Prevalence of Conventional Risk Factors and Lipid Profiles of Patients with First Day of Acute Coronary Syndrome Admitted in CCU of Gandaki Medical College Teaching Hospital, Pokhara, Nepal

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Keywords
Acute coronary syndrome, Lipid profile, Risk factors.

Abbreviations:

ACS	Acute coronary syndrome
BMI	Body mass index
CABG	Coronary artery bypass grafting
CAD	Coronary artery disease
CCU	Coronary care unit
MI	Myocardial infaraction
STEMI	ST-elevation myocardial infaraction

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ABSTRACT

Background: Out of the total number of patients admitted in coronary care unit (CCU) with acute coronary syndrome (ACS), 75 - 85% presented with conventional risk factors. On the other hand, lipid profile modification after a cardiovascular event related to acute coronary syndrome has also been recognized. But there are controversies regarding the temporary changes in lipid profile after ACS. In our country, there are limited studies about the basal characteristics of lipid profile and the variability of its components after an ACS.

Objectives:

1) To analyze the changes in lipoprotein levels in a group of patients hospitalized with ACS.
2) To describe the basal lipid profile.
3) To find out the prevalence of conventional risk factors of ACS patients.

Methods: A total of 300 patients with the diagnosis of ACS were studied and the presence of conventional risk factors including smoking, hypertension, dyslipidemia and diabetes were recorded. In addition, we also analyzed the lipid profile within the first 24 hours of admission and body mass index (BMI) of all the patients included in the study.

Results: Among a total of 300 patients, the mean age of men was 45 – 75 years and women 50 – 65 years. There were 47.5% patients with non-STEMI and 52.5% with ST-elevated myocardial infaraction (STEMI). In patients with BMI <24, 23.9% were males and 32.2% females; in patients with BMI 25 - 29, 55.4% were males and 48.7% females and in patients with BMI >30, 20.7% were males and 19.1% females. Among the study population, prior myocardial infaraction (MI) was seen in 29%, prior CABG in 4.2% and 10.5% had family history of CAD. In this study, diabetes and dyslipidemia were more in STEMI whereas dyslipidemia was common in non-STEMI. Among the conventional risk factors, smoking and hypertension were more common in STEMI in both men and women.

Conclusions: In all patients admitted in CCU, basal lipid profile should be evaluated at the time of admission for choosing the most adequate treatment.

INTRODUCTION

Extensive studies on acute coronary syndrome (ACS) regarding its diagnosis and management has proved that acute coronary syndrome and alteration of blood lipids have close relationship[1,2,3]. There is a general agreement that the evaluation of level of plasma lipids within first 24 hours of admission after an ACS reflects its habitual value[4,5,6]. Conventional risk factors such as hypertension, diabetes, smoking and dyslipidemia increase the risk of developing acute coronary events[7-13].

Increasing evidence suggest that statins decrease morbidity and mortality when administered early after admission to all the patients with acute coronary syndrome[9,14,15]. This is of prime importance that in hospital lipid testing and initiation of statins use in all patients with ACS are strongly recommended[8,16-18].

The relationship between lipid profile and obstruction disease in coronary arteries are well known event[6,10,17,18]. It has been suggested from OPERA registry that in patients with ACS, the in-hospital deaths were due to untreated dyslipidemia[2]. It has been recognized that alteration in lipid level consists of decrease in total cholesterol, LDL-C and increased triglyceride after ACS[1,19]. There is strong association between risk factors and occurrence of coronary artery disease[7,9,14]. There have been conflicting reports regarding risk factors and severity of coronary atherosclerosis[9,20].

The primary goal of our study was to analyze the changes in the plasma level of total cholesterol, low density lipoprotein-C (LDL-C), high density lipoprotein-C (HDL-C) and triglyceride within first 24 hours of admission and to find out the conventional risk factors and its association with severity of ACS.

METHODS

This was a databased cross-sectional study. Information was gathered from the registry of coronary care unit (CCU) of Gandaki Medical College Teaching Hospital from October 2012 to September 2013. The data which were recorded includes demographic information, cardiac history, clinical characteristics and laboratory investigations. Patients with diagnosis of ACS were identified and classified as ST-elevation myocardial infarction (STEMI) or non ST-elevation myocardial infarction (Non-STEMI) on the basis of clinical characteristics and electrocardiogram changes and biochemical markers.

