

To Study the Risk Predictors in Young Patients Presenting with Acute Coronary Syndrome

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Abstract

Background: To Study the Risk Predictors in Young Patients presenting with Acute Coronary Syndrome. **Subjects and Methods:** Patient with ACS who presented to medicine OPD or cardiology department were evaluated for hypertension, age, sex, smoking, family history of premature coronary artery disease and dietary history, Waist to hip ratio was calculated and association of different variables for ACS in young adults was assessed. **Results:** In the present trial total of 265 subjects Maximum were males (n=183, 69.06%) and rest were female (n=82, 30.94%). Maximum patient belongs to 41-50 years age group (n=104, 39.25%), Maximum patients had a sedentary lifestyle (n=197, 74.34%) and 81 patients (30.57%) reported to have a history of intake of diet rich in fat or saturated fats. 87 subjects (32.83%) gave history of Oral Tobacco Addiction, 80 patients (30.19%) gave history of Smoking and 43 patients (16.23%) were having habit of alcohol consumption. 33 patients (12.45%) gave Positive Family history. Subjects with WHR ≤ 0.9 (Male) or ≤ 0.85 (Female) were 191 (72.08%). And subjects with WHR > 0.9 (Male) or > 0.85 (Female) were only 74 (27.92%). Maximum patient had Dyslipidemia (n= 119, 44.91%). Maximum patients had AWMI. Metabolic syndrome was present in 148 subjects (55.85%). **Conclusion:** Males account for the majority of young ACS patients. To reduce ACS-related mortality and morbidity, more stress should be placed on addressing the young on how to manage these risk factors.

Keywords: Coronary Syndrome, Medicine

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Introduction

According to recent revival of increasing patterns of ACS in young Indian population, coronary artery disease is now becoming a significant cause of death worldwide.^[1] In Western countries, acute coronary syndrome (ACS) is one of the leading causes of hospital morbidity and mortality.^[2-4]

Progressive age, gender and a family history of ischaemic cardiomyopathy, high blood pressure, smoking, diabetes (DM), dyslipidemia, obesity are some of the factors.

Younger patients have a definite risk profile, clinical presentation, pattern of arterial blood vessel involvement, and outcome than older patients.^[1] Alcohol intake, tobacco consumption, smoking, hyper-coagulable conditions, and oral contraceptive drug use in young females are all potential conducive factors within the pathologic process of myocardial infarct in young patients. Early-onset ACS poses a large drawback for each the

patient and also the consulting physician, because it has devastating effects on young adult's quality of life & survival.^[3]

In young patients (40 years) with ACS, smoking, familial histories of CAD, dyslipidemia are all the risk factors for heart disease. Though many ACS risk factors are known, their quality within the pathologic process of ischaemic heart condition and in predicting clinical outcomes in young patients has to be established.^[5,6] The metabolic syndrome (MS) features insulin resistance, dyslipidemia, abdominal fat, and high blood pressure.^[7] It is a premorbid state that happens due to poor diet, physical inactivity, obesity, and heredity. MS may be a clinical predictor of CVD, and individuals with MS have a larger rate of acute coronary syndrome (ACS) than individuals that do not have MS.^[8,9] However, whether or not the ACS risk coupled with MS is bigger than the risk related to its individual parts continues to be debated.^[10,11] Moreover, the utility of MS in predicting ACS risk in patients with DM is debatable, as these patients could have associate magnified risk of ACS

despite MS diagnosis.

As a result there is presently little or no data on the prevalence of assorted risk factors for ACS within the younger population, this study on risk factors in young Acute Coronary Syndrome patients was designed to assist within the higher management and interference of ACS during this demographic.

Aim of the study

- To study the risk predictors of acute coronary syndrome (ACS) in young patients.

Objective

- Identify the risk predictors of ACS in young population.
- To identify the relation between metabolic syndrome and ACS in young patients.

Subjects and Methods

- Patients presenting with ACS to the Emergency/OPD/IPD of Department of Medicine, TMMC & RC, TMU, MORADABAD.
- Patients of acute coronary syndrome presented to Department of Internal Medicine and Department of Cardiology at TMU Hospital.
- This is a Hospital based Observational Study.

