

Original Research Article

TO DETERMINE CAROTID INTIMA-MEDIAL THICKNESS (CIMT) IN PATIENTS OF MYOCARDIAL INFARCTION

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Abstract

Background & Methods: The aim of the study is to determine carotid Intima-medial thickness (CIMT) in patients of myocardial infarction. Past History of CAD, systemic hypertension, diabetes mellitus, Hypothyroidism, History of Risk factors. Family History of CAD./DM/HTN, written consent of all cases & control subjects was taken and all ethical issues considered.

Results: Mean CIMT 0.536, seen in pts <45 years of age. Mean CIMT 0.834, seen in pts between 45-65 years of age. Mean CIMT 0.87, seen in pts >65 years of age. Mean CIMT increases as age increases. We found maximum risk in smoking/tobacco chewing 25% & dyslipidemia 21% respectively.

Conclusion: Out of 100 cases of myocardial infarction (48%) had Grade I obesity, 08 cases had Grade II obesity & rest (44%) cases had normal BMI. We found that Carotid Intima-medial thickness was statistically significant higher in myocardial infarction patients.

Keywords: CIMT, myocardial & infarction.

Study Design: Observational Study.

1. INTRODUCTION

Despite higher rates of smoking, CAD rates in rural India are about one-half those in urban India. A cross-sectional survey done in rural Haryana in 1998 revealed a CAD prevalence rate of 6% in rural Indians aged 35-64 years[1]. This CAD rate is 2-fold higher than contemporary U.S. rates and 3-fold higher than the 2.1% reported in 1974 from the same village.

The prevalence of CAD in urban India is about double the rate in rural India and about 4-fold higher than in the U.S. The rates appear to be higher in south India with Kerala having a prevalence of 13% in urban areas and 7% in rural areas[2]. The CAD rates in urban India are similar to those among the generally more affluent overseas Indians. For example, the prevalence of CAD in New Delhi is 10% and Chennai 11%. Overall there has been a >3-fold increase from 3% prevalence 30 years ago in urban India. In Sri Lanka, between 1980 and 1988, the CAD mortality rates have doubled and now have a prevalence of 10%, similar to India. CAD in India appears to follow the same pattern that was observed in the U.S., where high rates of CAD first appeared in the urban and affluent, followed by the poor and rural Americans[3].

Higher rates of CAD in urban India compared to rural India suggest important roles for nutritional and environmental factors, or nurture. There is a significantly higher body mass index (BMI) in urban India compared to rural India (BMI, 24 versus 20 in men and 25 versus 20 in women) [4]. There is also a higher rate of abdominal obesity among the urban population, with urban men having a waist to hip ratio (WHR) of 0.99 compared to 0.95 among rural men. This increase in BMI and WHR results in significant dyslipidemia and insulin resistance and a 3-fold increase in diabetes[5-6].

2. MATERIAL AND METHODS

Present study was conducted for 01 Year with detailed case history. Past History of CAD, systemic hypertension, diabetes mellitus, Hypothyroidism, History of Risk factors. Family History of CAD./DM/HTN, written consent of all cases & control subjects was taken and all ethical issues considered. Cases included 100 patients of myocardial infarction. Patients were taken from ICCU, General wards and Medical OPD.

Inclusion Criteria:

Diagnosed cases of myocardial infarction were included in this study.

Exclusion Criteria:

1. Chronic renal failure patients.
2. Chronic liver disease patients
3. Patients with multisystem disease.

3. RESULT

Table no: 1
Age distribution of myocardial infarction patients

No.	Age group	Number of patients
1	≤ 45 years*	20(20%)
2	45-65 years	68(68%)
3	>65	12(12%)
Total		100

*minimum age of patients was 27 years.

- 20 cases were in the age group of ≤45 years.
- Majority of patients (68) were in the age group of 45-65 years.
- 12 patient were in the age group of >65 years.

Table 2: Distribution of cases of MI - BMI:

No.	BMI	TOTAL CASES	MALE	FEMALE
1	18-24.9	44(44%)	30(30%)	14(14%)
2	25-29.9	48(48%)	32(32%)	16(16%)
3	30-39.9	8(8%)	2(2%)	6(6%)
4	>40	0	0	0

44 patients had BMI in the range of 18-24.9, out of which 30 were male & 14 female. 48 patients had BMI in the range of 25-29.9, out of which 32 were male & 16 female. 08 patients had BMI in the range of 30 -39.9, out of which 02 was male & 06 female. Maximum cases (48%) had BMI in the range of 25-29.9.