In all the patients recorded for the study, the presence or absence of conventional risk factors was recorded at the time of admission to CCU. For all the patients, serum total cholesterol, LDL-C, HDL-C, triglycerides were determined within the first 24 hours of admission.

BMI was also calculated in all the patients who were included in our study. Patients were classified as normal (BMI <24.9), overweight (BMI 25 - 29.9) or obese (BMI >30). In our study, patients who had been receiving lipid lowering drugs were excluded.

Statistical analysis

All the patients were stratified by sex for further analysis. All the variables were reported by frequency and percentage; groups were compared with percentage on chi-square testing. Reports were calculated by student t-test. P value <0.05 was considered significant. All the analysis was performed using SPSS 16.

RESULTS

In our study, a total of 300 patients were included with features of ACS. We analyzed the conventional risk factors among these patients. Among them 30% were STEMI and 70% were non-STEMI. The total number of male patients with STEMI were 55% and non-STEMI were 61.1%; similarly among the female patients, total STEMI were 38.8% and non-STEMI were 33.33%. Among the conventional risk factors, smoking and high blood pressure were most frequently encountered in our study followed by dyslipidemia and diabetes. Most patients were overweight (BMI >25) and men were more overweight then women in our study (55.4% in men and 48.7% in women) with p value 0.04.

In our study, high level of cholesterol (200 ±48) was found in males and 198 ±45 in females. Triglycerides were significantly higher among men 175 ±44 than in women 154 ±35 (p value 0.003). HDL-C was significantly lower in both men and women. Previous history of MI was found in 29.1% of all patients with almost no difference between men and women (27.9 versus 26.5 respectively with p value of 0.016).