Inclusion Criteria

Men below 55 years and women below 65 years of age.^[12]

ACS will include unstable angina, NSTEMI and STEMI.^[13]

Patients giving consent to be a part of study.

Exclusion criteria

Patients with chronic stable angina.

Patients <18 years of age.

Result

Table 1: Gender distribution among the study subjects

Gender	N	%
Male	183	69.06
Female	82	30.94
Total	265	100

The present study was conducted among 265 patients presenting with ACS to the Emergency/OPD/IPD of Department of Medicine, TMMC & RC, TMU, MORADABAD with the aim to study the risk predictors in young patients. In the present trial total of 265 subjects were involved, among them

maximum were males (n=183, 69.06%) and rest were female patients (n=82, 30.94%) as tabulated in Table 1 and depicted in [Figure 1].

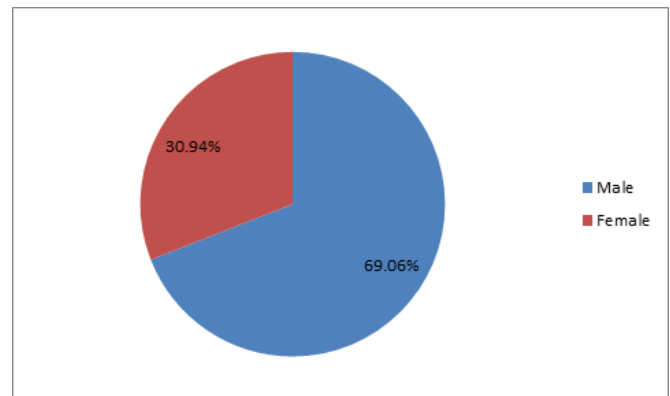


Figure 1: Gender distribution among the study subjects

Table 2: Risk factors among the study subjects

Risk Factors	N	%
Diet rich in fat or saturated fats	81	30.57
Sedentary lifestyle	197	74.34
OC Pills intake	0	0

When the risk factors among study subjects were considered, maximum patients have a sedentary lifestyle (n=197, 74.34%) and 81 patients (30.57%) reported to have a history of intake of diet rich in fat or saturated fats. No patient gave history of OC Pills intake. [Table 2]

Table 3: Deleterious habit among the study subjects

Habits	N	%
Alcohol consumption	43	16.23
Smoking	80	30.19
Oral Tobacco Addiction/Consumption	87	32.83

In the present trial deleterious habit among the study subjects were also recorded. 87 subjects (32.83%) gave history of Oral Tobacco Addiction, 80 patients (30.19%) gave history of Smoking and only 43 patients (16.23%) were having habit of alcohol consumption, as depicted in [Table 3, Figure 2].

In the present study, Personal history among the study subjects was also taken into account. 232 patients (87.55%) gave Negative Family history and only 33 patients (12.45%) gave Positive Family history. [Figure 3]

In the present study, BMI of the subjects was recorded. 177 patients (66.79%) had normal BMI i.e., ranging between 18.5-

