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Pattern of coronary artery disease in young males with acute coronary syndrome.

Shazia Qazi[1], Sajjad Kazi[2], Muhammad Amir[3], Nand Lal Rathi[4]

1. MBBS, FCPS (Cardiology)
   Assistant Professor Cardiology
   Isra University Hospital, Hyderabad.
2. MBBS, M.Phil (Community Medicine)
   Assistant Professor Community Medicine
   Isra University Hospital
   Hyderabad, Sindh, Pakistan.
3. MD (Peadiatric)
   Assistant Professor Pediatrics
   Isra University Hospital
   Hyderabad, Sindh, Pakistan.
4. MD (Cardiology)
   Associate Professor Cardiology
   National Institute of Cardiovascular Disease
   Tando Muhammad Khan.

Correspondence Address:
Dr. Shazia Qazi
Department of Cardiology
Isra University Hospital, Hyderabad.
dr.shaziakazi@hotmail.com

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ABSTRACT… Objective: The aim behind this study was to scientifically assess the pattern of coronary artery disease in young males with acute coronary syndrome. **Study Design:** Prospective Observational study. **Setting:** Department of Cardiology, Isra University Hospital, Hyderabad. **Period:** March 2014 to February, 2019, **Material & Methods:** Data of 260 patients were enrolled who were males and having age less than 50 years and more than 25 years and presented with acute coronary syndrome. All the patients underwent coronary angiography for the assessment of pattern of coronary artery disease. Data were entered and analyzed by using Statistical Package for the Social Sciences version 21.0. **Results:** Out of total 260 patients, the mean age and SD of admitted patients was 42.21 ± 4.69 years and the age ranging between 33 to 50 years. The most common risk factors among young males who were admitted with ACS were cigarette smoking (39.61%, N = 103) and Hypertension (19.61%, N = 51) while least common was alcohol consumption (6.53%, N = 17). The most common pattern of CAD we have observed in our study was presence of three vessels coronary artery disease (25%, N = 65) and Branched Vessel Disease (23.07%, N = 60) while two Vessels CAD was least common (17.30%, N = 45). **Conclusion:** Our study shows that overall burden of coronary artery disease in males belongs to above 40 years of age residing at urban areas and belongs to middle socioeconomic background. The most common risk factor was cigarette smoking and the most common pattern of coronary artery disease was 3 vessel coronary artery disease and Branched Vessel Disease, respectively.

Key words: Coronary Artery Disease Pattern, Pakistan, Young Males.

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INTRODUCTION

The term acute coronary syndrome (ACS) refers to any group of clinical symptoms compatible with acute myocardial ischemia and includes unstable angina (UA), Non - ST-segment elevation myocardial infarction (NSTEMI), and ST-segment elevation myocardial infarction (STEMI). In western part of the world ACS has one of the most common causes of hospitalization and related deaths and increasing rates are seen in developing countries also. Besides other parts of the world, cardiovascular disease accounts for morbidity and mortality in developing countries including Pakistan.[1,2]

Coronary artery disease (CAD) occurring below the age of 45 years is termed as young CAD. However various studies had considered the age limit varying from 35 years to 55 years in the spectrum of young CAD. This arena of cardiology has gained importance very recently due to increased prevalence in this age group over a last few decades, with varying risk factor profiles and difference in prognosis as well as longevity after an acute coronary episode. Data from European Spanish population has shown that younger males whom age is less than 45 years are higher admission rates due to ACS than females.[3]

Coronary artery disease previously considered to be the disease of older age population and that is why extensive data available on baseline characterization, common risk factors involved, and accordingly management in these group of population along with guidelines are thoroughly covering the population. In contrast, there is

limited data available in younger population and there is great diversity among different studies based on the cultural and also regional differences.[4-6] Acute Coronary Syndrome and its association with coronary artery disease pattern is crucial to determine in our population when the data is so sparse and disease pattern is greatly varying. This can help in knowing the actual burden of risk factors and how much they are linked with patterns of coronary artery disease that is why this study has been conducted to observe the common risk factors and pattern of coronary artery disease in ACS admitted male patients.

