

ORIGINAL RESEARCH

A Retrospective Study on Cardiovascular Risk Factors Among Acute Coronary Syndrome Inpatients

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ABSTRACT

Background- Patients with myocardial infarction (MI) who are in the acute vs chronic stable phase are at a higher long-term risk for recurrent cardiovascular events. This study was carried out to assess the risk factors for cardiovascular (CVD) morbidity and all-cause mortality, as well as to establish the interval between the acute and chronic stable phases of illness.

Methods- The study included 120 patients with acute coronary syndrome who were diagnosed with the condition and were admitted to the Darbhanga Medical College & Hospital, Department of Cardiology.

Results- In this study, 40% of the patients did not meet the criteria for MS, while 60% of the patients had metabolic syndrome. There are 14 females and 58 males in the MS+ category. The study's participants have an average age of 51.3 years. Patients with and without metabolic syndrome have a similar mean age of 52.3 and 48.9 years, respectively. Patients with metabolic syndrome were found to have a history of hypertension, smoking, diabetes, obesity, and coronary artery disease in proportions of 25, 5, 45, 8, 29, 20, 8, and 16, respectively. History of hypertension is the only factor of statistical significance. Males met 34 of the three criteria for metabolic syndrome, 17 of the four, and 2 of the five requirements for multiple sclerosis. Three females met three of the metabolic syndrome's criteria, seven met four, and four met all five.

Conclusion- The elderly were most frequently impacted. Smoking was the risk factor that was discovered in this investigation to be present most frequently.

INTRODUCTION

The most common cause of death worldwide, ACS is a collection of clinical symptoms that are closely related to acute myocardial ischemia and have a significant clinical and monetary impact. The diminishing risk that patients experience over time after an acute occurrence is well documented [1,2], despite the fact that their risk is still high. However, it is unclear when the acute phase ends and the consequences of this change into a chronic stable phase.

Coronary artery disease (CAD), which primarily affects older people, is a fatal condition since it can strike suddenly and take the life of an otherwise healthy person in their prime. When the individual is under 40, the sad repercussions for family, friends, and employment are especially severe and unanticipated. Fortunately, myocardial infarction (MI) and symptomatic CAD are uncommon in young adults; the majority of research indicate that only around 3% of all CAD occurrences occur in this age group. [3,4]

When a patient enters the chronic stable phase is not specified in recent treatment guidelines. In order to establish therapeutic strategies and improve decision-making for secondary prevention and long-term illness management among MI patients, it may be helpful to distinguish between acute and chronic disease situations. There are numerous ACS risk factors that can be changed. The majority of risk factors for heart disease include genetic, physiological, behavioural, and environmental elements. Age, genetics, and gender are risk factors that are unchangeable. Smoking, dyslipidemia, hypertension, and diabetes are all modifiable risk factors, and obesity and metabolic syndrome are frequently involved [5-7].

METHODS

120 patients with acute coronary syndrome admitted to the Darbhanga Medical College & Hospital, Department of Cardiology, with ST and non-ST segment elevation ACS and with clinical, electrocardiographic, and biochemical diagnosis during the first 24 hours of clinical onset. ST-segment elevation, after fulfilling the inclusion and exclusion requirements, were included in the study.

Inclusion criteria: Patients with an ACS diagnosis who meet one of the following criteria in addition to the American College of Cardiology and American Heart Association's criteria for the diagnosis of myocardial necrosis markers [MB fraction of creatine phosphokinase (CPK) $\geq 10\%$ of total CPK and/or troponin-I (TNI) ≥ 1 ng/ml]:

- Precordial ischemic pain >30 min with or without dyspnea,
- Diaphoresis, nausea and/or vomiting,
- ST-segment elevation in electrocardiogram >1 mm in two or more contiguous leads, Pathologic q wave or
- Left bundle branch block, new or presumed new.

