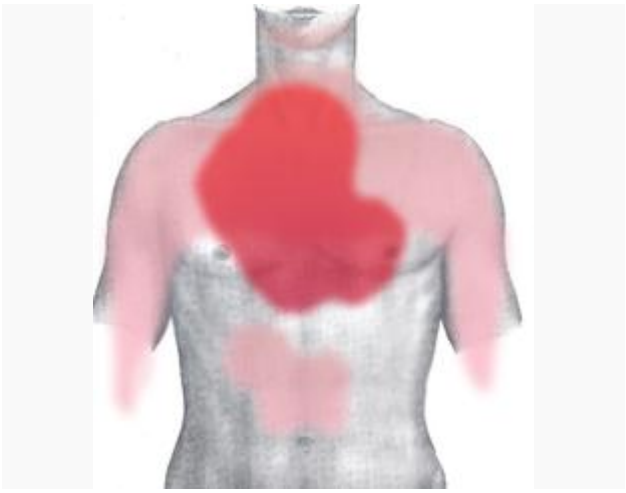

Fig No. B) Pain zones in Myocardial Infarction (MI).

Fig No. C) Pain zones in Myocardial Infarction (MI).

1) Shortness of breath (dyspnea) occurs when the damage to the heart limits the output of the left ventricle, causing left ventricular failure.[6]
2) Others symptoms include diaphoresis, weakness, light headiness, nausea, vomiting and palpitations.[3,6]
3) Most common symptoms of MI in women include dyspnea and fatigue[3], chest pain may be less predictive in women than in men.

CLASSIFICATION

Myocardial infarctions[7] are generally classified into ST elevation MI (STEMI) and non Stelevation MI (NSTEMI). A STEMI is the combination of symptons related to poor oxygenationof the heart with elevation of the ST segments on the electrocardiogram followed by an increase in proteins in the blood.

A 2007 consensus document classifies MI into five main types:

1) **TYPE 1[1]:** Spontaneous MI related to ischemia due to primary coronary event such as plaque erosion and/or ruputure, fissuring, or dissection.
2) **TYPE 2[4]:** MI secondary to ischemia due either incresed oxygen demand or decreased supply, e.g. coronary artery spasm, coronary embolism, hypertension.
3) **TYPE3[3]: S**udden unexpected cardiac death, including cardiac arrest, often withsymptoms suggestive of myocardial iscaemia, accompained by new ST elevation, or new LBBB, or evidence of fresh thrombus in a coronary artey by angiograghy and /or at autopsy but death occuring before blood sample could ge obtained, or at atime before the appearance of cardiac biomarkers in the blood.
4) **TYPE 4[2]:** Associated with coronary angioplasty or stents.
5) **TYPE 4a:** MI associated with PCI.
6) **TYPE 4b:** MI associated with stent thrombosis as documented by angiography o at autopsy.
7) **TYPE 5[1]:** MI associated with CAG (coronary angioplasty).

RISK FACTORS

Epidemiological evidence also shows that there are several factors which play important role in developing myocardial infarction.[1,4]

Modifiable

1) Blood pressure: It can be modified by using antihypertensive drugs.
2) Diet: People who are habituated to take fatty diet for them cholesterol levels are increased; this can be maintained by taking low fat diet.
3) Diabetes: To control the blood glucose levels in the body by consuming less amount of sugary products and by regularly using anti-diabetic drugs.
4) Smoking: Smoking narrows the blood vessels and damages the heart leading to heart attack.
5) Tobacco: Nicotine and carbon mono-oxide are the 2 products of tobacco consumption these are both potent vasoconstrictors and are a risk factor for stroke which should be avoided.
6) Alcohol: Consuming alcohol severely damages the lungs which leads to poor oxygen supply in the blood thus it should be avoided.

Non-modifiable

1) Age: About 80% of people suffering from MI are 60years and older.age itself increases the risk of developing heart diseases.
2) Gender: It has been proved that mostly men are prone to MI than women.
3) Family history: This is agene related factor, which develops heart diseases later in life. So, it is important to know your family medical history and share it with doctor.

PATHOPHYSIOLOGY

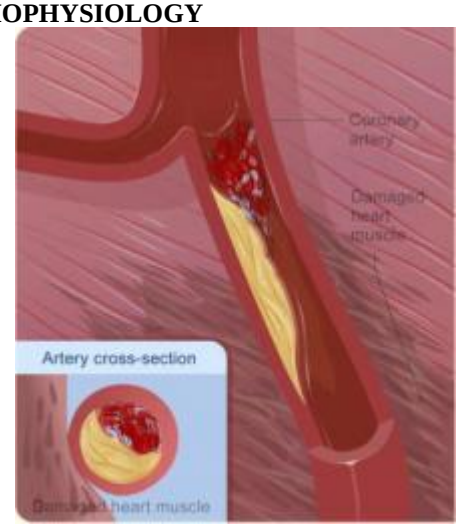

Fig No. D) An Atherosclerotic Plague in an Epicardial Coronary Artery.

The most common event is the disruption of an atherosclerotic plague in an epicardial coronary artery.[1] atherosclerosis is the gradual build-up of cholesterol and fibrous tissue in plagues in the wall of arteries when a severe enough plague rupture occurs in the coronary vasculature, it leads to MI.[8]

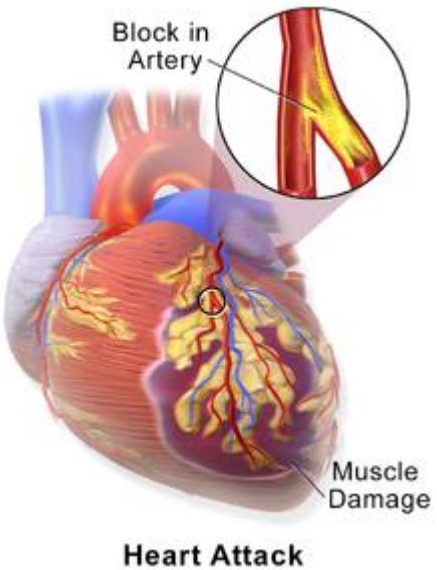

Fig No. E) Heart Attack due to block in artery.

Inflammation is known to be an important step n the process of atherosclerotic plague formation. C-reactive protein (CRP)[4] is a sensitive but non specific marker for inflammation. Elevated CRP blood levels, especially measured with high sensitivity assays, can predict the risk of MI, as well as development of diabetes.[9]

Fig No. F) Atherosclerotic Plague Formation.

