

Rationale Drug Therapy for The Management of Myocardial Infarction

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Abstract – Myocardial Infarction (MI) is an important health concern, especially for the elderly. In this study, patients with MI who were hospitalized to two hospitals had their medication treatment and associated variables thoroughly evaluated. The results of demographic research showed that both sexes are affected by MI, with a high proportion of patients in the 50–59 age range. The prevalence of concurrent illnesses, particularly hypertension and diabetes mellitus, highlights the necessity of controlling co-morbidities in addition to MI. The considerable worry of polypharmacy also raises questions about possible interactions and repercussions. The study also identified a dearth of patient education and counseling at the ward level, highlighting the urgent need for patient-centered treatment and information sharing. In light of these results, we suggest adding clinical chemists to the ward level to keep an eye on pharmaceutical regimens, spot probable interactions, and guarantee patient safety. For myocardial infarction patients, increased patient education and counseling can give them the confidence to take an active role in their care, eventually improving outcomes. This study clarifies the critical requirement for patient-centered, logical medication therapy in the treatment of this potentially fatal illness.

Keyword - Myocardial infarction (MI), Fibrosis, Coronary Heart Disease (CHD)

1. Introduction

Myocardial infarction, commonly known as a heart attack [1], is a life-threatening medical condition [2] characterized by the sudden and severe interruption of blood supply to a part of the heart muscle [3], typically due to the occlusion of a coronary artery by a blood clot [4-6]. This interruption of blood flow can lead to the death of heart muscle cells, resulting in serious complications and, in some cases, death [7-9]. Myocardial infarction remains a significant global health concern, and its management is of utmost importance to reduce morbidity and mortality associated with this condition [10, 11].

The management of myocardial infarction is multifaceted, involving various strategies and interventions aimed at restoring blood flow to the affected area of the heart, minimizing heart muscle damage, and preventing further complications [9, 12]. One crucial aspect of the management of myocardial infarction is the use of drug therapy, which plays a central role in the overall treatment plan [13, 14].

In this article, we will delve into the rationale behind drug therapy for the management of myocardial infarction. We will explore the different classes of medications used, their mechanisms of action, and how they contribute to improving

patient outcomes. It is essential to understand the pharmacological interventions involved in treating myocardial infarction to appreciate the holistic approach to care that combines medical, interventional, and lifestyle measures for optimal results.

The use of drugs in the management of myocardial infarction is not only about relieving symptoms but also about preventing further damage to the heart and promoting its recovery [15]. By addressing the underlying pathophysiology of a heart attack, drug therapy can significantly enhance the chances of a patient's survival and improve their quality of life in the long term. This discussion aims to shed light on the critical role that drug therapy plays in the comprehensive treatment of myocardial infarction and how it contributes to the ultimate goal of saving lives and improving cardiac function.

2. Methodolog

2.1. Setting and duration

The clinical clerkship project is based on the data collected from the Department of cardiology, Pakistan Institute of Medical Sciences (PIMS), Islamabad, Pakistan. The data is collected during hospital visit at Kohat, and during the 40-day clerk ship program at Hayatabad medical complex

2.2. Data collection

The data is collected from the admitted patient in the CRC and CCU ward of hospital during the visit to hospital, the data of 50 patients were collected which include information like patient name, age and gender, Chief complaints, history, Diagnosis, Concurrent disease, social history, Past medication, Family history, Biochemical test and Treatment chart.

2.3. Data Analysis

The data collected in hospital is thoroughly analyzed for

Table 1: Patient demographic data

Gender	No of patients	Percentage
Male	08	53.33%
Female	07	46.66%

3.2 Age in year of patient

Table 2: Age in of patients

Age	No of patients	Percentage
40-49	03	20.00%
50-59	06	40.00%
60-Above years	05	33.33%

its rationality, use of poly pharmacy possible side effects, drug-drug interaction, Drug-food interaction, management of doses for geriatric and renal impaired patient. Following questioner was used for history collection.

