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Medicine

A STUDY OF COMBINATION OF MULTIPLE RISK FACTORS IN MYOCARDIAL INFARCTION IN YOUNG

Dr. P. Musa Khan	M.D., Asst Prof. of Medicine,
Dr. S. Sreevani	M.D., Asst Prof. of Medicine,
Dr. K. S. Amaravathi	M.D., Asst Prof. of Medicine,
Dr. M. Bhargavi Devi	M.D., Asst Prof. of Medicine,

ABSTRACT

BACKGROUND: Ischemic heart disease is the leading cause of death in the world. Coronary artery disease has been recognized among younger age group more frequently in recent years.

Acute myocardial infarction below 40 years of age constitutes a specific subset of population having different risk factors and clinical features as compared to older patients. Pattern of coronary artery involvement and clinical outcome also varies suggesting different underlying pathophysiology. Better understanding this specific problem will lead to further improvement in management.

OBJECTIVES: To study the association of different risk factors in young patient with acute MI.

METHODS: 50 patients below the age of 40 years were enrolled in the study over a period of 2 years. Different risk factors were analyzed for the association with MI.

RESULTS: In our study obesity is present in all the patients. Out of 50 patients of study population Obesity with dyslipidemia was the commonest risk factor (82%) followed by obesity with hypertension (52 %), Obesity , dyslipidemia , hypertension and diabetes mellitus combination observed in (10%), Obesity , dyslipidemia and Diabetes Mellitus combination observed in (10 %).

CONCLUSIONS: Dyslipidemia is observed in majority of the patients. Combination of Obesity with dyslipidemia is the most common risk factor observed, followed by obesity with hypertension. Obesity, dyslipidemia, hypertension, and Diabetes Mellitus are the major modifiable risk factors in the present study.

KEYWORDS :

INTRODUCTION:

Coronary Artery Disease (CAD) is the major cause of morbidity and mortality throughout the world. The pattern of Coronary artery disease is changing in India which occurs a decade earlier than the other countries, The highest proportion of cases with first acute myocardial infarction at age 40 years or younger was in men from the Middle East (12·6%), Africa (10·9%), and south Asia (9·7%) and the lowest proportion was in women from China and Hong Kong (1·2%), South America (1·0%), and central and eastern Europe (0·9%)[1]. The risk in India is 3-4 times commoner than Americans, 20 times higher than Japanese**.** In India myocardial infarction is becoming more common in young patients and often having triple vessel disease. Reinfarction rate is three times higher and two times higher rate of mortality in india[2] . The risk factor concept implies that a person having one risk factor is likely to develop clinical atherosclerotic event and more do so in patients with multiple risk factors.

Although uncommon entity, it constitutes an important problem for the patient and the treating physician because of the devastating effect of this disease on the more active lifestyle of young adults. Young patients have different risk factor profiles, and prognosis when compared to older patients.[3,4]. A variety of other possible contributing factors that include smoking, sedentary life style, psychological stress also women have been implicated for the pathogenesis of myocardial infarction. The clinical presentation is also different from that of older patients. In majority of cases, a sudden myocardial infarction or unstable angina is the first manifestation of CAD.

MATERIALS AND METHODS:

The present study is a retrospective study aimed at evaluating the multiple risk factors involved in development of acute MI in young patients who are 40 years or below. 50 patients with acute myocardial infarction who were admitted in intensive cardiac unit of a tertiary care hospital were studied.

INCLUSION CRITERIA:

Patients who are in the age group of 20-40 years age with myocardial infarction based on the WHO criteria of chest pain, ECG changes and elevated cardiac enzymes Troponin (I and T).

EXCLUSION CRITERIA:

1. All patients who are presenting only with stable or unstable angina
2. Patients having old myocardial infarction
3. Patients' age more than 40 years.