COMPLICATIONS

1) Heart failure
2) Dresslers syndrome
3) Arrhythmias such as:

a) Ventricular fibrillation
b) Ventricular tachycardia
c) Atrial fibrillation
d) Heart Block

THE ROLE OF PHARMACIST AS PER WHO

❖ Discharge counselling for patient.[1]

1) Pharmacist play significant role in readmissions by ensuring that appropriate evidence –based pharmacotherapy regimens hav3 been prescribed during hospitalization, monitoring for drug duplications, errors, adverse reaction and performing medication reconciliation.
2) Studies have demonstrated the role of pharmacists[4] in reducing medication related visits to the emergency department as well as hospital readmissions
3) In order to accomplish the gole of reducing readmissions, health care providers must partner together across the continuum of care statement, we summarize key component of discharge counseling for patients with myocardial infarction including medication use, medication dose and frequency, drug interactions, medications to avoid, common adverse effects, role of the medication in the state, signs symptoms of the disease, diet, the patients role in self care and when patients should seek medical advice.

❖ The Pharmacists role in reducing patient delay in seeking treatment for myocardial infarction.[3]

Holt MR, Hand MM

1) The most common reason for delay treatment of an AMI is the patients' failure to seek care promptly.
2) Individuals diagnosed with CHD, including those who have experienced an AMI, are considered to be at high risk for an AMI.
3) These patients have the same greater delay times as individuals without prior AMI or CHD.
4) Pharmacist interacts with these high risk individual and their families frequently in person or by telephone.
5) During these interventions they have the opportunity, through education and counseling, to improve their patients understanding of early symptoms of AMI and the need for and benefits of prompt evaluation and treatment.
6) Hearing this message from their pharmacist and from other health care providers in other settings will hopefully lead the high risk individual to seek care promptly when needed.
7) Successfully conveying this message could effectively reduce the morbidity and mortality associated with CHD.

❖ The Pharmacist's role in thrombolytic therapy.[4]

1) The pharmacist's role in the administration appropriate use and evaluation of thrombolytic agents is discussed
2) Thrombolytic drugs have been shown to be efficacious when given early in the development of an acute myocardial infarction.
3) If the drug is to be reconstituted in a central area, there must be immediate response from the pharmacy.
4) If reconstitution is not pharmacist's responsibility, the pharmacist should still play a role in establishing guidelines for patient selection drug reconstitution should still play a role in establishing guidelines for patent selection drug reconstitution patient specific dosing regimens and concoment therapy.
5) Pharmacist must also participate in drug use evaluation.
6) The three thrombolytic agents currently available for the management of AMI are streptokinase, alteplase and anistreplase.
7) Dosing and reconstitution guidelines for each of these agents are given and current investigation concerning optimum regimens are summarized.
8) Some of relative contraindications now used patient selection need to be examined.
9) It is possible that certain patients subgroup excluded in some trials may benefit from thrombolytic agents.
10) Future clinical trial will provide guidance for the use of thrombolytic agent in these populations.
11) The advent of thrombolytic therapy offers pharmacy an opportunity to expand its role in the drug-use process and to ensure the appropriate use of these agents.

TREATMENT[1]

Treatment of Myocardial Infarction patient by Pharmacological therapy

Drugs used in the treatment of Myocardial Infarction.

A. Antiplatelate agents[5]

These agents act by cyclooxygenase which is involved in the production of platelate activator TXA_2. Aspirin has been shown to markedly reduce mortalily and thus should be taken as soon as possible in those without an allergy to it.

1) Aspirin

2) Clopidogrel

B. Thrombolytic agents[4]

It breaks the peptide bonds of plasminogen there by converting in to plasmin. Plasmin thus formed dissolves the fibrin clot.

1) Streptokinase
2) Anistreplase
3) Reteplase
4) Urokinase

C. Nitrates

These decrease BP by activating cGMP which bring about smooth muscle relaxation. It is associated whit the decrease in myocardial stress due to peripheral vasodilation

1) Nitroglycerine

D. β - Blockers

Selective β-1 blocker which act by decreases the contraction automaticity and sympathetic nervous system on the heart

1) Metaprolol
2) Propranolol
3) Atenolol

E. ACE inhibitors

Act by inhibiting ACE which is involved in the converstoin of angiotension 1to2, a potent vasoconstrictor

1) Captopril
2) Lisinopril

F. Analgesics

Reducs pain and causes vasodilation there by redusing systemic vascular resistance

1) Morphine
2) Pethidine

G. Anti-arrhythmics

Act by blocking Na channels involved in contraction.

1) Lidocaine
2) Procainamide

H. Anticoagulants

Act by activation of anti- thrombin 3 to prevent convertion of fibrinogen to fibrin, there by preventing formation of clot.

1) Heparin
2) Warfarin

Non pharmacological therapy[1,13]

1) Percutaneous Coronary Intervention (PCI)

1. PCI is the most preferred alternative to thrombolytic drug treatment. It should be performed only by skilled personal or by a cardiologist. It is carried out to restore arterial blood flow by opening the artery as early as possible.

2) Cardiac Rehabilitation

1. Cardiac rehabilitation mainly focuses on optimization of cardiac function and improving the quality of life. In this, patient care counseled and informed about the importance of giving up smoking, alcohol which increases the risk of reinfarction. Apart from that, much stress is laid on regular physical exercise which helps to reduce increased level of cholesterol, weight, blood pressure and also help the patient to stay fit.

MATERIAL AND METHODS

1) STUDY DESIGN: Observational prospective study, total 100 patients who met the inclusion criteria were selected by physician and referred to pharmacist during the regular physician's visits in the out patient department.

2) DURATION OF STUDY: The study was done for a period of 15 days i.e., from (26-02-14 to 12-03-14).

3) STUDY SITE: The descriptive study was carried out at Red hills, Hyderabad.this a quantitative prospective study involving review of available documents and interviewing the patient during regular physician visit.

4) INCLUSION CRITERIA: Age, patient with myocardial infarction, currently or previously had been treated with at least one cardiovascular medication with or without surgical history, diabetes risk factors (alcohol, tobacco, smoking) and examination (blood pressure, ECG, pulse rate, lipid protice,spo2).

AIMS AND OBJECTIVES

1) To study the clinical profile of patients with MYOCARDIAL INFARCTION.
2) To interact with subjects to assess their risk factors by knowing their clinical study.
3) To know about management of medication.

RESULTS

A total of 100 patients with MYOCARDIAL INFARCTION were included in the study. Out of which several risk factors being assessed.

Table No. 1 Percentage of Myocardial Infarction patients with reference to Gender ratio.

