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Clinical Profile, Angiographic Characteristics and Treatment outcomes of Young Myocardial infarction patients in a territory care center

Cardiology

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ABSTRACT

Introduction: Coronary Artery Disease (CAD) is now the leading cause of death and disability globally, causing 7 million deaths in 2010 compared with 5.2 million in 1990. The aim of this paper is to study the clinical profile, Angiographic characteristics and treatment outcomes of young patients with coronary artery disease.

Materials and Methods: It is a single centre observational study of 208 S-T segment elevation young Myocardial Infarction patients. who were hospitalized in the department of Cardiology at Govt.Mohan Kumaramangalam Medical College between January 2015 to June 2017. CAD was defined an >1 epicardial coronary segment with stenosis > 25% and was diagnosed visually and using quantitative coronary angiography (QCA) software.

Results: Out of 208 patients enrolled in our study, Mean age of presentation was 37 years. 95% of the patients were Males. Smoking and Tobacco chewing were in 75% and 40% of the patients. 80.2% of the patients had single vessel disease LMCA, LAD, LCX and RCA lesions were present in 1% , 28% , 15% ,24% respectively. 42 patients were advised percutaneous intervention in the form of angioplasty. 154 patients' medical management and 12 patients for bypass surgery. The patients who underwent thrombolysis within 3hours of window period had favourable outcome in the form of that 53% of them were advised medical management.

Conclusion: Our study reported that young patients with acute MI-STEMI tends to be males with high prevalence of smoking and tobacco chewing. Thrombolyis within 3 hours of window period is extremely favourable.

KEYWORDS

CAD: Coronary Artery Disease, CAG: Coronary Angiogram, PTCA: Percuteneous Transluminal Coronary Angioplasty

Introduction:

Coronary artery disease (CAD) a group of disease characterised by insufficient circulation in coronary arteries leading to angina pectoris, myocardial infarction, heart failure and sudden cardiac death. Framingham study[1] reports a 10 years incidence rate per 1000 cases of myocardial infarction of 12.9 in men 30-34 years old and 5.2 in women of 35-44 years old. Men and in women of 55-64 years old showed an incidence of myocardial infarction that was eight and nine times greater respectively. Many studies take age < 40 years when choosing to study young patients with CAD[2]. Our aim of study is to evaluate the clinical profile, angiographic characteristics in terms of vessel involved and treatment outcomes of young myocardial infarction patients.

Materials and Methods:

This study was carried out at department of Cardiology, Govt Mohan Kumaramangalam Medical College, Salem from January 2015 to June 2017. Informed consent obtained from every patient included in the study. This study was conducted by a detailed standardized questionnaire. In all patients, we recorded data on age, sex, marital status, occupation, educational level, dietary pattern, physical activity, tobacco use, family history of heart disease, hypertension and diabetes. Anthropometric measurements including height, weight, waist circumference and hip circumference were obtained. Two readings or blood pressure were recorded in the supine position with a mercury sphygmomanometer. An ECG was done in all patients.

Elective coronary angiography was performed through standard femoral or radial artery approach. Angiographic data were collected by analyzing the angiogram by two intervention cardiologists. CAD was defined an >1 epicardial coronary segment with stenosis >25% and was diagnosed visually and using quantitative coronary angiography (QCA) software. Patients were grouped as having single vessel disease (SVD), double vessel disease (DVD) and triple vessel disease (TVD) according to the number of vessels involvement. Patients were also grouped according to the type of artery involved stenosis of a vessel was categorized as mild (<50%) moderate (50-69%) and severe (>70%).

Treatment recommendation were based on AHA/ACC guideline 2016 for coronary artery revascularization. The statistic package for social science (SPSS) version 19 was used for data analysis. Results were expressed a mean ± standard deviation for numerical variables and frequencies (Percentages) for categorical variables in the form of tables.

Results:

We studied 208 ST segment elevation myocardial infarction patients in young individuals. 75% of patients presented with anterior wall MI 16% patients presented with interior wall MI 6% patients presented with posterior wall MI and 3% patients had evidence of right ventricular MI. Of the 208 participants 95% were Males and Mean age of the study. participants was 37 years. Smoking and tobacco chewing were the most common risk factors present in 75% and 40% of the patients respectively. It was noted that mean body mass index (BMI) was 24, hypertension was present in 24% of patients, diabetes in 21% patients, dyslipidemia in 73 % patients.

Table 1:- Demographics, risk factors and clinical diagnosis of patient with coronary artery disease

Clinical Characteristics	Frequency (n =208) (%)
Age distribution:	1 (0.48)
<20	36 (17)
21 -30	72 (35)
31-35	99 (47.5)
36-40	
Gender:	137 (95)
Male	11 (5)
Female	
Risk Factors:	156 (75)
Smoking	83 (40)
Tobacco	34 (12)
Family History	44 (21)
Diabetes	50 (24)
Hypertension	73 (35)
Dyslipidemia	
BMI (kg/m^2):	
<23	70 (34)
23-27	116 (56)
>27	22 (10)

Mean total cholesterol levels were 192 mg/dl, mean HDL levels were 32mg/dl. Mean LDL levels were 103mg/dl. Mean Triglyceride levels were 154 mg/dl. Mean total lipid to HDL ratio was 5.2:1. Mean left ventricular ejection fraction was 43.5%. Thrombolysis with injection streptokinase done for 132 patients.