Fig 1: Prevalence of conventional risk factors

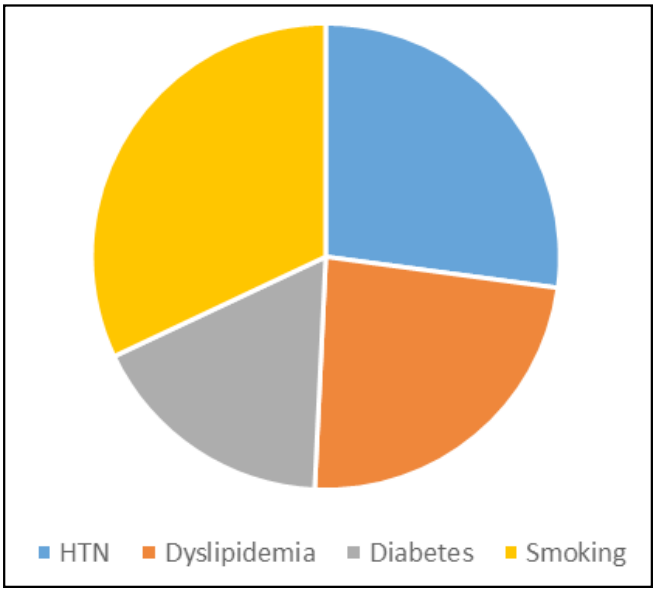


Fig 2: Prevalence of conventional risk factors in different age groups

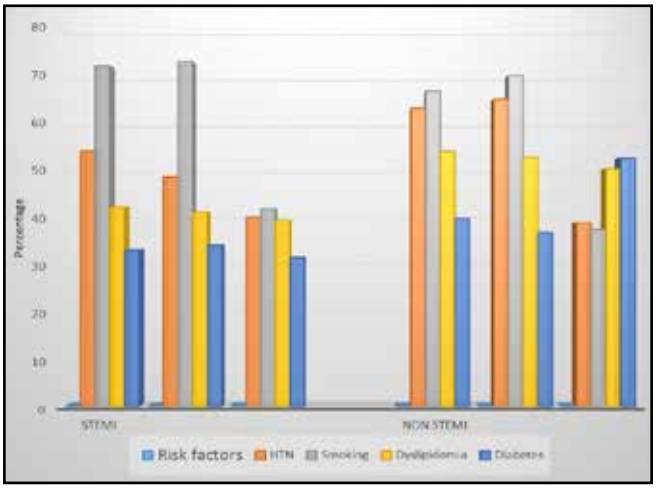


Fig 3: Mean lipid values on admission in men

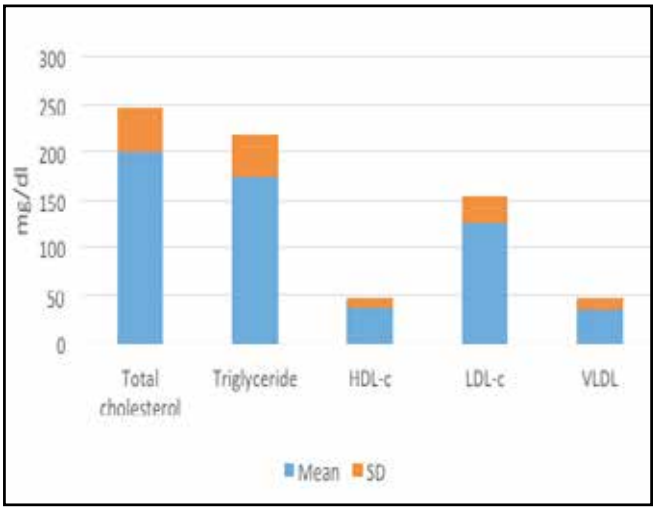
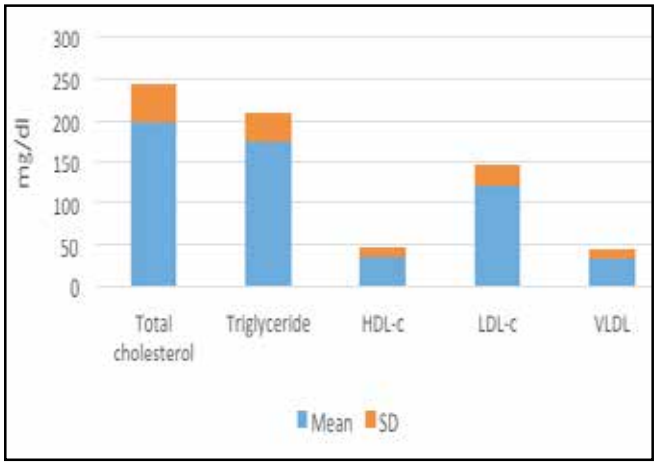


Fig 4: Mean lipid values on admission in women



DISCUSSION

In this study, we included patients with acute coronary syndrome (both ST elevation MI and non ST elevation MI). We found that conventional risk factors were common, at least one form of risk factor like smoking, dyslipidemia, diabetes and high blood pressure were present in patients with any form of MI. The lipid profile analyses demonstrate that some type of dyslipidemia is present in all patients and among them males had higher values than females.

The prevalence of conventional risk factor is high in all patients with ACS but dyslipidemia and smoking were common in males and hypertension and diabetes were common among the female patients. In our series, the risk factors with higher prevalence were smoking and hypertension respectively. A similar finding was reported in INTERHEART study[1].

In the past, it was thought that more than 50% patients with CAD had no conventional risk factor but in one study done by Rosengren showed that there is higher prevalence of one or more risk factors for CAD in individuals who developed acute coronary syndrome[12]. Knot *et al*, analyzed 1,22,458 patients in 14 clinical studies on ACS, and demonstrated that 85% of patients had at least one of the four conventional risk factors[7].

Although epidemiological studies have shown a reduction in total cholesterol and LDL-C levels in general population, the levels of HDL-C have reduced significantly[1]. This reduction has attributed to increased frequency of obesity, insulin resistance and diabetes[11,21]. So a better knowledge of lipid profile in patients with ACS allows better understanding of type of dyslipidemia and for tailoring specific treatment.

CONCLUSIONS

In ACS patients, the prevalence of conventional risk factors were common and among them hypertension and smoking were most common to STEMI and dyslipidemia and diabetes to non-STEMI. Most patients presented with one to three risk factors. The lipid profile analysis helps to find out some type of dyslipidemia in all patients. So determining the lipid profile of patients admitted with ACS allows for early detection of type of dyslipidemia and thereby helps to select the type or intensity of lipid lowering therapy because many of the risk factors are modifiable and can be treated.

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