3. Results

3.1. Patient Demographic Data

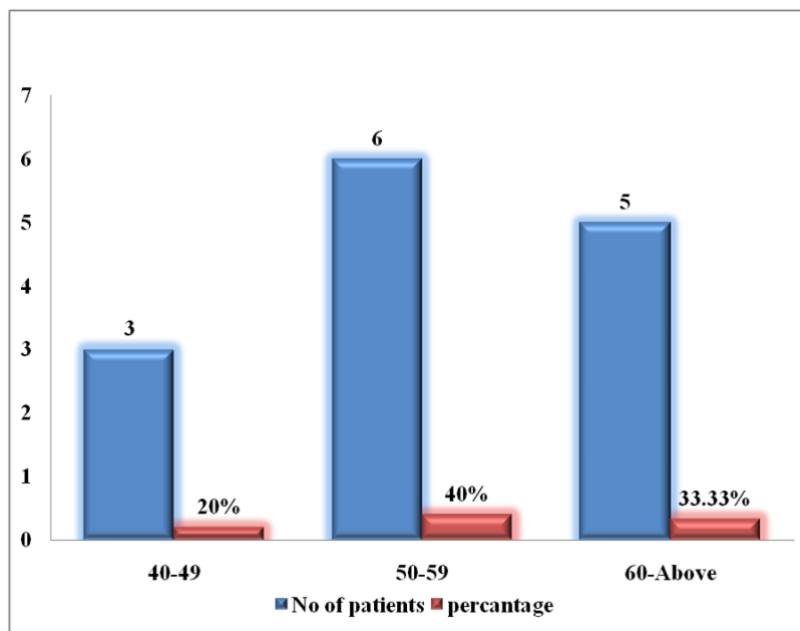


Figure 1: Graphical illustration of Age of Patients (Years).

3.3 Cause of hospitalization

Table 3: Cause of hospitalization

Cause of hospitalization	No of patients	Percentage
Chest pain	12	80%
Shortness of breath	09	60%
Edema	02	13.33%
Palpitation	03	20.00%
Feet pain	01	6.66%
Headache	02	13.33%
Generalized lesion	01	6.66%
Left arm pain	03	20.00%
Abdominal pain	04	26.66%
Orthopnea	01	6.66%
Dyspnea	01	6.66%
Dizziness	01	6.66%

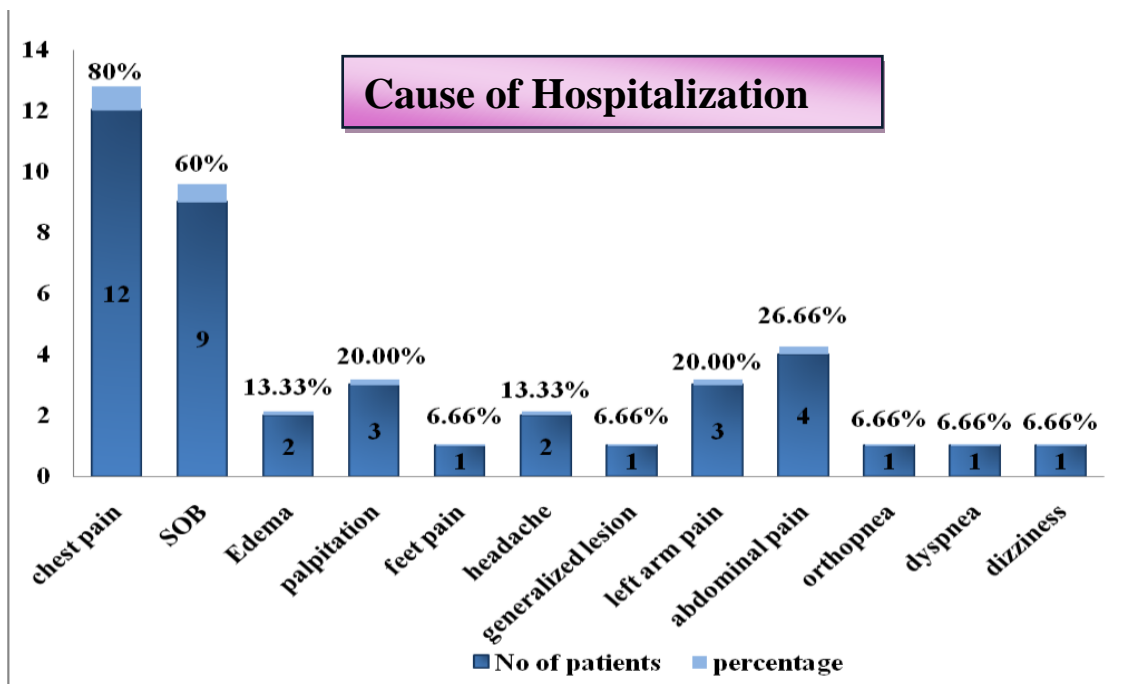


Figure 2: Graphical illustration of among cause of hospitalization and Number of patients.