MATERIAL & METHODS

This is a prospective hospital based study carried out in the Department of Cardiology, Isra University Hospital, Hyderabad. This study was started in March 2014 to February, 2019, data of 260 patients were enrolled based on the inclusion and exclusion criteria. Inclusion criteria for this study was all the cases who were admitted in the department of cardiology with the diagnosis of ACS and having age more than 25 years and less than 50 years particularly males were included in this study after taking informed consent while those who were having age less than 25 years or more than 50 years, female gender, and having limitation or contraindication in performing coronary angiography were excluded from the study. After inclusion in the study all the patients underwent coronary angiography to look for the pattern of coronary artery disease in young males.

A preformed structured questionnaire was used to collect the baseline data such as age, gender, area of residence, marital status, and social class and objective specific data such as type of ACS and pattern of coronary artery disease.

The data were evaluated in Statistical Package for the Social Sciences (SPSS) version 21.0. Quantitative data (numerical parameters) i.e. age in years, BMI, and laboratory parameters were calculated as mean ± SD. Qualitative data such as education status, marital status, area of residence, social class, and pattern of coronary artery disease were calculated as number and percentage.

RESULTS

Out of total 260 patients were analyzed those who fulfilled the inclusion and exclusion criteria. The mean age and SD of admitted patients was 42.21 ± 4.69 years and the age ranging between 33 to 50 years. Among them, majority was married (86.92%, N = 226), resident of urban areas (69.61%, N = 181), secondary level education (40.38%, N = 105), and belongs to a middle socioeconomic background (57.30%, N = 149).

The most common risk factors among young males who were admitted with ACS were smoking (39.61%, N = 103) followed by Hypertension (19.61%, N = 51), Type 2 Diabetes Mellitus (18.84%, N = 49), Dyslipidemia (8.07%, N = 21), Family History of Premature Coronary Artery Disease (7.30%, N = 19), and alcohol abuser (6.53%, N = 17).

Among all the admitted patients with ACS, the STEMI (49.61%, N = 129) and Unstable Angina (31.53%, N = 81) was the most common diagnosis made after workup in these patients.

Our main objective was to evaluate the pattern of coronary artery disease in patients with ACS. The most common pattern of CAD we have observed in our study was presence of three vessels coronary artery disease (25%, N = 65) followed by Branched Vessel Disease (23.07%, N = 60), Single Vessel CAD (19.23%, N = 50), Non-obstructive CAD (17.30%, N = 45), and Two Vessels CAD (17.30%, N = 45).

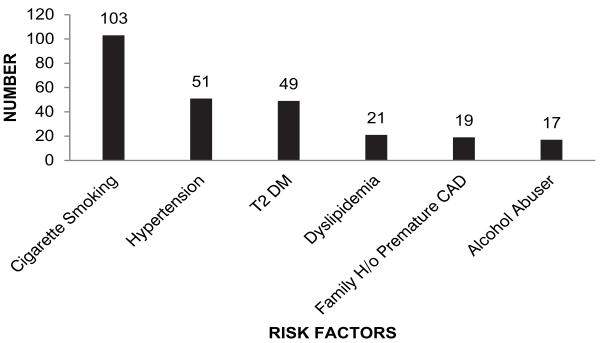

Figure-1. Most common risk factors in admitted ACS males (N = 260)

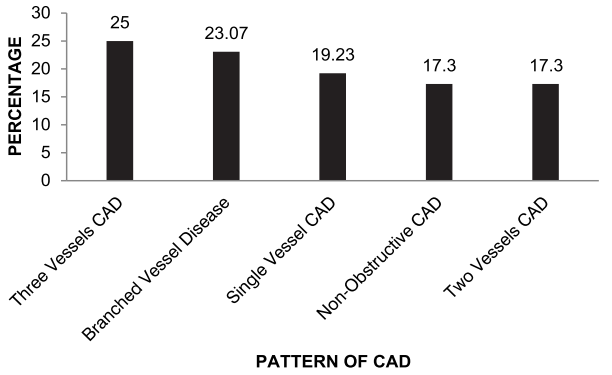

Figure-2. Pattern of CAD in patients with ACS (N = 260)