GENDER	% of MI PATIENTS
Male	56
Female	44

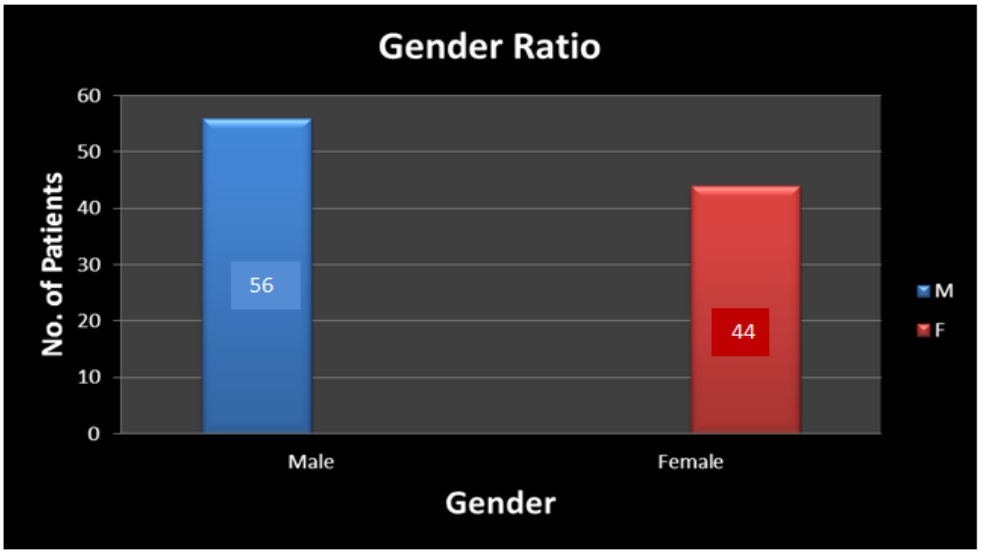

Fig No. 1:- As shown in the figure there were totally 100 patients out of them males (56%) and females (44%). Mostly males were move prone to MI

Table No.2 Percentage of Myocardial Infarction patients with reference to Age.

Age	% of MI PATIENTS
20-30	8
30-40	17
40-50	19
50-60	26
60-70	17
70-80	8
80-90	5

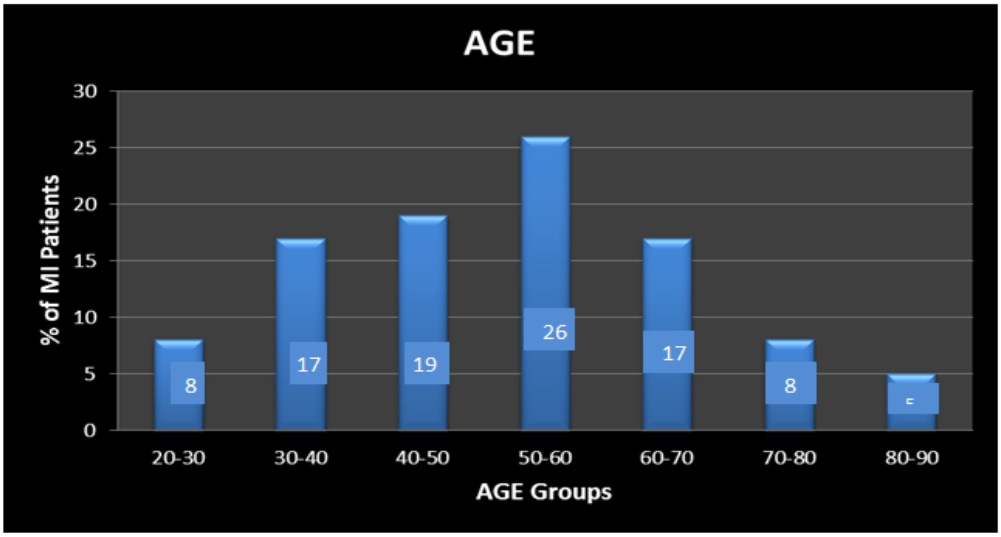

Fig No. 2:- Age group from 20-30 (8%), 30-40(17%) 40-50 (19%), 50-60 (26%), 60-70 (17%), 70-80 *8%), 80-90 (5%) major MI patients falls under the age group 50-60.

Table No. 3 Percentage of Myocardial Infarction (MI) patients with reference to types of MI.

Types of MI	% of MI PATIENTS
Anterior Wall MI	57
Inferior Wall MI	14
Acute Coronary Syndrome	21
Right Coronary Disease	2
ASMI	6

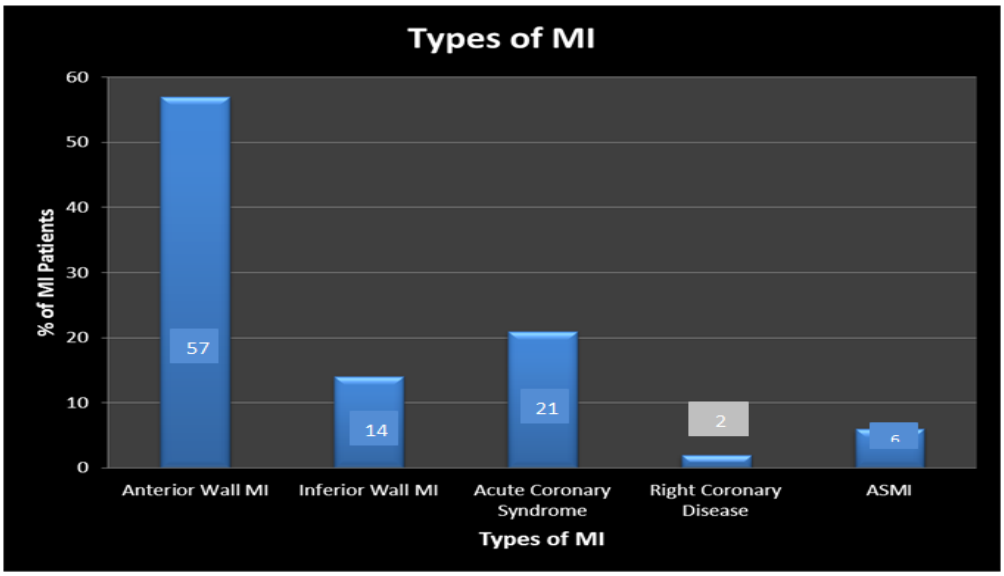

Fig No. 3 It was observed that Anterior Wall MI patients were (57%), Inferior Wall MI (14%), Acute Coronary Syndrome (21%), Right Coronary Disease (2%), ASMI (6%)

Table No.3a) Percentage of AWMI patients with reference to Gender and total AWMI.