3.4 Concurrent diseases

Table 4: Concurrent Diseases

Concurrent Diseases	No of patients	Percentages
HTN	10	66.66%
DM	06	40%
COPD	01	6.66%
RBBB	01	6.66%
Bilateral Effusion and Ascites pedal edema	01	6.66%
Impaired left ventricle	01	6.66%
Angina	01	6.66%

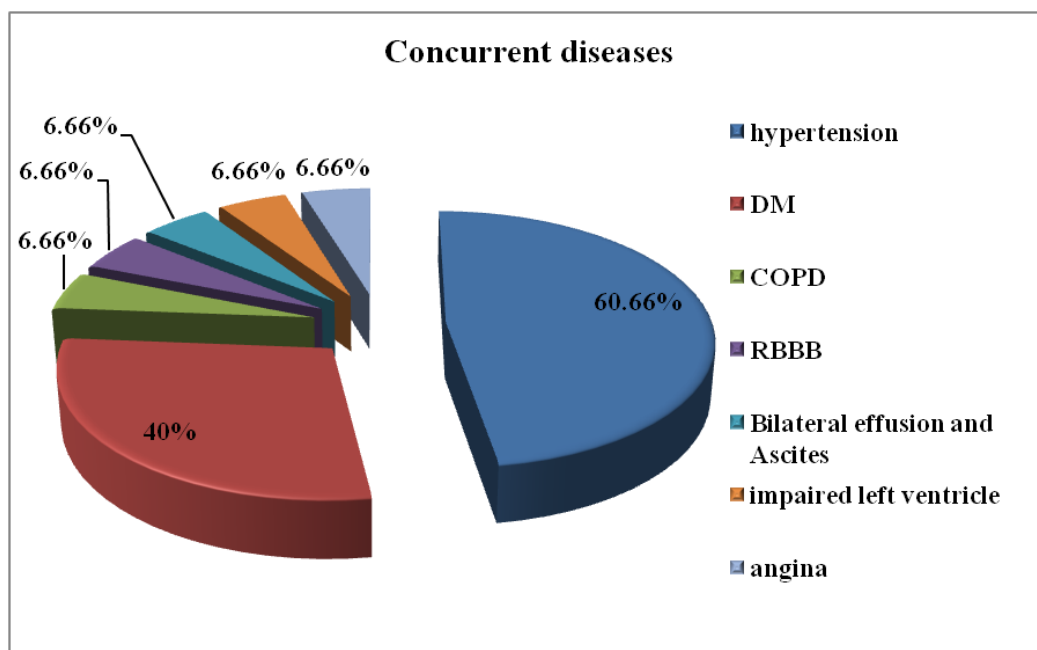


Figure 3: Graph amongst Number of patients and concurrent diseases.

3.5 Drug interaction of each drug percentage wise

Table-5: Drug interaction

Drug interaction	Occurrence	Percent	History No
Enoxaparin + Aspirin	07	21.21 %	1,2,4,5,7,10,12
Enoxaparin + warfarin	01	3.03 %	1
Aspirin + clopidogrel	06	18.18%	1,2,4,5,8,11
Aspirin + furosemide	03	9.09%	1,5,10
Alprazolam + nalbuphine	01	3.03 %	2
Bisoprolol + telmisartan	01	3.03 %	3
Telmisartan + Atorvastatin	01	3.03 %	3
Metoclopramide + dopamine	01	3.03 %	6
Telmisartan + digoxin	01	3.03 %	7
Ceftriaxone + Enoxaparin	02	6.06%	10,13
Fondaparinux Na+ Clopidogrel	01	3.03 %	11
Ramiprile + Aspirin	01	3.03 %	12
Ramiprile + furosemide	02	6.06%	12,13
Aspirin + Spironolactone	01	3.03 %	14
Spironolactone + furosemide	01	3.03 %	14
Aspirin + glimipride	01	3.03 %	15
Bisoprolol + Losortan	01	3.03 %	15
Aspirin + Losortan	01	3.03 %	15
Total	33	100%	-----