Table 3: Age distribution of MI patients as per Carotid Intimal Medial Thickness:

AGE	MEAN CIMT
<45 YR	0.536
45-65 YR	0.834
>65 YR	0.87

Mean CIMT 0.536, seen in pts <45 years of age. Mean CIMT 0.834, seen in pts between 45-65 years of age. Mean CIMT 0.87, seen in pts >65 years of age. Mean CIMT increases as age increases.

Table 4: Risk Factors

S. No.	Risk Factors	TOTAL
2	SMOKING/TOBACCO CHEWING	25(25%)
3	ALCOHOLISM*	11(11%)
4	FAIMILY HISTORY OF PREMATURE CAD	10(10%)
5	SYSTEMIC HTN	13(13%)
6	DIABETES MELLITUS	09(09%)
7	CVA	3(3%)
8	DYSLIPIDEMIA	21(21%)

9	LIPID & OBESITY	4(4%)
10	STRESS	4(4%)

We found maximum risk in smoking/tobacco chewing 25% & dyslipidemia 21% respectively.

4. DISCUSSION

Carotid plaque was common (30.3%) in patients with coronary atherosclerosis. Carotid plaque was associated with old age, systemic hypertension, and increased carotid intimal medial thickness, and was an independent predictor of multi-vessel disease[7].

Nikić P[8] in The Kangwha Study evaluated impact of multiple cardiovascular risk factors on the carotid intimal medial thickness in young adults. In this study they concluded that with an increasing number of risk factors (p value<0.001)and carotid intimal medial thickness values were 0.665,0.674,0.686,0.702,and0.748mm for 0,1,2,3,4,and 5 risk factors ,respectively. This study shows an adverse impact of multiple cardiovascular risk factors on carotid intimal medial thickness in asymptomatic, healthy population of young adults.

Kim KW, Park HW, Jeong JH, Kim KY, Bae JH[9] evaluated the prevalence & significance of carotid plaque in patients with coronary atherosclerosis. . The study population consisted of 1,705 consecutive patients {933 males (54.7%); mean age, 59.7+/-10.9 years} who underwent coronary angiography and carotid artery scanning using high-resolution ultrasonography. Carotid plaque was defined as a focal structure encroaching into arterial lumen by at least 50% of the surrounding IMT value or a thickness >1.2 mm. In this study Carotid plaque was identified in 30.3% (516/1,705) of the patients. The prevalence of systemic hypertension (58.5% vs. 45.2%, p<0.001) and diabetes mellitus (30.6% vs. 23.5%, p=0.007) was higher in patients with carotid plaques. The patients with carotid plaques were older (65.4+/-8.9 years vs. 57.2+/-10.7 years, p<0.0001), had a thicker CIMT (0.89+/-0.20 mm vs. 0.77+/-0.16 mm, p<0.001), and higher fasting blood sugar (FBS) levels (132.1+/-60.7 mg/dL vs. 121.6+/-47.1 mg/dL, p<0.001) than those without carotid plaque. Patients with carotid plaque more frequently presented with acute coronary syndrome (32.4% vs. 23.9%, p<0.001) than those without carotid plaque. Significant coronary artery stenosis by coronary angiography (75.4% vs. 58.3%, p<0.001), especially multi-vessel disease (46.3% vs. 27.2%, p<0.001), was more frequent in patients with carotid plaques. On multivariate analysis, old age (>=65 years), hypertension, and increased CIMT (>=1.0 mm) were independent predictors of carotid plaque (odds ratio, 1.85; 95% confidence interval, 1.39-2.45; p<0.001) was an independent predictor of multi-vessel disease based on multivariate regression analysis.

5. CONCLUSION

Out of 100 cases of myocardial infarction (48%) had Grade I obesity, 08 cases had Grade II obesity & rest (44%) cases had normal BMI. We found that Carotid Intima-medial thickness was statistically significant higher in myocardial infarction patients.

6. REFERENCES

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