Research Article

Drug utilization pattern in acute coronary syndrome at tertiary care hospital: a prospective cross-sectional observational study

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ABSTRACT

Background: To study the pattern of utilization of drug in the patients of Acute Coronary Syndrome at tertiary care hospital.

Methods: Prospective cross-sectional observational drug utilization study was conducted in patients of acute coronary syndrome admitted in ICCU, for the period of two months. Data was collected in preformed Case record form. Analysis was done by using drug use indicators, demographic pattern, morbidity pattern of disease, pattern of drug use. Data analysed using Microsoft Excel SPSS software - version 21.1. Total 71 cases were analysed.

Results: In our study we analysed 71 patients out of that 50 were male and 21 were female patients. The mean age of patient was 57.61±11.09 yr; most belonging to age group of 51-60 years (36.62%). Number of patients undergoing thrombolysis were 28(39.43%) and 43(60.57%) underwent percutaneous coronary intervention (PCI). Total 44 different drugs were used and 565 drugs were prescribed in 71 patients. Most frequently prescribed drugs were Clopidogrel and aspirin in 100% encounters, followed by atorvastatin (85%). Average number of drugs per encounter was 7.96. Percentage of drugs prescribed by generic name was 16.28%.

Conclusions: The present study provides valuable insight about the overall pattern of drug used in Acute Coronary syndrome. Physician should be encouraged to prescribe drugs with generic name.

Keywords: Acute coronary syndrome, Drug utilization

INTRODUCTION

Cardiovascular disease (CVD) is responsible for about 1/3 of deaths and likely to remain the prevalent eradicator globally.1 Concerning the cardiovascular mortalities, projected number was 20 million in 2015 and more than 24 million expected by the year 2030.2,3 Incidence of CVD found to be greater than non-communicable diseases particularly occupied by three quarter portion of deaths about 86% of global burden of CVD reported among various developed countries.2,4

Emerging field of cardiovascular diseases, acute coronary syndrome (ACS) considered as one of the leading causes of mortality and morbidity worldwide. Acute coronary syndrome (ACS) is composed of ST elevation myocardial infarction, non ST elevation myocardial infarction, or unstable angina.5 The mortality rate with ACS is approximately 30% with more than half of these deaths occurring before the individual gets emergency care. An acute coronary syndrome may occasionally occur in the absence of electrocardiographic changes or elevations in biochemical markers, when the diagnosis is supported by the presence of prior documented coronary artery disease or subsequent confirmatory investigations.6 In addition to primary prevention efforts, joint guidelines by the American College of Cardiology (ACC) and the American Heart Association (AHA) in 2010 suggest...
secondary drug prevention measures to be used in patients with ACS.\(^7,8\) In conjunction with diet and lifestyle modifications, these guidelines suggest the use of statin, beta-blocker, and renin-angiotensin aldosterone system inhibitor drug therapies in ACS patients.\(^7,8\) Long term survival rate in post-acute coronary syndrome (A.C.S.) patients depends to a large extent on how well post A.C.S. period is managed.

Primary objective of this study is to study drug utilization pattern in acute coronary syndrome patients in patient admitted to intensive coronary care unit for first 48 hours.\(^9\) Drug utilization services practically appreciated in different clinical settings, health care management programs, hospitals and communities by considering therapeutic drug class and disease condition to assess the fundamental part of patient care system.\(^10\) The World Health Organization (WHO) regarded drug utilization as promotion, distribution, prescribing pattern and use of drugs within health care organization with main emphasis on therapeutics, societal and financial consequences.\(^11\)

**METHODS**

This is a prospective cross-sectional observational study. The study started after receiving approval of Institutional Review Board (IRB). Written informed Consent of patient was taken in vernacular language and confidentiality of all the data is maintained.

This study was conducted at Dr Jivraj Mehta Smarak Health Foundation Bakeri Medical Research Centre, Ahmedabad for the period of two months in patients of acute coronary syndrome. Inclusion criteria were 1) patient of age more than 18 years of either sex diagnosed and treated for Acute Coronary Syndrome. 2) Patients willing to give consent.

Demographic data like initials, age, sex, address, occupation and socio-economic class were recorded on the case record form. There after history of present illness, past history, family history, addiction, history of drug allergy and investigations were noted. The drugs prescribed to the patient including the dose, frequency, route of administration, duration of the treatment were noted on the case record form.

A statistical analysis was done by using the SPSS software - version 21 and Microsoft excel.

**RESULTS**

In our study we analysed 71 patients during period of 2 months. Out of 71 patients 50 were male and 21 were female patients (Figure 1). The mean age of patient was 57.61±11.09, most commonly belong to age group of 51-60 years (36.62%) followed by age group of 41-50 years (22.54%), 61-70 years (18.31%), 71-80 years (14.08%) (Figure 2).

![Gender wise distribution.](image1)

**Figure 1: Gender wise distribution.**

Most of the patients were of myocardial infarction, 68 in number and others were of Unstable Angina. Only 28 (39.43%) number of patients underwent thrombolysis, while others (60.57%) had undergone for per cutaneous coronary intervention (PCI). Total 44 different drugs were used and 565 numbers of drugs were prescribed in 71 patients. Most frequently prescribed drugs were clopidogrel and aspirin in 100% encounter, followed by atorvastatin (85%), pantoprazole and ondansetron (Figures 3, 4). Among the analgesics tramadol was given in 39 (55%) patients and fentanyl was given in 10 (14%) patients. Heparin, an anticoagulant was prescribed in 36 (51%) patients (Table 1).

![Age wise distribution.](image2)

**Figure 2: Age wise distribution.**

![Most frequently prescribed groups.](image3)

**Figure 3: Most frequently prescribed groups.**
In our study most patients had myocardial infarction and only 3 had of unstable angina. We found that out of 71 patients 43 (60.57%) were undergone Percutaneous Coronary Intervention. This is comparable to other studies which shows increasing trends of PCI in Acute coronary syndrome. Early reperfusion is key to management of patients presenting with STEMI. If facilities are available, primary percutaneous coronary intervention (angioplasty with stenting) is treatment of choice for patients with STEMI. In acute coronary syndromes there is drift towards early invasive treatment and this is reflected in marked increase in cardiac care (catheterization laboratories and cardiac surgery centers) facilities throughout India.

In our study most frequently prescribed drugs were antiplatelet clopidogrel and aspirin in 100% encounters, which is comparable as in other studies. The association of physicians of India recommends that all patients with MI, should receive dual antiplatelet therapy.

Atorvastatin was prescribed in 60 (85%) patients and rosuvastatin in 10 (14%) patients, so hypolipidemic in total were prescribed in 70 (99%). This is comparable with another studies. ACE inhibitors and Beta blockers were prescribed in 29.58% and 39.39% of patients which shows undertreatment of this drugs in ACS.

Average number of drugs per encounter was 7.96 which is less than that found in other studies. Only 16.28% of drugs were prescribed with generic name, which is very low in our study. Increasing generic prescribing would rationalize the use and reduce the cost of drugs.

CONCLUSION

Although small number of patients is limitation of our study, it points towards trends in drug utilization in ACS. The present study provides valuable insight about the overall pattern of drugs used in Acute Coronary syndrome. Physicians should be encouraged to prescribe drugs with generic name.

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