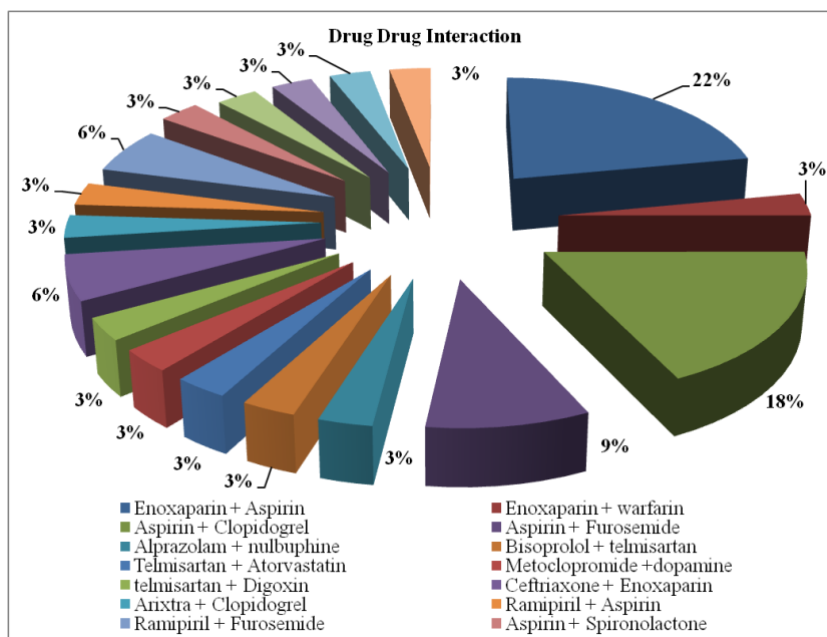


Figure 4: Graphical representation of Drug-Drug Interactions

4. Discussion

The purpose of this study was to check the rationale drug therapy for the management of myocardial infarction, Dual antiplatelet therapy with aspirin and clopidogrel is standard for prevention of thrombotic complications [16] but there is a risk of toxicity when use together so it should be monitor closely specially in case of poly-pharmacy, as most of the people suffering from myocardial infarction are at the age of above 50 and at this stage the patient also has concurrent diseases like hypertension and diabetes mellitus [17, 18] so there is a great risk of drug-drug interaction. The present study includes 15 case histories to check the rationale drug therapy for the management of myocardial infarction. Data was collected from patients admitted in Department of cardiology, Pakistan Institute of Medical Sciences (PIMS), Islamabad, Pakistan. The following parameters are included in this study to evaluate the rationale therapy, drug-drug interaction adverse drug effect and route of administration. The gender wise distribution in current study include 8 male (53.33 %) and 7 female (46.66 %) , the age wise distribution shows that the disease was more prevalent in 50 – 59 year of aged patient 40% of the individual lie in this category , the rest include 40 – 49 year of age(20%) and above 60 include (33.33%). As for as far as concurrent disease are concerned hypertension was the most common (66.66%) followed by diabetes mellitus (40%) and COPD (6.66%). Among all the patients the major cause of hospitalization is Chest pain, mostly elderly patients are admitted in the ward at the age of 50 - 59, use of poly pharmacy is reported in all histories due to which great number of drug-drug interaction are found which should be closely Monitored to avoid the risk of any serious damage. Most of the patients were adhered to therapy but few were complaining about gastric

disturbances and pain. A few side effects and adverse effects are also noted including nausea vomiting diarrhea. Poly pharmacy and multi prescription were involved in most of the cases.

5. Conclusion

After comprehensive study of patient medication histories in Department of cardiology, Pakistan Institute of Medical Sciences (PIMS), Islamabad, Pakistan, it is concluded from the study that there are many complications reported in the patient therapy which include drug-drug Interaction, like ceftriaxone and Enoxaparin are used together similarly use of Fondaparinux Na+ Clopidogrel which contra-indicated in combination or we shall use some alternative for such type of treatment. There is no patient education or patient counseling on ward level, hence there is no clinical pharmacist to look after such prescription which are needed to be monitored closely as the drug which are to be monitored closely are given in most of the prescription which include Aspirin + Clopidogrel. And at the same time Enoxaparin is also prescribed which can result in hemorrhage. So from the above discussion it is concluded there is no rational prescribing in the ward level most of the treatment is empirical treatment, due to which poly pharmacy is mostly observed in the patients histories, and the doses should be adjusted in comparison to the biochemical test of the patient, no dose adjustment is seen in the elderly or renal impaired patients which conclude the irrational treatment of myocardial infarction. It is essential for the health authorities to take action on this irrational prescribing, create awareness among patients, start patient counseling and ensure rational therapy in treatment of myocardial infarction. For this induction of clinical Pharmacist is necessary on ward level to ensure patient safety and monitored the drugs closely, and look

for the possible drug-drug interaction, and dose adjustment in renal impaired patient. By taking such interventions, rational therapy for myocardial infarction can be made and the mortality rate can be reduced to some extent.

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Conflict of Interest

Authors have no conflict of interest to declare

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