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MYOCARDIAL INFARCTION IN YOUNG ADULTS: ITS, CLINICAL PRESENTATION AND RISK FACTORS.

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Abstract:
INTRODUCTION: Coronary heart disease (CHD) is the leading cause of death in the Western countries. Acute myocardial infarction (AMI) in young is relatively uncommon but it is of great concern for the physician as these patients present with the different clinical presentation, risk factors and better prognosis than the older patients. In younger patients and the first onset of angina which rapidly progresses to fully evolved MI is often the case in patients less than 45 years of age. In a young patient presenting with MI care full history should be taken and risk factors such as smoking, obesity, diabetes and history of recurrent venous and arterial thrombosis should also be noted. **MATERIAL AND METHODS**: 34 patients of age >18 years and <45 years were included in the study who presented with the acute myocardial infarction. Informed consent was obtained from all the patients who were included in the study. Clinical presentation and risk factors were recorded in the prescribed format. Anthropometric and clinical examination was carried out for each patient. Body weight and height were measured and Body mass index (BMI) was calculated using Quetlet's formula as weight in kg/square of the height in meters. **RESULTS**: Mean age of the patients presenting with acute MI was 32± 6.21years. The youngest patient was 27 years old while the most common age group was 35-40 with 17(50%) patients. Out of 34 patients 33 (97.05%) were male while only 1 (2.95%) was female. Maximum patients were from urban area 22 (64.70%) while 12 (35.29%) were from the rural area. Smoking and physical inactivity was the most common associated risk factor in MI patients 29(85.29%). All smokers were male. Second most common risk factor was obesity and stressful life 18(52.94%) followed Hypertension in 13(38.24%) cases. In 12(35.29%) cases diabetes was associated as a risk factor. Family history of premature CAD, and dyslipidemia was seen in 11(32.35%) and 8(23.53%) cases respectively. **CONCLUSION**: Smoking, Physical inactivity, family history of premature CAD, and obesity were the most common risk factors. Early stabilisation in golden hour should be followed by risk stratification, and early revascularisation.

Introduction:

Coronary heart disease (CHD) is the leading cause of death in the Western countries.Acute myocardial infarction (AMI) in young is relatively uncommon but it is of great concern for the physician as these patients present with the different clinical presentation, risk factors and better prognosis than the older patients. Prevalence of coronary heart disease (CHD) was shown to be 7%-13% in urbanand 2%-7% in rural Indian Population[i].Myocardial infarction (MI) is the lethal manifestation of CHD and can cause sudden death in young adults. MI carries a significant morbidity, psychological effects, and financial constraints for the patient and their family members.Better prognosis among young adults can be achieved by prompt and appropriate investigations and treatment[ii].The causes for MI among patients aged less than 45 can be divided into four groups: Atheromatous CAD, Non-atheromatous CAD, Hypercoagulable states, MI related to substance misuse. Even though there is considerable overlap between all the groups, but this classification can provide appropriate guidelines to the clinician towards appropriate management[iii].In younger patients and the first onset of angina which rapidly progresses to fully evolved MI is often the case in patients less than 45 years of age[iv].The duration of symptoms may be less than a week and most of the patients deny about any chest pain before MI[v].

In a young patient presenting with MI care full history should be taken like use of recreational drugs, family history of premature CAD, and risk factors such as smoking, obesity, diabetes and history of recurrent venous and arterial thrombosis should also be noted[3].

MATERIALS AND METHODS

34 patients of age >18 years and <45 years were included in the study who presented with the acute myocardial infarction. Informed consent was obtained from all the patients who were included in the study.Clinical presentation and risk factors were recorded in the prescribed format.

AMI was defined as rise and fall of cardiac markers of myocardial necrosis with at least one of the following: Ischaemia, ECG changes indicative of ischaemia i.e. ST elevation or depression, Development of Pathological Q waves in ECG, Echocardiographic evidence of new regional wall motion abnormality[vi].

Exclusion criteria were :-Electrocardiogram (ECG) showing bundle branch block or left ventricular hypertrophy, Conditions influencing ST-segment on ECG like myocarditis, pericarditis, hypothermia, on amiodarone treatment, Previous history of MI, Coronary artery bypass graft (CABG) surgery, percutaneous coronary intervention, Coronary angiography and revascularization.

All routine tests like, hemogram, urea, creatinine, fasting lipid profile, fasting and postmeal sugar levels, was carried out. Viral markers such as hepatitis B surface antigen (HBsAg), hepatitis C virus (HCV) and human immunodeficiency virus (HIV) were tested. Routine urine examination and microscopy was done.Detail history was taken from all the patients and were clinically evaluated.