Elevation of a non-ST portion When angina started ≤ 20 minutes and was accompanied by electrocardiographic (ECG) alterations showing negative ST-segment deviation >1 mm in two or more contiguous leads, ACS was determined to be present.

EXCLUSION CRITERIA

1. Patients found to have other than acute coronary syndrome on evaluation is excluded from the study.
2. Seriously ill patients, patients with acute infection, neoplastic disease, cardiomyopathies, cardiogenic shock at admission were excluded from the study.
3. Patients with other major organ (liver, kidney, brain) chronic illness or degenerative disease with life expectancy <2 years are excluded from the study.
4. Patients who were taking medications known to change the blood lipid profile and unrelated to lipid lowering therapy (long-term steroids, diuretics, other proprietary pharmaceuticals, etc.) were excluded from the trial. Before being admitted into the study, each patient signed an informed consent form.

All of the patients underwent thorough medical examinations and detailed histories, and the information gathered was entered into a pre-made proforma.

- Diagnosis of ACS as per ACC/AHA criteria
- Waist circumference as per national health and nutrition survey study.
- Blood and urine routine investigations
- Fasting blood sugar
- 12 hr fasting lipid profile
- 12 lead ECG
- 2 D echo
- Coronary Angiography

- Evaluation of Metabolic Syndrome using South Asian Modified NCEP-ATP III criteria. 120 ACS patients who were admitted to the ICU and who also met the inclusion and exclusion criteria were included in the study. Their profile of cardiovascular risk factors is investigated, specifically with regard to metabolic syndrome, and the findings are statistically analysed. Two groups are examined for the effects of risk factor clustering: those with metabolic syndrome (MS+) and those without (MS-). [Metabolic Syndrome Evaluation Using South Asian Modified NCEP-ATP III Criteria] [8] The results were described using the average, standard deviation, or median and ranges in accordance with the data distribution. Frequencies and percentages were used to express demographic features of groups. Using the Student t-test, qualitative independent variables were compared. According to predicted frequencies, dichotomous variables were examined using the χ^2 test or Fisher's exact test. A p-value of <0.05 or lower was regarded as statistically significant.

RESULTS

In this study, 40% of the patients did not meet the criteria for MS, while 60% of the patients had metabolic syndrome. In the MS+ group, 14 (18%) women and 58 (82%) men are represented. There is no statistically significant difference in the MS distribution between males and females.

Table1: Demographic distribution in present study

Age group	MS+(n=72)	MS-(n=48)
<30	0 (0%)	4(6.4%)
30-39	8(9.8%)	6(14.2%)
40-49	13(19.2%)	14(29%)
50-59	34(45.9%)	15(35.1%)
60-69	13(20.2%)	9(16.9%)
≥ 70	4 (6%)	0 (0%)
Gender		
Males	58(80%)	5(96.2%)
Females	14(20%)	1(4.0%)

Except for smoking history, which is more prevalent in the MS- group, cardiovascular risk factors like family history of hypertension, diabetes, obesity, and coronary artery disease are more common in the MS+ group than the MS- group. Statistics only support the difference in history of hypertension between MS+ and MS- groups.

Table 2: Risk factors associated with metabolic syndrome in genders 00

MS+	Males	Females	p-value
H/o Smoking	16 (25.5%)	0(0%)	S
H/o HTN	23 (40.5%)	10 (70 %)	NS
H/o Diabetes	18 (29.2%)	4 (38.2%)	NS
H/o Obesity	10 (18.4%)	7 (45%)	NS
H/o CAD	10 (18.4%)	2 (20)	NS

In the MS+ group, females are more likely than males to have cardiovascular risk factors like family history of hypertension, diabetes, obesity, and coronary artery disease, with the exception of history of smoking, which is only statistically significant in men.