Characteristics	ACS Patients
Mean age ± SD – Years	42.21 ± 4.69
Marital Status	**N (%)**
Married	226 (86.92)
Single	34 (13.07)
Area of residence	
Urban	181 (69.61)
Rural	79 (30.38)
Level of Education	
Non-Educated	71 (27.30)
Primary	67 (25.76)
Secondary	105 (40.38)
≥Graduate	17 (6.53)
Socioeconomic Status	
Low Class	84 (32.30
Middle Class	149 (57.30)
Upper class	27 (10.38)

Table-I. Baseline characteristics of study participants (N = 260)

Type of ACS	N (%)
Unstable Angina	81 (31.53)
NSTEMI	50 (19.23)
STEMI	129 (49.61)
Laboratory Parameters	**Mean ± SD**
RBS	169 ± 30.12
Hemoglobin	12.9 ± 2.01
WBC	14.7 ± 3.11
Serum Creatinine	0.7 ± 0.97
Total Cholesterol	178 ± 27.48

Table-II. Clinical parameters of study participants (N = 260)

DISCUSSION

Unlike earlier series of young patients with ACS, our study has drawn the data from the general population makes it possible to quantify the magnitude of risk factors in these patients and how much these factors contribute in projecting the coronary artery disease among young males. In our study we have observed that most of the presenting ACS patients were belongs to above 40 years of age while the fortunately cases of ACS below 40 years of age are less common in our study which is a good sign. National data from Pakistan on younger males with ACS is lacking but younger cases during early 30s and late 20s are frequently been observed in international studies which is an alarming situation and needs proper identification to reduce the burden of younger group to become affect by this disease.[7,8]

The most common risk factors involved in our study was smoking (39.61%, N = 103) followed by Hypertension (19.61%, N = 51), Type 2 Diabetes Mellitus (18.84%, N = 49), and Dyslipidemia (8.07%, N = 21) while alcohol abusers (6.53%, N = 17) were accounted for least common group of young males who affected with CAD. Another study from Pakistan has shown in their findings that cigarette smoking was their most common risk factor in causing CAD while family history and Hypertension were comparatively least common than ours.[9] While when comparing our data with international published studies it has been shown that the most common risk factor among their population was Hyperlipidemia (8.8%).[10,11] There is a huge difference between the risk factors among developed country and developing countries like Pakistan. The fortunate thing is that their commonest risk factor was non-modifiable to some extent but cigarette smoking is a modifiable risk factor which can be changed and reduce the burden of CAD in young Pakistani males.

In our study we have found that the most common pattern of CAD we have observed in our study was presence of three vessel coronary artery disease (25%, N = 65) followed by Normal Epicardial Vessels (23.07%, N = 60), Single Vessel CAD (19.23%, N = 50), Non-obstructive CAD (17.30%, N = 45), and Two Vessel CAD (17.30%, N = 45). The data is sparse throughout the world in representing the pattern of coronary artery disease among young adults. This could be due to the presence of underlying risk factors which

may play a significant role in the development of coronary artery disease like in our study most common risk factor we have found was cigarette smoking and most common CAD pattern was 3 vessel coronary artery disease. On the other hand an Indian study which shares almost same social and cultural class has shown dyslipidemia and family history of CAD was more prevalent and underlying CAD pattern was single vessel CAD and the same findings were observed when looking at the international data.[12,13] The disagreement from our study could be due to presence of underlying prevalent risk factor like those who smokes cigarette are more likely to develop 3 vessel CAD in comparison with those who has Hyperlipidemia are prone to have single vessel coronary artery disease.

CONCLUSION

Our study shows that overall burden of coronary artery disease in males belongs to above 40 years of age residing at urban areas and belongs to middle socioeconomic background. The most common risk factor was cigarette smoking and the most common pattern of coronary artery disease was 3 vessels coronary artery disease and Branched Vessel Disease, respectively.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Shazia Qazi	All authors contributed equally.	
2	Sajjad Kazi	All authors contributed equally.	
3	Muhammad Amir	All authors contributed equally.	
4	Nand Lal Rathi	All authors contributed equally.	