Anthropometric and clinical examination were carried out for each patient. Body weight and height were measured and Body mass index (BMI) was calculated using Quetlet's formula as weight in kg/square of the height in meters.

Hypertension was defined as systolic blood pressure ≥ 140 and/or diastolic ≥ 90 mmHg on at least two occasions and/or on anti-hypertensive treatment. Overweight was defined as BMI > 25 kg/m^2.Diabetes mellitus (DM) was defined as patients having fasting glucose (FPG) ≥ 126 mg/dl and/or post-prandial glucose (PPPG) ≥ 200 mg/dl or a past history of diabetes mellitus and/or taking medication for diabetes. Hyperlipidemia was defined as serum cholesterol of ≥ 200 mg/dl, triglyceride (TG) >150 mg/dl, low-density lipoprotein > 130 mg/dl, HDL-C < 50 mg/dl for female and < 40 mg/dl for male, known cases of dyslipidemia and/or those on medication for dyslipidemia[11]. High homocystine (HC) was defined HC more than 15 mg/dl and high Lipoprotein a (Lpa) as Lpa more than 30 mg/dl.

Various risk factors such as smoking habits, physical inactivity, stressful life events, family history of premature CAD. Smoker was defined as a person who was smoking cigarettes, within 1 month of index admission. A positive family history for CAD was defined as evidence of CAD in a parent, sibling, or children < 55 years of age.

Statistical analyses were performed using the SPSS 21.0 for windows. The comparison between groups was done by U test for continuous variables and by chi-square test for categorical variables. $P < 0.05$ was considered statistically significant.

RESULTS

TABLE 1: Demographic variables

Variables	n=34	%
Age (mean± SD)	32± 6.21	-
Sex (Male/Female)	33/1	97.05/2.95
Residence (Urban /Rural)	22/12	64.70/35.29

Mean age of the patients presenting with acute MI was 32± 6.21years. The youngest patient was 27 years old while the most common age group was 35-40 with 17(50%) patients. Out of 34 patients 33 (97.05%) were male while only 1 (2.95%) was female. Maximum patients were from urban area 22 (64.70%) while 12 (35.29%) were from the rural area.

TABLE 2: Risk factors

Associated risk factors	n=34	%
Smoking	29	85.29
Hypertension	13	38.24
Diabetes	12	35.29
Obesity	18	52.94
Physical inactivity	29	85.29
Family history of premature CAD	11	32.35
Stressful life	18	52.94
Dyslipidemia	8	23.53

Smoking and physical inactivity was the most common associated risk factor in MI patients 29(85.29%). All smokers were male. Second most common risk factor was obesity and stressfull life 18(52.94%) followed Hypertension in 13(38.24%) cases. In 12(35.29%) cases diabetes was associated as a risk factor. Family history of premature CAD, and dyslipidemia was seen in 11(32.35%) and 8(23.53%) cases respectively.

TABLE 3: Lipid profile

Lipid profile	(mean± SD)
Total cholesterol (mg/dl)	184± 26.8
TG (mg/dl)	187±73.22
LDL (mg/dl)	126± 18.21
HDL (mg/dl)	36.4± 6.6

Mean total cholesterol (mg/dl) level was 184± 26.8, while triglyceraldehyde(TG) level was 187±73.22, Low-density lipoprotein was 126± 18.21 and High-density lipoprotein 36.4± 6.6.

TABLE 4; Clinical presentation

Clinical presentation	n=34	%
Chest pain	29	85.29
Sweating	29	85.29
Nausea/vomiting	10	29.41
Breathlessness	14	41.18
Syncope	2	5.88
Atypical presentation	3	8.82

Chest pain and sweating was observed as a commonest symptom in 29(85.29%) cases, followed by Breathlessness14(41.18%).patient with Nausea/vomiting, 10(29.41%) breathlessness 14(41.18%), syncope 2(5.88%), and with atypical presentation were3(8.82%)

DISCUSSION

Although MI is a disease of older population it can occur at any age. The prevalence of young acute coronary syndrome in Spain was observed to be 7% [vii] while in Thailand it was 6.3% [viii].Cardiovascular disease is more aggressive and has started manifesting at a younger age [12]. In this study out of 34 patients 33 (97.05%) were male only 1 (2.95%) female. This may be due to the protective effect of oestrogens in preventing atherosclerosis and risk factor like smoking which was common in male.

