VOLUME - 11, ISSUE - 05, MAY - 2022 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

Internal Medicine

A CROSS SECTIONAL STUDY: RISK FACTORS FOR MYOCARDIAL INFARCTION IN YOUNG ADULT

Prof Piyush Saxena Professor and Head, Medicine Department, MLN Medical College.

Nitesh Kumar Patel Junior Resident, Department of Medicine,MLN Medical College.

Prof Sujit Kumar Professor, Medicine Department, MLN Medical College.

ABSTRACT

Aims: This study was done to study the risk factors in young patients presenting with acute myocardial infarction (AMI). **Materials And Methods:** One hundred and forty one consecutive patients of less than 45 years male and less than 50 years female and above 18 years presenting with AMI were studied for the conventional risk factors. Patients of MI were selected from cardiology departments in MLN Medical College Prayagraj. **Results:** Major conventional risk factors were found to be smoking 51.8% (73), followed by hypertension 45.4% (64), alcohol 33.3% (47), obesity 14.9% (21) and diabetes mellitus in 14.2% (20). Family history of cardiac disease present in 19.1% (27). On an isolated level, the most commonly deranged parameter was serum TGs, 39.7% had elevated TGs, 38.4% had borderline TGs. HDL-C decreased in 36.2%, 62.4% had borderline HDL-C, LDL-C was elevated in 14.2% studied population and 14.2% had borderline LDL-C and total cholesterol was found to be elevated in 29.1% and borderline in 13.5% of patients. **Conclusion:** The most prevalent risk factor in young patients is smoking, followed by hypertension. The most prevalent lipid profile derangement is triglycerides followed by HDL-C.

KEYWORDS : young adult, myocardial infarction, risk factors

INTRODUCTION:

Over last decade cardiovascular disease has become leading cause of death worldwide. Despite advances in diagnosis and management, STEMI remains a major public health problem in the industrialized world and is on the rise in developing countries[1]. Myocardial infarction increases with increasing age in both men and women and racial difference, more common in black men and women compared to white. The proportion of acute coronary syndrome who have STEMI has declined over past decade but due to introduction of more sensitive assay myocardial injury has increased in number of NSTEMI relative to STEMI[2]. Hospitalizations for myocardial infarction decreases for patients older than 55 years age but not similar decreases in younger patients.

Acute myocardial infarction (AMI) among young is relatively uncommon. Still, it is an important problem for the patient and the treating physician, as these patients have different risk factors, clinical presentation and prognosis than the older patients. There are few studies of risk factor profile AMI in young, so the purpose of the study.

AIMS AND OBJECTIVES:

Coronary artery disease (CAD) mostly occurs in persons older than 45 years of age. In India, CAD manifests almost a decade earlier than in Western countries. This study will done for evaluation of risk factors for acute myocardial infarction in young patients.

MATERIALS AND METHODS:

One hundred and forty one patients of less than 45 years male and less than 50 years female and above 18 years presenting with AMI were studied for the conventional risk factors. AMI was defined as typical rise and fall of cardiac markers of myocardial necrosis with at least one of the following:

- Ischaemic symptoms
- Electrocardiogram (ECG) changes indicative of ischaemia (ST elevation or depression)
- Development of Pathological Q waves in ECG
- Positive troponin I
- Echocardiographic evidence of new regional wall motion abnormality
- A history of diabetes diagnosed and/or managed with medication and/or diet, or fasting blood glucose of 126 mg/dl or above, was categorised as diabetes. Blood pressure more than 140 mmHg systolic or 90 mmHg diastolic on at least two times was considered as having a history of hypertension diagnosed and/or managed with medication, diet, and/or exercise. Hyperlipidaemia was defined as total cholesterol greater than 240 mg/dl, or high-density lipoprotein 40 mg/dl, LDL-C greater than 160 mg/dl and triglycerides greater than 200 mg/dl as well as a history of Dyslipidaemia diagnosed and/or treated by a physician. Current smoker was defined as a person smoking cigarettes within 1 month of index admission. A positive family history for coronary artery disease (CAD) was defined as evidence of CAD in a parent, sibling, or children before 55 years of age.

Case Selection:

Myocardial Infarction patients diagnosed by suggestive signs, symptoms and confirmed by physical examination ECG and 2D-Echo findings attending Swaroop Rani Nehru Hospital were enrolled in the study.

Inclusion Criteria:

Cases less than 45 years of age Male or less than 50 years female with electrocardiographic or biomarker suggestive of myocardial infarction

Exclusion Criteria:

Age more than 45 years in Male or 50 years in Female Or less than 18 years

After obtaining written informed consent, patient qualifying inclusion criteria were assessed for the study.