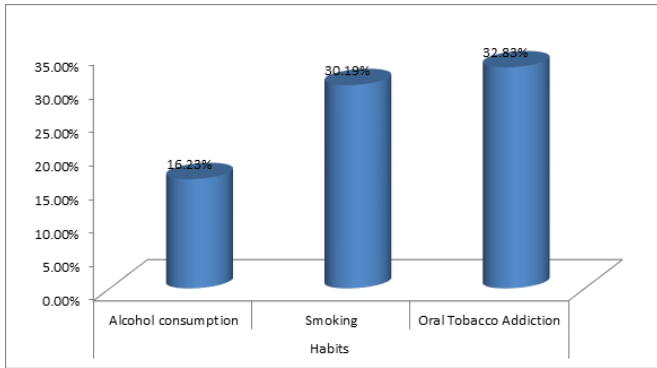


Figure 2: Deleterious habit among the study subjects

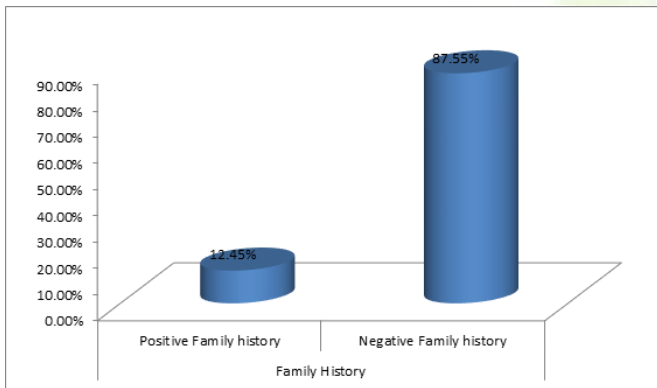


Figure 3: Personal history among the study subjects

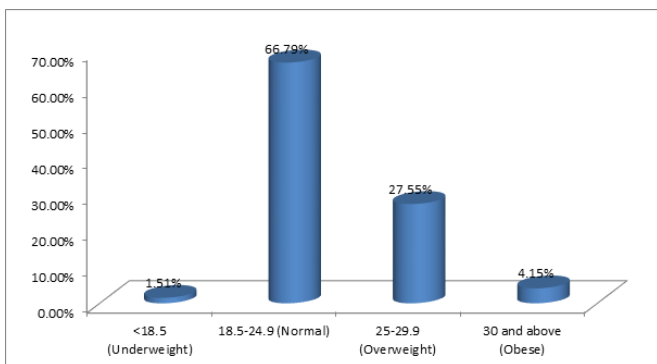


Figure 4: BMI (kg/m2) among the study subjects

24.9kg/m2. 73patients (27.55%) were overweight (BMI=25-29.9kg/m2), 11 were obese (BMI= 30 and abovekg/m2) and only 4 subjects were underweight (BMI= <18.5kg/m2). [Figure 4]

Table 4: Waist–HipRatio (WHR) among the study subjects

WHR	N	%
≤0.9 (Male) or ≤0.85 (Female)	191	72.08
>0.9 (Male) or >0.85 (Female)	74	27.92

In the present trail, Waist–HipRatio (WHR) among the study subjects was recorded. Subjects with WHR ≤0.9 (Male) or ≤0.85 (Female) were 191 (72.08%). And subjects with WHR >0.9 (Male) or >0.85 (Female) were only 74 (27.92%). [Table 4]

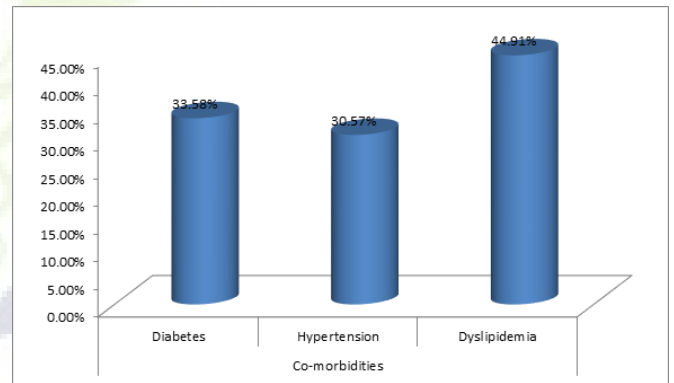


Figure 5: Co-morbidities among the study subjects

When Co-morbidities among the study subjects were considered, maximum patient had Dyslipidemia (n= 119, 44.91%), followed by Diabetes (n=89, 33.58%) and 81 patients (30.57%) gave history of Hypertension as depicted in [Figure 5].