AWMI	% OF AWMI PATIENTS	
Total of AWMI 57%	Male	Female
	36%	21%

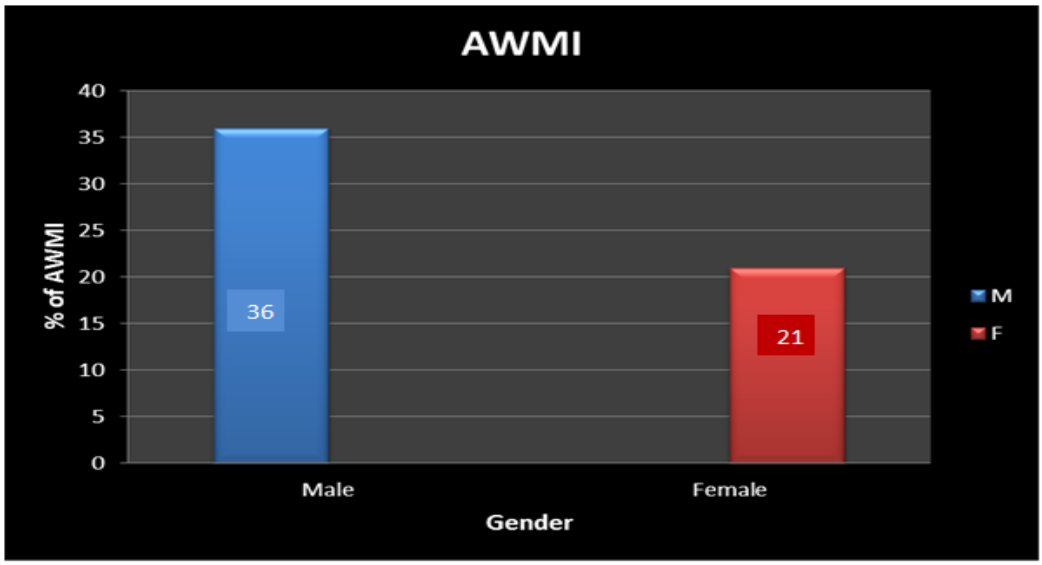

Fig No. 3a) We observed that AWMI in Males (36%), and Females (21%), Males were prone to AWMI.

Table No.3b) Percentage of IWMI patients with reference to Gender and total IWMI.

IWMI	% OF IWMI PATIENTS	
Total of IWMI 14%	Male	Female
	10%	4%

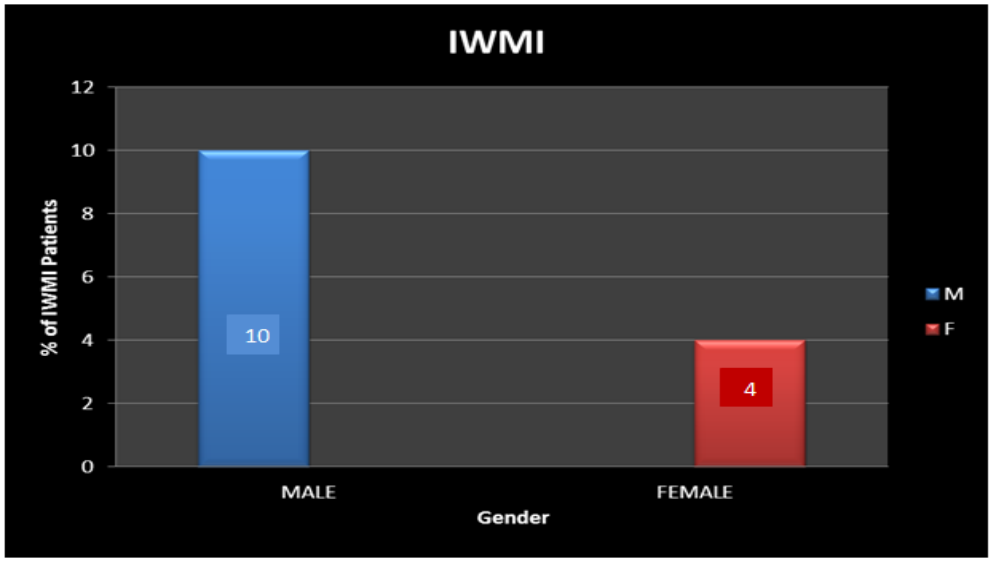

Fig No. 3 b) We observed that IWMI in Males (10%), and Females (4%), Males were prone to IWMI.

Table No.3c) Percentage of patients with reference to Gender, ACS, RCD.

ACS, RCD	% OF PATIENTS	
ACS	Male	Female
	9%	12%
RCD	2%	0%

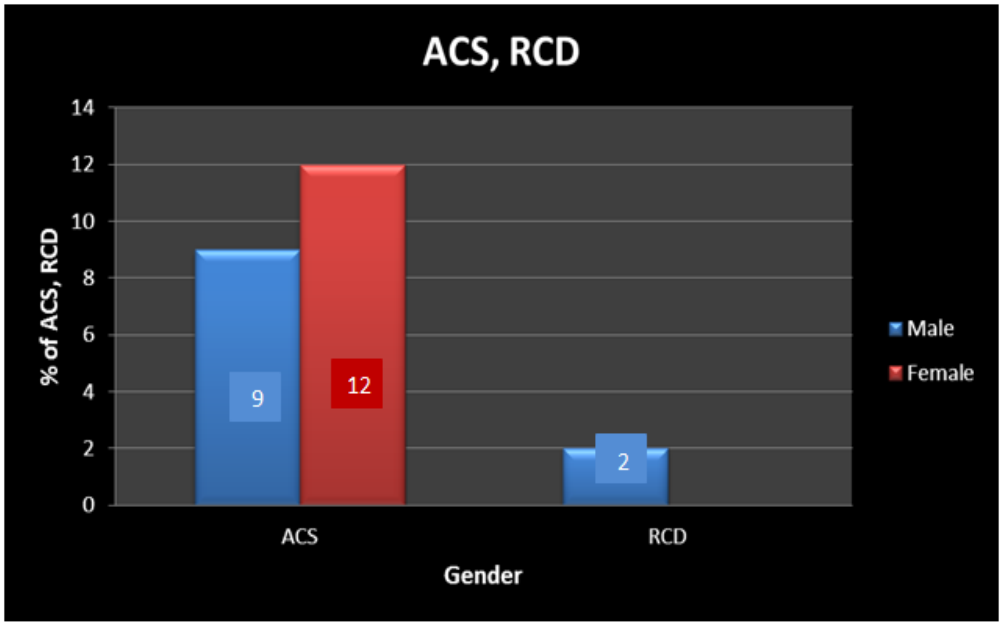

Fig No. 3 c) We observed that in coronary syndrome ACS Males (9%), Females (12%), RCD in Males (2%), Females (0%).

Table No.3d) Percentage of ASMI patients with reference to Gender and total ASMI.

ASMI	% OF ASMI PATIENTS	
Total 6%	Male	Female
	3%	3%

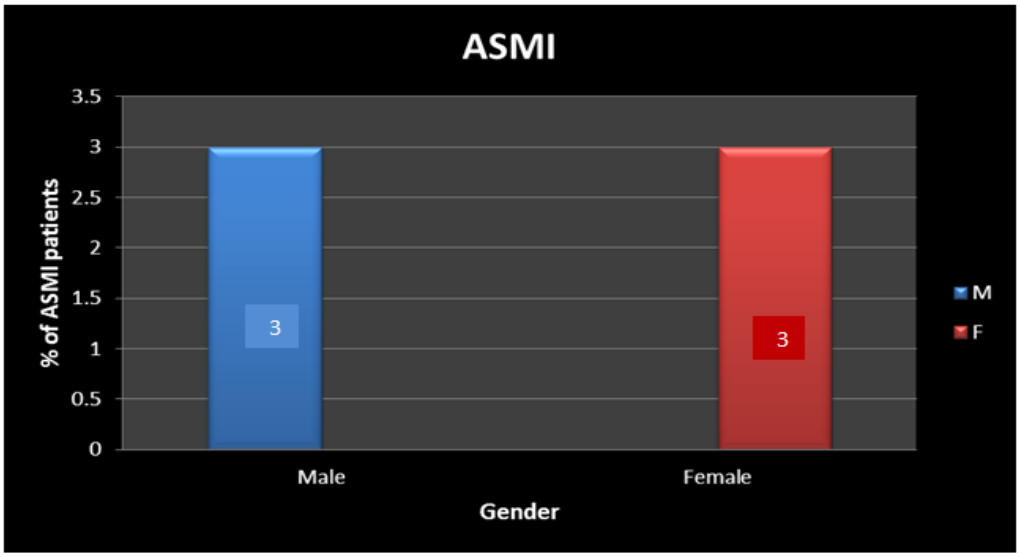

Fig No. 3 d) We observed that ASMI in Males (3%), Females (3%)

Table No. 4) Percentage of patients with reference to MI and other diseases.