In the present study clinical symptoms like chest pain, breathlessness, palpitations, sweating were taken into consideration and the percentage of each symptom were studied. Physical signs like raised jugular venous pressure, crepitations, wheeze, hypertension and obesity xanthomas and xantholesmas were looked for. BMI was calculated by using wt./ht^2 .Patients were categorized as those with BMI < 25 as desirable, 25 - 28.6 as overweight, > 28.6 as obese. Waist circumference measured between coastal margin and iliac crest and hip circumference is measured over the buttocks waist hip circumference ratio more than 0.83 in females and 0.93 in males were taken as abnormal. Patients walking 4km or exercising for 20 minutes in a day for 5 days in a week were labeled as physically active and who are not, as physically inactive or sedentary. A brief history of diabetes, hypertension, stroke and family history of ischemic heart disease were recorded. Diabetes was defined as having a history of diabetes diagnosed or treated with medication or diet or fasting blood glucose 110mg/dl or more. Hypertension was defined as having a history of hypertension which treated with medication or diet and blood pressure greater than 140 mmHg systolic or 90 mmHg diastolic on at least two occasions. Dyslipidemia was defined as history of dyslipidemia who is on treatment or total cholesterol greater than 200 mg/dl , low-density lipoprotein greater than or equal to 100 mg/dl ,High triglyceride (TAG) level was defined as level more than 150mg/dl .

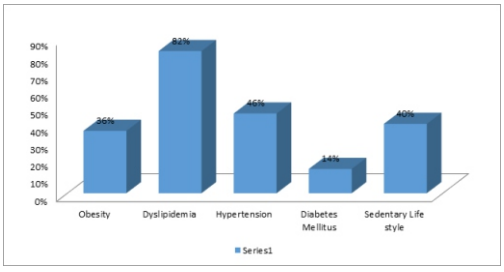
RESULTS:

Out of 50 patients included in the study, 44 (88 %) were males and 6 (12%) were females. Most common age group were between 35-40 years correlating with Nepalese[5]. 37 (72%) having family history of ischemic heart disease. All 50 patients (100%) were obese, 41 (82%) having dyslipidemia, 23 (46%) had hyper tension, 7 (14%) patients were diabetics, 20 (40%) had sedentary life style. 5 women out of 6 and 30 men out of 44 had high waist to hip ratio . Majority of the patients having more than one risk factor.

1. **RISK FACTORS:**

Table 1:

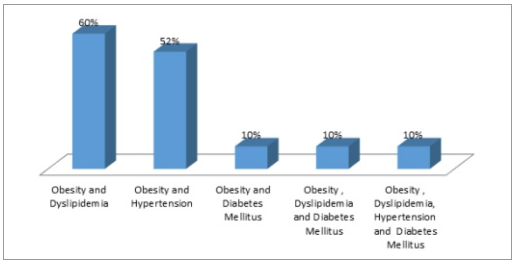
Obesity	18 (36 %)
Dyslipidemia	41(82 %)
Hypertension	23 (46%)
Diabetes Mellitus	7 (14%)
Sedentary Life style	20(40%)



2. COMBINATION OF RISK FACTORS ANALYSIS:

Table 2:

Obesity and Dyslipidemia	30 (60 %)
Obesity and Hypertension	26(52 %)
Obesity and Diabetes Mellitus	5 (10%)
Obesity , Dyslipidemia and Diabetes Mellitus	5 (10%)
Obesity , Dyslipidemia, Hypertension and Diabetes Mellitus	5 (10%)



DISCUSSION:

In the present study of multiple risk factors analysis in the young myocardial infarction patients, dyslipidemia was observed in all 41 (82 %) patients, which is correlating with VNS study (92.9%) in 1971. Association of Obesity with dyslipidemia ranks highest among the risk factors.

Obesity and Dyslipidemia:

Combination of obesity and dyslipidemia were observed in 30 (60%) patients, which were very important risk factors in the development of coronary artery disease[6]. Obesity is associated with increased blood volumes, cardiac output and left ventricular filling pressure. When the additional effect of dyslipidemia was added, it accelerates atherogenic process especially central obesity is associated with an atherogenicity.