Table 5: Diabetic profile among the study subjects

Variables	Diabetic (N=89)		Non-Diabetic (N=176)	
	Mean	SD	Mean	SD
HbA1c	8.19	0.44	6.11	1.08
FBS	184.58	11.08	99.47	4.61
PPBS	218.13	10.71	158.62	8.92

Diabetic profile among the study subjects was also taken into account. Among 89 diabetic patients, mean HbA1c level was 8.19±0.44, mean FBS level was 184.58±11.08 and mean PPBS level was 218.13±10.71. In non- diabetic patients, mean

HbA1c level was 6.11 ± 1.08 , mean FBS level was 99.47 ± 4.61 and mean PPBS level was 158.62 ± 8.92 . [Table 5]

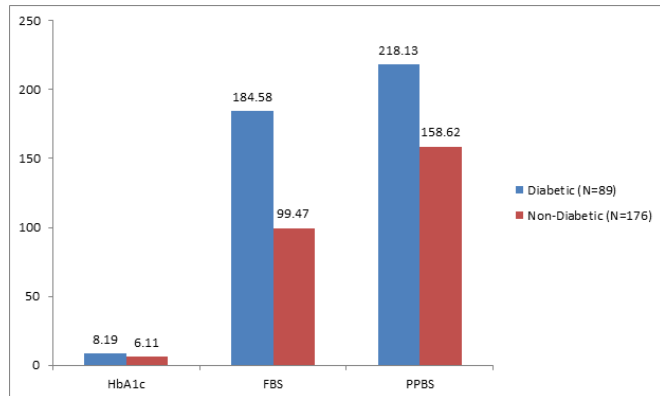


Figure 6: Diabetic profile among the study subjects

Table 6: Lipid profile among the study subjects

Variables	Mean	SD
Triglyceride	132.09	5.85
HDL	40.54	2.93
LDL	83.22	6.43
VLDL	29.01	3.05

Lipid profile among the study subjects was also recorded. The mean Triglyceride level was 132.09 ± 5.85 . The mean HDL level was 40.54 ± 2.93 . The mean LDL level was 83.22 ± 6.43 . And the mean VLDL level was 29.01 ± 3.05 . [Table 6]

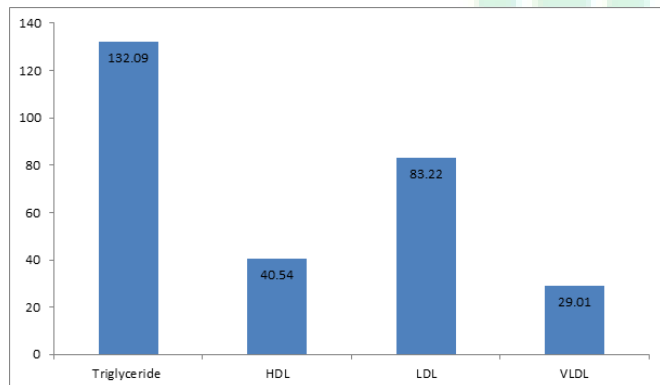


Figure 7: Lipid profile among the study subjects

In the present trail, maximum patients had AAMI (Anterior wall myocardial infarction) (n=103, 38.87%). 74 patients (27.92%) had IWMI (Inferior wall myocardial infarction). 49 patients (18.49%) had PWMI (Posterior wall myocardial

Table 7: Type of ACS

Type	N	%
AAMI (Anterior wall myocardial infarction)	103	38.87
IWMI (Inferior wall myocardial infarction)	74	27.92
PWMI (Posterior wall myocardial infarction)	49	18.49
NSTEMI (Non-ST-elevation myocardial infarction)	31	11.70
USA (Unstable angina)	8	3.02

infarction). 31 subjects (11.70%) had NSTEMI (Non-ST-elevation myocardial infarction). Least no. of patients were of USA (Unstable angina) (n=8, 3.02%). [Table 7]