Patients with MI and Other Diseases	% of patients
Myocardial infarction	30%
Myocardial infarction + Hypertension	35%
Myocardial infarction + Diabetics	11%
Myocardial infarction + Hypertension + Diabetics	24%

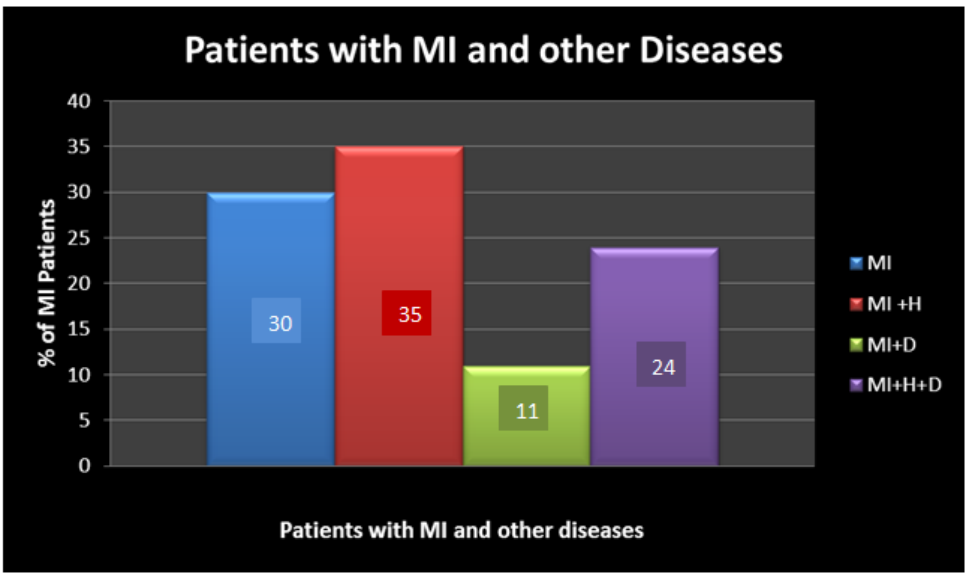

Fig No. 4) We observed that patients with only Myocardial infarction (30%) Myocardial infarction + Hypertension (35%), Myocardial infarction + Diabetics (11%), Myocardial infarction + Hypertension + Diabetics (24%)

Table No.4 a) Percentage of patients with reference to Gender and MI

Patients with MI	% PATIENTS	
Myocardial Infarction 30%	Male	Female
	17%	13%

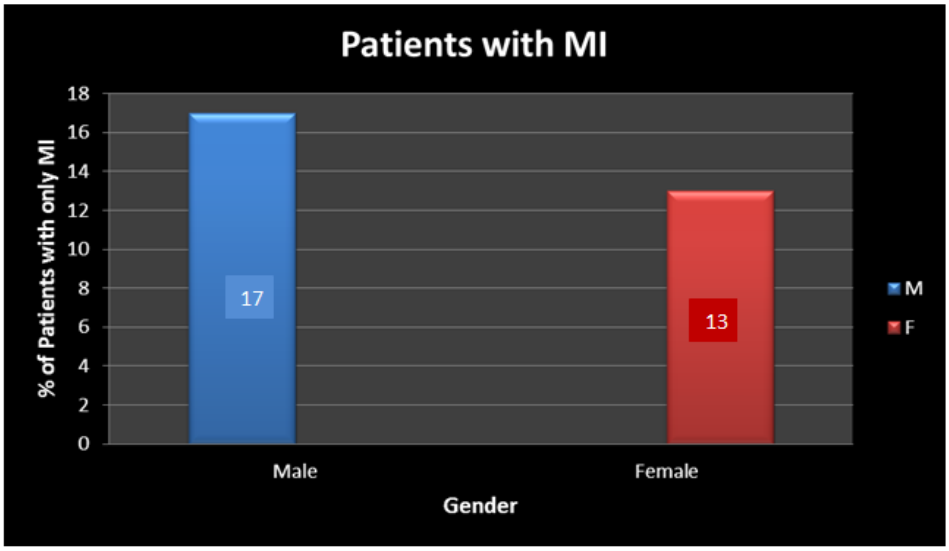

Fig No. 4 a) We observed that patients with only Myocardial infarction in males (17%), females (13%)

Table No.4 b) Percentage of patients with reference to Gender and MI and HTN.

Patients with MI + HTN	% PATIENTS	
Myocardial Infarction + Hypertension 35%	**Male**	**Female**
	22%	13%

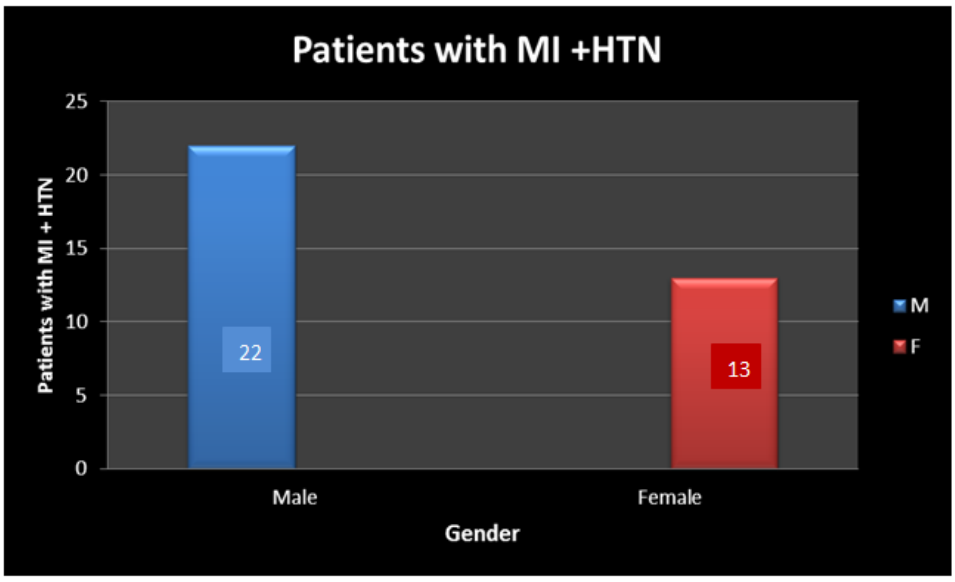

Fig No. 4 b) We observed that patients with only Myocardial infarction + Hypertension in males (22%), females (13%)

Table No.4 c) Percentage of patients with reference to Gender and MI and Diabetes.