RESULTS:

Mean age of patients enrolled in the study was 39.18±4.82 (24-50) years.

Majority of the patients were males (93.6%), rest were females (6.4%). Gender ratio was 14.6:1.

Major conventional risk factors were found to be smoking 51.8% (73), followed by hypertension 45.4% (64), alcohol 33.3% (47), obesity 14.9% (21) and diabetes mellitus in 14.2% (20). Family history of cardiac disease present in 19.1% (27).

On an isolated level, the most commonly deranged parameter was serum TGs, 39.7% had elevated TGs, 38.4% had borderline TGs. HDL-C decreased in 36.2%, 62.4% had borderline HDL-C, LDL-C was elevated in 14.2% studied population and 14.2% had borderline LDL-C and total

cholesterol was found to be elevated in 29.1% and borderline in 13.5% of patients.

DISCUSSION:

Over a twelve-month period in 2020-2021, the current study was conducted on 141 patients in Department of cardiology, Motilal Nehru Medical College, Prayagraj.

Several studies found an exceedingly high rate of tobacco use among young patients with acute myocardial infarction. Previously Mulay Pramod Pz et al[4] showed Risk factors male sex 88.9%, smoking 55.56%, diabetes mellitus 13.34%, hypertension 26.67%, alcoholism 37.78%, family h/o of IHD 28.89% and obesity in 44.44% patients.

Callachan et al[5] showed male 98.7%, history of smoking presents in 61.0%, hypertension 19.5%, diabetes mellitus type 5.2%, angina 5.2%, elevated cholesterol 19.5%, elevated triglyceride 14.3%, decreased HDL 70.1%, elevated LDL 29.9%, and Obesity 53.2% patients. Sinha et al[6] showed that male sex 93%, history of smoking 53%, family history of ischemic heart disease 11%, past history of IHD 17%), diabetes 9%, hypertension 15% and dyslipidemia 20%. Bhandari et al[7] showed male sex 80%, smoking 72%, hyperlipidemia 68%, obese 32%, diabetic 24% in which 10% newly diagnosed, hypertension 18% and family history of premature CAD in 18%.

Kumbhalkar and Bisne et al[8] showed male sex 84.2 %, tobacco chewing 35.7%, hypertension 22.8%, smoking 17.1%, and DM 11.5%. Family history CAD in 8.6% of patients and Increase Total cholesterol 38.6%, LDL-C in 41.4%, TGs in 32.9%, HDL-C was low in 62.9% of patients. Kumar V et al[9] showed male sex 97.8%, smoking 46.1%, diabetes mellitus 9.0% patients, hypertension 14.6% and family history of CAD in 19.1% patients. Chandregowda et al[10] showed male 95.08%, smokers 75.4%, dyslipidemia 68.85%, diabetes 26.22%, hypertension 18.03%, family history of CAD 8.19%, obesity or overweight in 9.83% patients.

According to our study mean age of studied patients was 39.18 years, total 141 patients 132(93.6%) male and 9(6.4%) female. Smoking is important risk factors in young patients with myocardial infarction. Major conventional risk factors were found to be smoking 51.8% (73), followed by hypertension 45.4% (64), alcohol 33.3% (47), obesity 14.9% (21) and diabetes mellitus in 14.2% (20). Family history of cardiac disease present in 19.1% (27). Dyslipidemia is an important risk factor in young patients with acute MI. On an isolated level, the most commonly deranged parameter was serum TGs, 39.7% had elevated TGs, HDL-C decreased in 36.2%, LDL-C was elevated in 14.2% studied population and total cholesterol was found to be elevated in 29.1% patients.

CONCLUSION:

- Young adult myocardial infarction (male 45 years and female 50 years) is predominantly seen in males (93.6%).
- The most prevalent risk factor in young patients is smoking (51.8%), followed by hypertension (45.4%), alcohol (33.3%), family history (19.3%), obesity (14.9%), and diabetes mellitus (14.2 %)
- The most prevalent lipid profile derangement is triglycerides (39.7%), followed by HDL-C (36.2%), total cholesterol (29.1%), and LDL-C (14.2%).