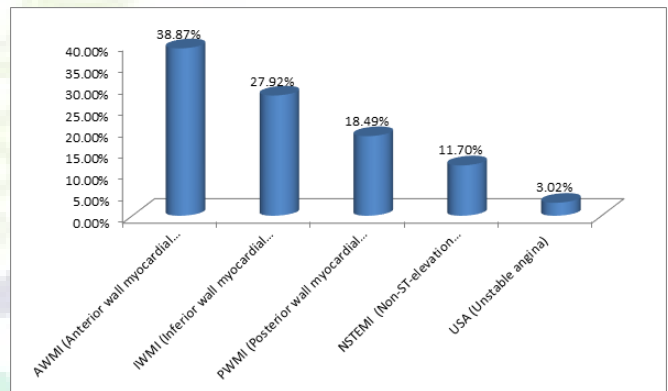


Figure 8: Type of ACS

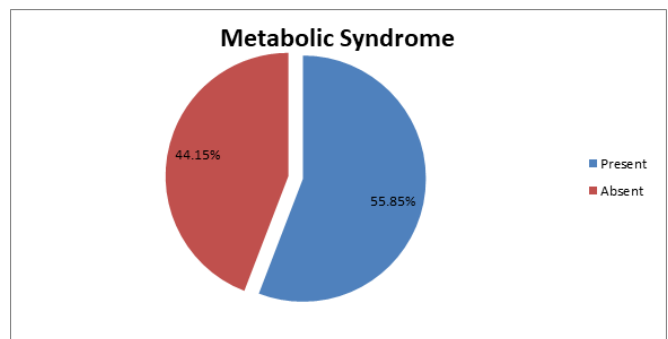


Figure 9: Metabolic syndrome among the study subjects

In present study, metabolic syndrome was present in 148 subjects (55.85%) and absent in 117 patients (44.15%). [Figure 9]

Table 8: Relation between metabolic syndrome and ACS in young patients

Parameters	Metabolic Syndrome (N=148)		No Metabolic Syndrome (N=117)		p value
	N	%	N	%	
STEMI	121	81.76	105	89.74	0.73
NSTEMI	27	18.24	12	10.26	0.34
Diabetes	62	41.89	27	23.08	0.026*
Hypertension	55	37.16	26	22.22	0.035*
Dyslipidemia	71	47.97	48	41.03	0.048*
Overweight+Obese	59	39.86	25	21.37	0.013*

*: significant, **: highly significant

In the present trial when metabolic syndrome was correlated with no metabolic syndrome for STEMI and NSTEMI no significant correlation was found. But when it was correlated for presence of Diabetes, history of hypertension, Dyslipidemia and patients who were Overweight and Obese both, it was found to have a significant correlation. [Table 8]

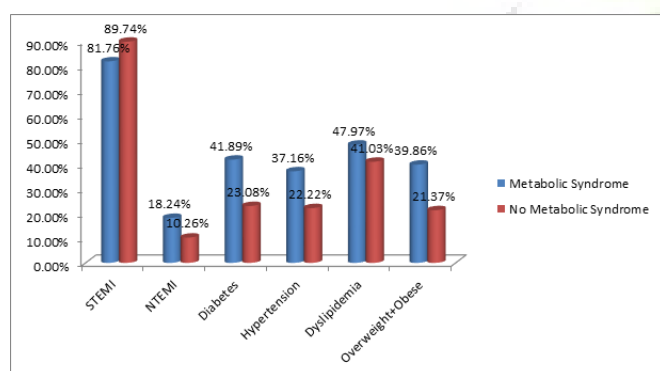


Figure 10: Relation between metabolic syndrome and ACS in young patients

Discussion

The present study was conducted among 265 patients presenting with ACS to the Emergency/OPD/IPD of Department of Medicine, TMMC & RC, TMU, Moradabad with the aim to study the risk predictors of acute coronary syndrome (ACS) in young patients. In the present trial total of 265 subjects were involved, among them maximum were males (n=183, 69.06%) and rest were female (n=82, 30.94%). Age range between was 18 to 65 years. Among the study subject's maximum patient belong to 41-50 years age group (n=104, 39.25%), followed by >50 years age group (n=88, 33.21%), 31-40 years age group (n=62, 23.40%) and least were in 18-30 years age group (n=11, 4.15%). Similarly Ravi Sahiet al,^[14] in their study reported that 46% of patients were around 41-44 years