Patients with MI+D	% PATIENTS	
Myocardial infarction + Diabetics 11%	**Male**	**Female**
	4%	7%

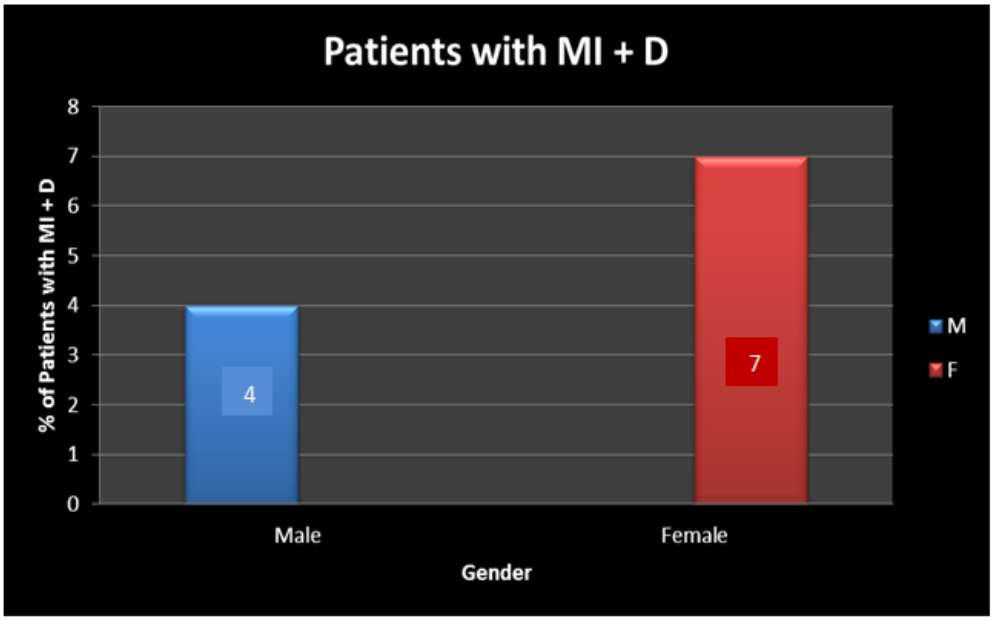

Fig No. 4 c) We observed that patients with only Myocardial infarction + Diabetics in males (4%), females (7%)

Table No.4 d) Percentage of patients with reference to Gender and Myocardial Infarction, Hypertension and Diabetes.

Patients with MI+HTN+D	% OF PATIENTS	
Myocardial infarction + Hypertension + Diabetics 24%	**Male**	**Female**
	14%	10%

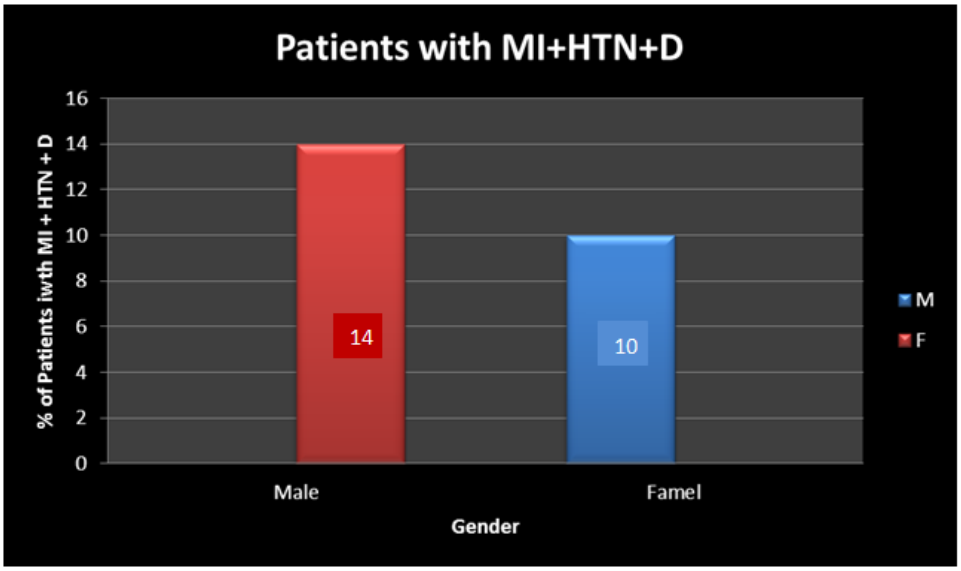

Fig No. 4 d) We observed that patients with only Myocardial infarction + Hypertension + Diabetics in males (14%), females (10%)

Table No. 5) Percentage of MI patients with reference to risk factors.

Risk factor	% of MI patients with risk factors
Alcohol	6%
Tobacco	40%
Smoking	40%

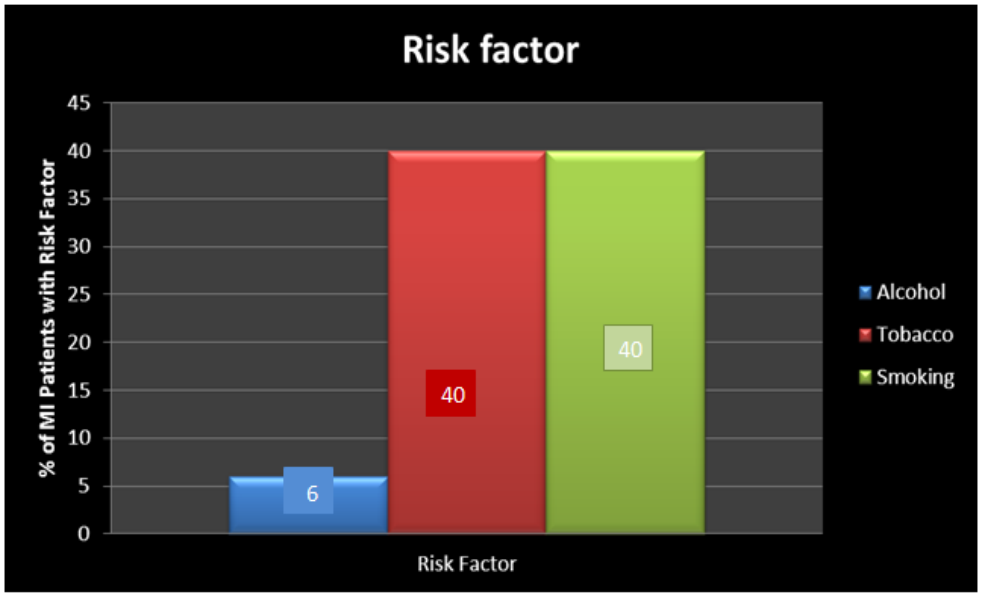

Fig No. 5) It was observed that 6% of people consuming Alcohol, 40% are Tobacco chewers, and 40% are smokers were prone to MI.