Table 3: Components of Metabolic Syndrome Vs Sex Distribution

MS+	Males	Females	p value
WC	50 (86.1%)	8 (54.6%)	NS
HTN	39 (67.2%)	10 (70%)	NS

FBS	44 (74.5%)	10 (83.6%)	NS
TG	43 (73.4%)	10 (83.6%)	S
HDL-C	11 (20.1%)	14(100%)	HS

Males met 34 of the three criteria for metabolic syndrome, 17 of the four, and 2 of the five requirements for multiple sclerosis. Three females met three of the metabolic syndrome's criteria, seven met four, and four met all five.

DISCUSSION

After fulfilling the inclusion and exclusion requirements, 120 patients with acute coronary syndrome who had been diagnosed with the condition and were hospitalised to the Darbhanga Medical College & Hospital, Department of Cardiology were enrolled for the study. Here, the observations are discussed. This study found that 60 percent of patients with acute coronary syndrome had metabolic syndrome, as defined by the NCEP ATP III modified South Asian criteria, which is greater than the prevalence found in the studies described above. The other research were carried out among non-Indian people. Asian Indians face a dual threat from nature and nurture: nature, represented by the genetic excess of insulin resistance, diabetes, and Lp(a) excess, and nurture, represented by the steadily unhealthy lifestyle linked to increased wealth, urbanisation, and mechanization[9]. Additionally, patients with ACS represent a cohort in which a number of risk factors have built up to cause an unfavourable coronary event.

However, the way dyslipidemia manifests in individuals with ACS varies across research, which could be a sign of some kind of demographic effect. Additionally, STEMI was the first type of MI to be associated with dyslipidemia, then NSTEMI. According to several studies, dyslipidemia is one of the main risk factors that is very prevalent in ACS patients and is more common in men than in women [10]. The incidence, clinical and angiographic features, and long-term clinical outcome of ACS in Swiss hospitals were examined in a study. The two most prevalent risk variables were dyslipidemia (59%) and current smoking (81%) [11,12].

The evidence from RCT populations at 6 months of follow-up is consistent with these broad patterns for clinical outcomes. A higher risk of death was seen between patients in the acute and chronic phases in Mahaffey et al. of the composite endpoint of vascular death, MI, and stroke [8]. Similar patterns can be seen in our data for outcomes including death and ischemia endpoints. Each result has a different level of risk, with death having the highest level of risk within the acute group. Our results indicate that acute patients enter the chronic phase at 3–4 months after the initial MI, when comparing composite endpoints that include death and other combinations of ischemic events (such as death, AMI, and stroke).

In this study, the majority of patients (50.4 percent in the MS+ group and 35.4% in the MS- group) belonged to the 50–59 age range. The difference in mean age of presentation between two age groups (52.3 and 48.9 years) is not statistically significant (NS). In this study, as opposed to other studies, metabolic syndrome in ACS patients is observed earlier. Similar to prior studies, the MS+ group in this study had an 82 percent male to 18 percent female ratio.

The prevalence of the aforementioned risk factors is lower in this study than in other studies, which reflects Indians' inadequate awareness and management of CVD risk factors. There is no discernible difference in the prevalence of past history of the cardiovascular risk factors, with the exception of past hypertension. [$p > 0.05$ percent]. The most frequent risk factors are high waist circumference, high triglyceride levels, and high fasting blood sugar. High Waist Circumference and High Triglycerides are higher in this study when compared to other studies, showing increased prevalence of atherogenic dyslipidemia among Indians. In this study, the MS+ group had mean values for every component of MS that were higher than those in the MS- group.

CONCLUSION

Patients with acute coronary syndrome are far more likely to have the metabolic syndrome, which is linked to severe CAD. The elderly were most frequently impacted. Smoking was the risk factor that was discovered in this investigation to be present most frequently. When a patient is evaluated, the identification of these risk indicators may be useful in identifying high-risk patients who require specialised care, vigorous therapy, and close monitoring to improve their bad result. Therefore, it is crucial to strive for tougher objectives and lower cutoffs for intervention at all stages of prevention— primordial, primary, and secondary.

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