In our study Smoking and physical inactivity was the most common associated risk factor in MI patients 29(85.29%). All smokers were male. Second most common risk factor was obesity and stressfull life 18(52.94%) followed Hypertension in 13(38.24%) cases. In 12(35.29%) cases diabetes was associated as a risk factor. Family history of premature CAD, and dyslipidemia was seen in 11(32.35%) and 8(23.53%) cases respectively.

Mukherjee *et al*. [ix]in their studyobserved that the prevalence of smoking is higher in those less than 40 years of age, compared to those above 60 yrs. i.e. 58.7 and 43% respectively. Zimmerman *et al.*, observed that the prevalence of smoking is 92% of young CAD patients which is much higher which was similar to our study[x]. Smoking has adverse effects on all phases of atherosclerosis by hastening thrombotic process and coronary vasoconstriction and ultimately creates a thrombotic milieu [11].

In a study it was observed that stressful life events (29.6%) may be a cause for the instability of the plaque which causes rupture. prevalence of CAD in diabetes was 10.4% as compared to non-diabetics (4.5%) which strongly confirms the role of diabetes in CAD[xi].In an INTERHEART study of 52 countries it was observed that Hypertension as risk factor was observed in 31.1%[xii].Family history of CAD in study by Bhardwaj R et al[6] was 18%, while in a study by Chan et al it was 39%[4].In our study TG was directly and HDL was inversely related with relative risk of MI. In South Asian cohort study prevalence of obesity was 44.2%[12]

CONCLUSION

Smoking, Physical inactivity, family history of premature CAD, and obesity were the most common risk factors.Early stabilisation in golden hour should be followed by risk stratification, and early revascularisation, where appropriate, should be offered as it carries a better clinical outcome. Modifications of the risk factors can prevent the MI in Young adults.

REFERENCES

1. [i]Gupta AK, Bharadwaj A, Ashotra S, Gupta BP. Feasibility and training of multipurpose workers in detection, prevention and control of coronary artery disease in apple-belt of Shimla hills. South Asian J PrevCardiol. 2002;6:17–22.
2. [ii]**Sinha R**. Fisch G, Teague B, *et al*. Prevalence of impaired glucose tolerance among children and adolescents with marked obesity. N Engl J
3. [iii]Egred M, Viswanathan G, Davis GK. Myocardial infarction in young adults. Postgraduate Medical Journal 2005;81:741-745
4. [iv]**Chen L**, Chester M, Kaski JC. Clinical factors and angiographic features associated with premature coronary artery disease. Chest1995;108:364
5. [v]**Klein LW**, Agarwal JB, Herlich MB, *et al.* Prognosis of symptomatic coronary artery disease in young adults aged 40 years or less. Am J Cardiol1987;60:1269–72

6. [vi]Bhardwaj R, Kandoria A, Sharma R.Myocardial infarction in young adults-risk factors and pattern of coronary artery involvement. Niger Med J. 2014 Jan-Feb; 55(1): 44–47.
7. [vii]Enas EA, Yusuf S, Mehta J. Meeting of the International Working Group on Coronary Artery Disease in South Asians. 24 March 1996, Orlando, Florida, USA.Indian Heart J. 1996 Nov-Dec; 48(6):727-32
8. [viii]Avezum A, Makdisse M, Spencer F, Gore JM, Fox KA, Montalescot G, Eagle KA, White K, Mehta RH, Knobel E, Collet JP, GRACE Investigators.. Impact of age on management and outcome of acute coronary syndrome: observations from the Global Registry of Acute Coronary Events (GRACE). Am Heart J. 2005 Jan; 149(1):67-73
9. [ix]Mukherjee D, Hsu A, Moliterno DJ, Lincoff AM, Goormastic M, Topol EJ. Risk factors for premature coronary artery disease and determinants of adverse outcomes after revascularization in patients < or =40 years old.Am J Cardiol. 2003 Dec 15; 92(12):1465-7
10. [x]Zimmerman FH, Cameron A, Fisher LD, Ng G. Myocardial infarction in young adults: angiographic characterization, risk factors and prognosis (Coronary Artery Surgery Study Registry).J Am CollCardiol. 1995 Sep; 26(3):654-61
11. [xi]Tewari S, Kumar S, Kapoor A, Singh U, Agarwal A, Bharti BB, Garg N, Goel PK, Sinha N. Premature coronary artery disease in North India: an angiography study of 1971 patients.Indian Heart J. 2005 Jul-Aug; 57(4):311-8
12. [xii]Yusuf S, Hawken S, Ounpuu S, Dans T, Avezum A, Lanas F, McQueen M, Budaj A, Pais P, Varigos J, Lisheng L, INTERHEART Study Investigators. Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study.Lancet. 2004 Sep 11-17; 364(9438):937-52.