Table No. 5 a) Percentage of MI patients with reference to gender and risk factors.

Risk factor	% OF MI PATIENTS	
	Male	Female
Alcohol	6%	0%
Tobacco	22%	18%
Smoking	40%	0%

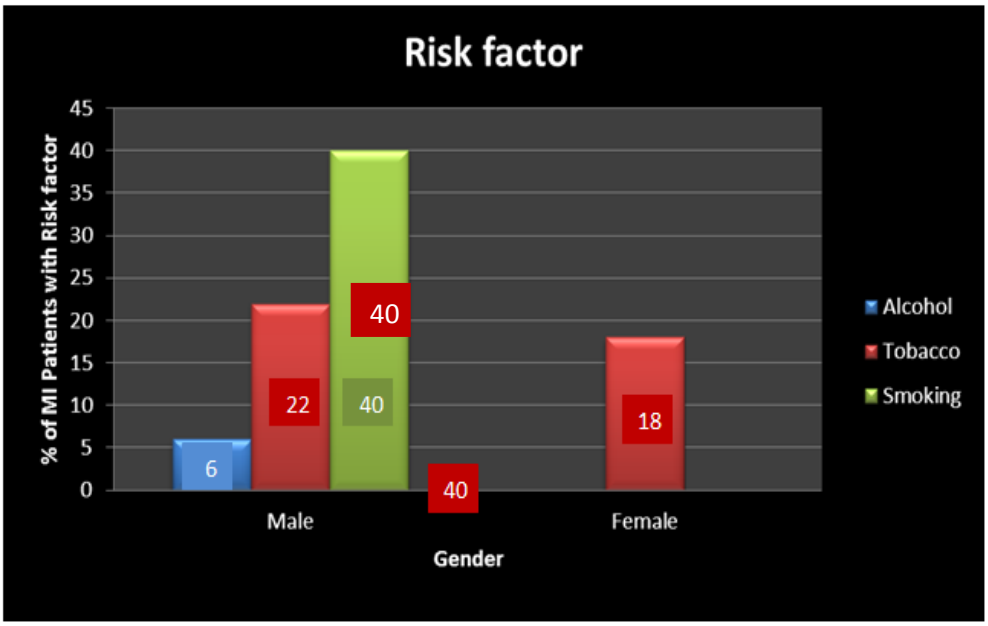

Fig No. 5 a) It was observed that 6% of Males were consuming Alcohol, 22% of males and 18% of female are Tobacco chewers, and 40% are smokers were prone to MI.

Table No. 6) Percentage of MI patients with reference to Drugs (Medication).

Drugs used for MI patients	% of Patients
Adormix	9%
Rosawasatin	13%
Clopidogrel	17%
Diltiatam	3%

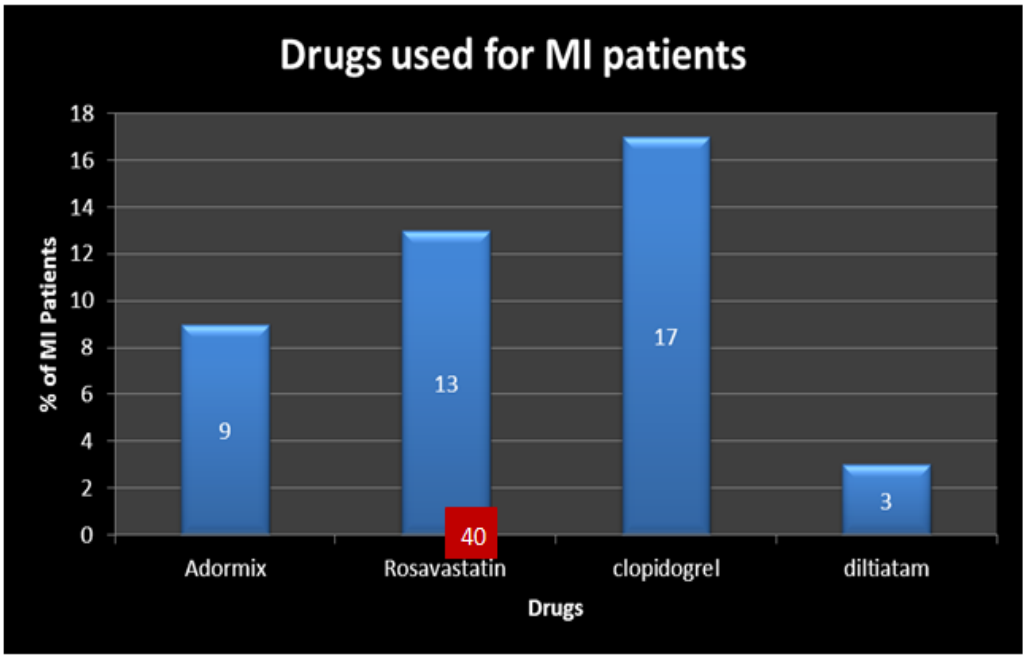

Fig No. 6) To evaluate major percutage of the drugs used in MI patients Adormix (9%), Rosavastatin (13%), Clopidogrel (17%), Diltiatam (3%), clopidogrel was the major drug used in MI patients followed by other drugs.

Table No. 6 a) Percentage of MI patients with reference to Drugs (Medication) used for patients with MI & HTN.

Drugs used for patients with MI + HTN	% of Patients
Clopidogrel	14%
Adrmix	15%
Rosavastatin	11%
Telmisartan	12%
Almisartain	5%
Rabeprazol	7%
Metaprolol	4%
Atenolol	4%