Obesity and Hypertension

It is observed that 23 (46%) of the patients had hypertension , similar observations have been found in other studies also i.e. Marty AK Das et al (28%), Nitter Haugh et al (24%), Dwivedi et al (51.42%) in 2000. In present study 26 (52%) patients were found to have high blood pressure and obesity, the probable reason being the accelerated atherosclerosis, increased left ventricle mass, left ventricle tension and stroke work. Hypertension is an individual risk factor, next only to dyslipidemia, when it is combined with obesity is it causing higher incidence of myocardial infarction.

Obesity and Diabetes Mellitus

In the present study 7(14%) of patients were found to have diabetes. The reason being it impairs endothelial and smooth muscle function and appears to increase leukocyte adhesion to vascular endothelium, a critical early step in atherogenesis. And also insulin resistance also produces a prothrombotic state due to increased level of PAI-1 and fibrinogen, similar observations have been made in other studies also i.e. Marty AK Das AK et al (18%), PK Biswas A (9.7%), VSN study (3%) in 1986, Dwivedi[5] et al (7.14%) in 2000, Chennai study (18%) in 1991. Diabetes is associated with a 2- to 3-fold increase in the likelihood of developing CVD,[7] glucose intolerance is also associated with a 1.5-fold increase in the risk of developing cardiovascular disease.

Obesity, Dyslipidemia, Hypertension and Diabetes Mellitus:

In our study combination of Obesity, Dyslipidemia and Diabetes Mellitus were observed in 5(10%) patients and also similar number of patients had all risk factors like Obesity, Dyslipidemia, Hypertension and Diabetes Mellitus. smoking, diabetes mellitus, hypertension, and hypercholesterolemia [7] Diabetes is also associated with a higher probability of presenting with hypertrigliceridemia, low HDL-C, high blood pressure, and obesity, which usually precede the onset of diabetes.[8]

CONCLUSIONS:

- Dyslipidemia is most common risk factor for Myocardial infarction.
- Combination of Dyslipidemia and Obesity were major risk factors for Myocardial infarction for young.
- The effect of risk factors is multiplicative rather than additive. Prevention can aim at modifying the risk factors like reduction of weight , dietary measures , control of hypertension and diabetes

References:

1. Salim Yusuf, Steven Hawken, Stephanie Ôunpuu, Tony Dans, Alvaro Avezum, Fernando Lanas, Matthew McQueen, Andrzej Budaj, Prem Pais, John Varigos, Liu Lisheng, on behalf of the INTERHEART Study Investigators*
2. Harrison principles of International Medicine. 15th Edition. 1387-1399.
3. Coronary artery disease in the young; Heredo familial or faulty life style or both by : S Dwivedi, Girish Dwivedi, A Chaturvedi, Sanjiv Sharma, Journal Indian academy of clinical medicine Vol. No.3, Oct-Dec 2000.
4. Praveen Kumar and Michael Clark, "Clinical Medicine" 1994 3rd edition.
5. Dwivedi S, Anupam P, Chaturvedi A, Cardiovascular risk factor in young coronary artery heart disease patient around East Delhi. South Asian Journal preventive Cardiology 1997. 1, 21-26.
6. Chen L, Chester M, Kaski JC. Clinical factors and angiographic features associated with premature coronary artery disease. Chest 1995;108:364–369
7. Fox C, Coady S, Sorlie P, Levy D, Meigs JB, D'Agostino RB Jr. Trends in cardiovascular complications of diabetes. JAMA. 2004;292:2495-9.
8. Wilson PW.F, McGee DL, Kannel WB. Obesity, very low density lipoproteins and glucose intolerance over fourteen years. Am J Epidemiol. 1981;114:697-704.Rev Esp Cardiol. 2008;61:299-310 - Vol. 61 Num.03 DOI: 10.1016/S1885-5857(08)60118-8