of age. When the risk factors among study subjects were considered, maximum patients had a sedentary lifestyle (n=197, 74.34%) and 81 patients (30.57%) reported to have a history of intake of diet rich in fat or saturated fats. No patient gave history of OC Pills intake. In the present trial deleterious habit among the study subjects were also recorded. 87 subjects (32.83%) gave history of Oral Tobacco Addiction, 80 patients (30.19%) gave history of Smoking and only 43 patients (16.23%) were having habit of alcohol consumption. 232 patients (87.55%) gave Negative Family history and only 33 patients (12.45%) gave Positive Family history. In one study, Saumya Gupta et al,^[15] discovered that thirteen of patients had a case history of premature CAD, whereas Akhtar et al discovered that fifty-seven of patients had a case history of premature CAD, and Tamrakar R et al,^[3] discovered that thirty third of patients had a case history of premature CAD 177 patients (66.79%) had normal BMI i.e., ranging between 18.5-24.9kg/m². 73patients (27.55%) were overweight (BMI=25-29.9kg/m²), 11 were obese (BMI= 30 and abovekg/m²) and only 4 subjects were underweight (BMI= <18.5kg/m²). Singh et al,^[16] too revealed obesity as a risk factor among the study subjects. Saumya Gupta et al,^[17] in their study showed obesity among 13% of the subjects. The Waist-HipRatio (WHR) among the study subjects was recorded. Subjects with WHR ≤0.9 (Male) or ≤0.85 (Female) were 191 (72.08%). And subjects with WHR >0.9 (Male) or >0.85 (Female) were only 74 (27.92%). When Co-morbidities among the study subjects were considered, maximum patient had Dyslipidemia (n= 119, 44.91%), followed by Diabetes (n=89, 33.58%) and 81 patients (30.57%) gave history of Hypertension. In Paudel et al,^[17] study's 45 percent of the participants were hypertensive, with 14 % diabetic also diabetes was linked to multiple diseases & a poor prognosis.^[18] Diabetic profile among the study subjects was also taken into account. Among 89 diabetic patients, mean HbA1c level was 8.19±0.44, mean FBS level was 184.58±11.08 and mean PPBS level was 218.13±10.71. In non- diabetic patients, mean HbA1c level was 6.11±1.08, mean FBS level was 99.47±4.61 and mean PPBS level was 158.62±8.92. Lipid profile among the study subjects was also

recorded. The mean Triglyceride level was 132.09 ± 5.85 . The mean HDL level was 40.54 ± 2.93 . The mean LDL level was 83.22 ± 6.43 . And the mean VLDL level was 29.01 ± 3.05 . Maximum patients had AWMI (Anterior wall myocardial infarction) ($n=103$, 38.87%). 74 patients (27.92%) had IWMI (Inferior wall myocardial infarction). 49 patients (18.49%) had PWMI (Posterior wall myocardial infarction). 31 subjects (11.70%) had NSTEMI (Non-ST-elevation myocardial infarction). Least no. of patients were of Unstable angina ($n=8$, 3.02%). In present study, metabolic syndrome was present in 148 subjects (55.85%) and absent in 117 patients (44.15%). In the present trial when metabolic syndrome was correlated with no metabolic syndrome for STEMI and NSTEMI no significant correlation was found. But when it was correlated for presence of diabetes, history of hypertension, dyslipidemia and patients who were overweight and obese both, it was found to have a significant correlation. Anand Verma et al,^[19] in their study found that sedentary lifestyle was the risk factor for MS. Among the components of Metabolic Syndrome they found statistically significant difference in diabetes, TGL, BP and Waist circumference in patients with Metabolic Syndrome than without Metabolic Syndrome.

Conclusion

Though ACS is a rare occurrence in young adults, it poses a significant challenge for both the patient and the treating physician. These factors must be controlled immediately in India in order to prevent and treat early cardiovascular disease. Hypertension, obesity, cholesterol levels, and glycemia must all be controlled with precision. Males account for the majority of young ACS patients. The younger group has a higher occurrence of mild LV dysfunction, while the older group has a higher occurrence of severe LV dysfunction. To reduce ACS-related mortality and morbidity, more stress should be placed on addressing the young on how to manage these risk factors.

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