The distribution of the patients according to the window period is in Table 2. Most of the patients were thrombolysed within 6 hours (78%

of the patients) 44 % of the patients received Thrombolysis within 3 hours and 35 % of the patients received Thrombolysis within 6 hours.

Coronary angiography was performed in all the patients. Significant LMCA disease was present in 1% of the patients, significant LAD and LCX and RCA lesions were present in 28% , 15%, 24%. of the patients respectively. LAD was the most common vessel involved 80.2% of the patients had single vessel disease. After coronary angiographic results 42 patients were advised perutaneous intervention in the form of angioplasty, 154 patients were advised medical management and 12 patients were advised coronary bypass surgery.

Table-2

Table 2:- Distribution of patients according to window period of thrombolysis	
Window period	**Frequency (n) (%)**
<3 h	58 (44)
3-6 h	46 (35)
6-12	15 (11)
>12 h	13 (10)

There are significant number of patients in the thrombolysed group 74% has medical management for CAD. Those who underwent PTCA or CABG was 35% and 42% in the non thrombolysed group respectively.

The effect of Thrombolysis in the management of young MI patients in as Table 3 and 4

Table: 3 Effect of Thrombolysis on management		
Management	**Thrombolysed patients n(%)**	**Nonthrombolysed (n) (%)**
PTCA	27 (64)	15 (35)
Medical Management	98 (63)	56 (37)
CABG	7 (58)	5 (42)

Table: 4 Effect of Thrombolysis in the management					
Therapeutic advise	**P Value**	**Window period**			
Number (n) Total -132		< 3h n(%)	3-6 h n(%)	6-12 h n(%)	12-24 h
PTCA (27)	0.00001	6 (23)	18 (67)	2 (7)	1 (3)
Medical Management(98)	*	52 (53)	28 (29)	12 (12)	6 (6)
CABG(7)		0	0	1 (14)	6 (86)

***Statistically Significant**

Discussion:

This study shows that most of the young MI patients were males who had risk factors like smoking, tobacco chewing, hypertension, dyslipidmia and family history. Young MI patient had higher frequency of single vessel disease and Left anterior coronary artery was most commonly involved whereas left circumflex artery was the least. These patients had higher chance of acquisition of recanalisation on Thrombolysis and had very less chance of in hospital death.

Smoking remains as the single most important risk factor causing premature CAD in almost all studies as well as our study [7-14] Dyslipidemia pattern shows characteristicly low HDL level, normal LDL level, and hypertriglytridemia. From our study, higher prevalence of risk factors and young MI were seen in patients with BMI 24 kg/m^2. Our study results clearly support WHO initiatives and Meenakshisundaram et al[15] and Ashwal Jayaram et al[16] studies. Vikram et al[17]have concluded that non-obese Indians with BMI < 25 kg/m^2 and normal waist circumference have higher cardiac risk which is due to endothelial dysfunction an early finding in the atherosclerosis[18-20]

80.2% of the patients had single vessel disease. Previous studies have shown that young patient demonstrated less extensive CAD in coronary angiogram and most had single vessel disease[6-9] This was true for our cohort of patients also. The Prediliction for involvement of left anterior descending coronary artery followed by right coronary artery have been documented by various studies[21]. Our study was also confirmed this report. Bharadwaj et al[22] study shows male predominance, mean age was 35.9% ± years, 95% patients had ST elevation MI. AWMI was present 70.97% inferior wall MI 25%. 58.8% were smokers. Single vessel disease was seen in 45% patients two vessel disease in 12% patients and Three vessel disease in 6.4% of patients. Our study shows similar observation 75% had anterior wall MI, 16 had inferior wall MI, Mean age was 37 years. smoking was predominance risk factor in 75% of the patients. Single vessel disease was the most prevalent form with 80.2% having single vessel disease.

Coronary artery disease in young Indians might be thrombogenic, spasmogenic and less atherosclerotic. Early intravenous fibrinolysis improves survival in patients with young STEMI. The benefit of thrombolysis is greater when the agents administrated less than 3 hours of symptom onset. In our study also, it confirm that results.

Conclusion:

This single centre observation study provides the evidence that young patients with acute MI-STEMI tends to be males with high prevalence of smoking, tobacco chewing, hypertension, dyslipidemia, higher frequency of left anterior descending coronary artery involvement as the culprit vessel. Moreover, we noticed that early thrombolysis within 3 hours of window period is extremely favourable in the management of young myocardial infarction patients.

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