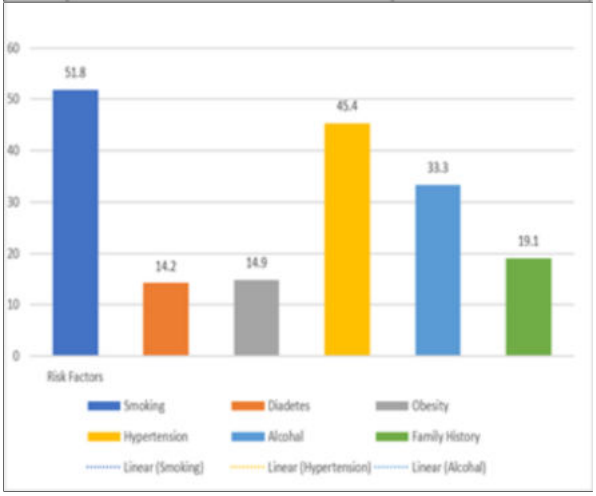
Limitation

- The main limitation of this study is the small number of patients.
- We only analyze the patients who reached the hospital so it might not be a true representative of the population.
- Data were collected from one hospital and might not represent the overall AMI population.

Tables And Charts

Table 1:demographic Profile Of The Study Population.

SN	Demographic Profile	
1-	Mean age±SD (Range)	39.18±4.82 (24-50) years
2-	Gender	
	Male	132 (93.6%)
	Female	9 (6.4%)
	Male: Female ratio	14.6:1



Graph 1: Risk Factors Present In Study Population

Table 2: Lipid Profile Among Study Population

Parameter	Normal N (%)	Borderline N (%)	Undesirable N (%)
Triglycerides (TGs)	31 (21.9)	54 (38.4)	56 (39.7)
LDL-C	101 (71.6)	20 (14.2)	20 (14.2)
HDL-C	2 (1.4)	88 (62.4)	51 (36.2)
Total Cholesterol	81 (57.4)	19 (13.5)	41 (29.1)

REFERENCES:

1. Roth GA, Huffman MD, Moran AE, et al. Global and regional patterns in cardiovascular mortality from 1990 to 2013. Circulation. 2015; 132:1667–1678.
2. Benjamin M. Scirica, Peter Libby, David A. Morrow. ST-Elevation Myocardial Infarction-Pathophysiology and Clinical Evolution. Braunwald's heart disease, 2018, 11th edition page 1112.
3. Benjamin M. Scirica, Peter Libby, David A. Morrow. ST-Elevation Myocardial Infarction Pathophysiology and Clinical Evolution. Braunwald's heart disease, 2018, 11th edition page 1097
4. Mulay Surekha P, M. P. P., & Milind S, H. (2017). Acute Myocardial Infarction among Young Adults in India: Clinical Profile and Risk Factors. International Journal of Innovative Research in Medical Science, 1(09), 366 to 371. https://doi.org/10.23958/ijirms/vol01-i09/07
5. Edward L. Callachan, Alawi A. Alsheikh-Ali, Lee A. Wallis, Analysis of risk factors, presentation, and in-hospital events of very young patients presenting with ST-elevation myocardial infarction, Journal of the Saudi Heart Association,Volume 29, Issue 4, 2017, Pages 270-275, ISSN 1016-7315, https://doi.org/10.1016/j.jsha.2017.01.004.
6. Sinha, S. K., Krishna, V., Thakur, R., Kumar, A., Mishra, V., Jha, M. J., Singh, K., Sachan, M., Sinha, R., Asif, M., Afdaali, N., & Mohan Varma, C. (2017). Acute myocardial infarction in very young adults: A clinical presentation, risk factors, hospital outcome index, and their angiographic characteristics in

North India-AMIYA Study. ARYA atherosclerosis, 13(2), 79–87.
7. Bhandari, M., Singh, V. and Venkatraman, D., 2017. A study of risk factors for acute myocardial infarction in patients below 35 years in eastern India. Nigerian Journal of Cardiology, 14(2), p.84.
8. Kumbhalkar, S.D. and Bisne, V.V., 2019. Clinical and angiographic profile of young patients with ischemic heart disease: A central India study. Journal of Clinical and Preventive Cardiology, 8(1), p.6.
9. Kumar, V., Arora, V., Jain, D., Anwar, J., Prasad, D., & Kumar, V. (2020). Clinical Profile and Outcomes in Young Patients of St Elevation Myocardial Infarction. Frontiers Journal of Cardiology & Cardiovascular Medicine, 1(1), 1- 10. Bibliography 52
10. Chandregowda; K., Mahesh; UNNIKRISHNAN, Anagha. A cross sectional study of acute myocardial infarction in young individuals below 40 years and associated risk factors in Mandya institute of medical sciences, Mandya, Karnataka. International Journal of Advances in Medicine, [S.l.], v. 8, n. 4, p. 511-516, mar. 2021. ISSN23493933. Available at: Date accessed: 29 nov.2021. doi: http://dx.doi.org/10.18203/2349-3933.ijam 20211047.