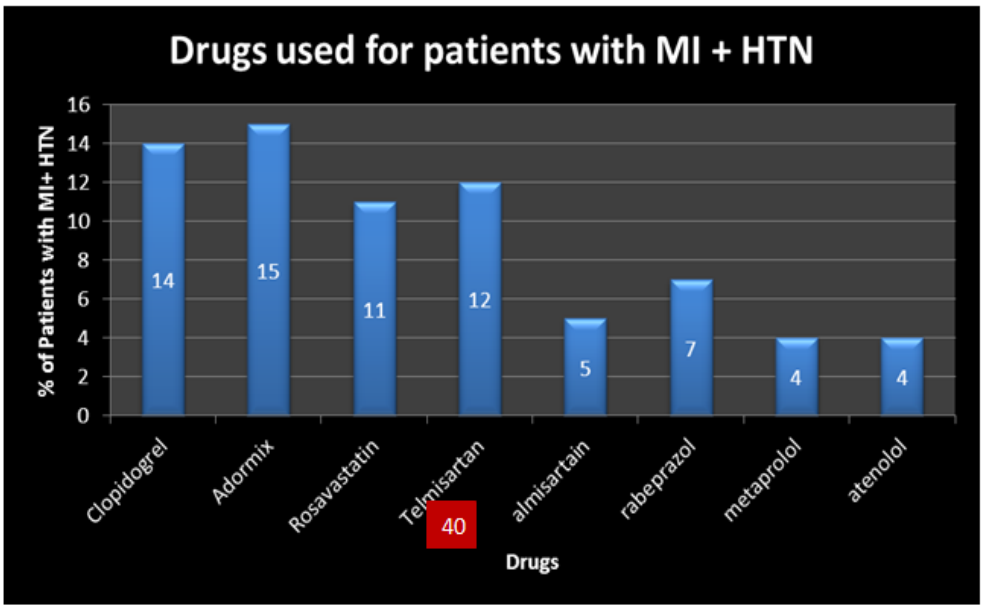

Fig No. 6 a) To evaluate major percatage of the drugs used in patients with MI + HTN. Clopidogrel (14%), Adormix (15%), Rosavasastin (11%), Telmisartan (12%), olmisartin (5%) Rabeprazol (7%), Metaprolal (4%), Atmolol (4%).

Table No. 6 b) Percentage of MI patients with reference to Drugs (Medication) used for patients with MI & Diabetes.

Drugs used for patients with MI + D	% of Patients
Glimipride	8%
Clopidogrel	5%
Adormix	3%
Rosavasavtin	6%

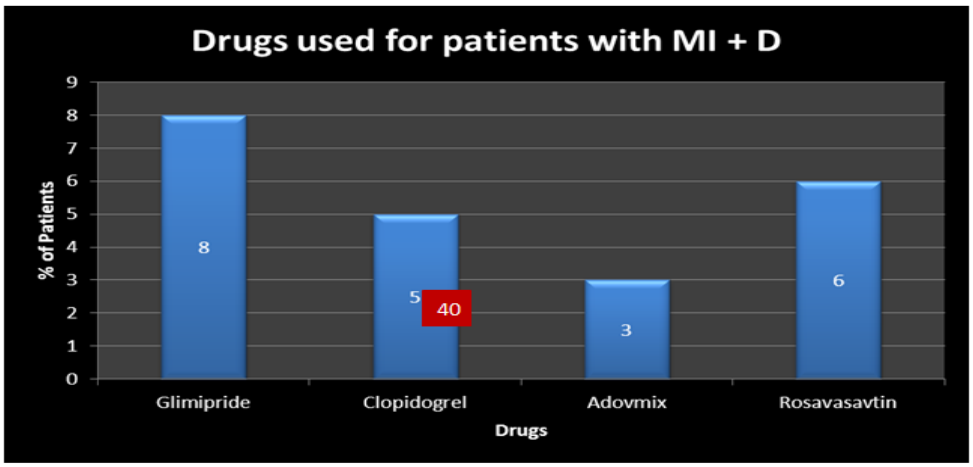

Fig No. 6 b) To evaluate major percentage of the drugs used in patients with MI + D Glimiprid (8%), clopidogrel (5%), Adovmix (3%), Rosavasavtin (6%)

Table No. 6 c) Percentage of MI patients with reference to Drugs (Medication) used for patients with MI, HTN and Diabetes.

Drugs used for patients with MI + HTN + D	% of Patients
Clopidogrel	9%
Adovmix	3%
Calflash	4%
Rosavastatin	11%
Telmisartan	7%
Olmisartain	6%
Afenolopol	2%
Metaprolol	4%
Climipride	11%
Metformin	9%

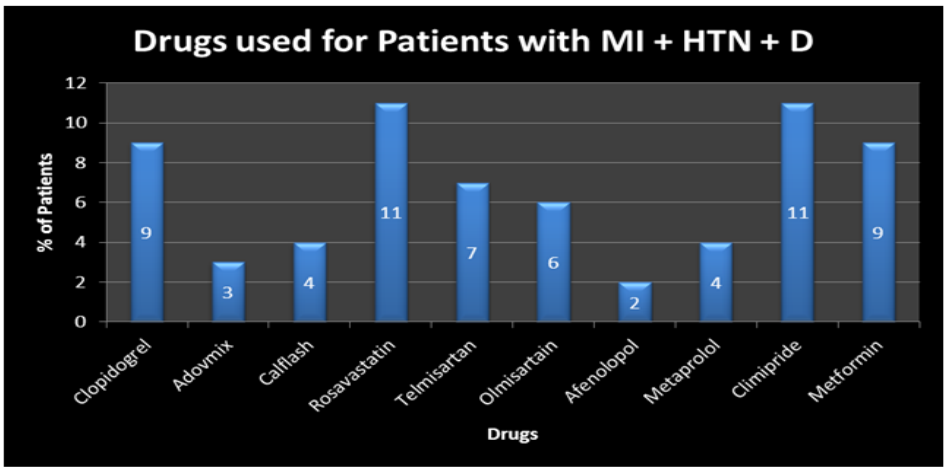

Fig No. 6 c) To evaluate major perantage of the drugs used in MI + HTN + D patients clopidogrel (9%), Adormix (3%), calflash (4%), Rosavastatin (11%), Telmisartain (7%), olmisartin (6%), Atenolol (2%), Glimipride (11%), Metformin (9%), Metaprolol (4%).

REFERENCES

1. WHO (World Health Organization).
2. JACC (journal of the American college of cardiology).
3. Kosuge, M; Kimura K, Ishikawa T et al. (March 2006). "Differences between men and women in terms of clinical features of ST-segment elevation acute myocardial infarction".
4. WHO (Geneva 2012).
5. National Heart, Lung and Blood Institute. Heart Attack Warning Signs. Retrieved (November 22, 2006).
6. Mallinson, T (2010). "Myocardial Infarction". Focus on First Aid (15): 15. Retrieved 2010.
7. Moe KT, Wong P (March 2010). "Current trends in diagnostic biomarkers of acute coronary syndrome".
8. Reznik, AG (2010). "[Morphology of acute myocardial infarction at prenecrotic stage]". Kardiologiia (in Russian)
9. Moe KT, Wong P (March 2010). "Current trends in diagnostic biomarkers of acute coronary syndrome" (PDF). Ann. Acad. Med. Singap. 39.
10. kannel Lobelo et.al in 1980 Conducted Study perspective on MI.
11. RICH EDWORD JW 1980 studed at, MONICA (Multinational Monitoring of trends and determinants in cardiovascular disease.
12. Fremann R conducted study In 2004 risk of myocardial infarction.
13. Gupta R, Joshi P, Mohan V, Reddy KS, Yusuf S (January 2008). "Epidemiology and causation of coronary heart disease and stroke in India". Heart 94(1).