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General Medicine

A CLINICAL STUDY OF NECK CIRCUMFERENCE IN ACUTE MYOCARDIAL INFARCTION PATIENTS IN GMC, KADAPA

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ABSTRACT

Background: Myocardial Infarction is an important cause of mortality and morbidity in India. Atherosclerosis is by far the most common cause of Myocardial Infarction. Other modifiable risk factors include Diabetes mellitus, Smoking, Hypertension, Hyperlipidemia, Obesity, Stress and Depression. High Neck Circumference is a novel marker for Coronary Artery Disease. Neck Circumference can be used as a tool to screen the general population for the risk of Myocardial Infarction.

Aim: The aim of this study is to determine the relation between Neck Circumference and the risk of Myocardial Infarction.

Materials and Methods: This study comprised of 50 patients diagnosed with Acute Myocardial Infarction from May 2019 to December 2019 in the Department of General Medicine in Government medical College, Kadapa. Neck Circumference was measured and patients were evaluated for BMI and other Cardiovascular risk factors.

Results: Out of 50 patients,27 patients has abnormal NC, out of which 14 were male and 13 were female. Over all the mean NC was 36.18cm. Among the males the mean NC was 37.16 cm and in females it was 34.93 cm.

Conclusions: This study emphasizes that - Upper body fat distribution has long been recognized as related to increased cardiovascular disease risk and Neck Circumference could be used as an index. Patients with abnormal Neck Circumference should be screened for cardiovascular risk factors and followed up at regular intervals to detect abnormality at earliest for appropriate intervention.

KEYWORDS : Neck Circumference, Myocardial Infarction

INTRODUCTION

In past two decades, low and middle income countries had a shift of focus from infectious diseases ,maternal and child health to Non Communicable Diseases [NCD].Of the NCDs Cardiovascular disease[CVD] is number one cause of mortality. WHO has recommended Waist Circumference(WC), Waist :Hip ratio as a tool to screen the general population for risk of CVD. But WC has disadvantages like variations in measurements with respiration,post prandial states,variations on heavy clothing and also poses difficulty in bed ridden patients.

Upper body obesity have been found to be more strongly associated with glucose intolerance, hyperinsulinemia, diabetes, hypertriglyc eridemia and has long been recognized as related to increased cardiovascular disease risk, and neck skin fold [1] or neck circumference (NC) has been used as its index [2,3].

Measuring NC can be a practical and economical method used to measure the upper body fat. NC is positively corelated to WC and BMI in various studies. It has been showed that NC more than 37 cm in males and NC more than 34 cm in females has more chances of developing Metabolic syndrome [4] and has more cardiovascular risk.

METHODS AND MATERIALS

The present study was a Hospital based Observational and Descriptive study conducted in Government Medical College ,Kadapa. A total of 50 patients ,out of which 28 were male and 22 were female ,who were diagnosed with Acute Myocardial Infarction was selected consecutively based on inclusion and exclusion criteria. The period of study was from 1/5/19 to 31/12/19 and the subjects were evaluated for BMI and cardiovascular risk factors.

Inclusion Criteria :

- Patient with Angina with ECG changes of Acute MI/
- Troponin positive / 2D Echocardiography evidence of RWMA

Exclusion Criteria:

- Patient with Unstable Angina.
- Patient who refused to participate in the study.
- A purposely built Questionnaire was used to obtain demographic data ,habits ,relevant family history and other comorbidities like Diabetes and Hypertension.General ,Physical Examination ,Anthropometric indices ,NC ,BMI, ECG, Troponin and 2D Echocardiography was done as per standard methods.
- The NC was measured with plastic tape with head positioned in horizontal plane and superior border of plastic tape placed just below the laryngeal prominence and applied perpendicular to the long axis of the neck. NC more than 37 cm in males and NC more than 34 cm in females was considered abnormal [5].

Stastical Analysis:

The statistical analysis was performed using SPSS 17 software. Mean for the values were calculated. Variables are compared using Chi-square test.

RESULTS

The study group consists of 50 patients with Acute Myocardial Infarction, predominantly male.The mean age of study subjects was 56.7,the mean BMI was 25.38.Out of 50 patients 22 had Diabetes and 28 patients had Systemic Hypertension. Out of 50 patients,27 patients has abnormal NC, out of which 14 were male and 13 were female. Overall the mean NC was 36.18cm. Among the males the mean NC was 37.16 cm and in females it was 34.93 cm.

Demographic and clinical characteristics of 50 patients with Acute MI:

	Normal NC	Abnormal NC	Percentage
Males	14	14	50.0
Females	9	13	59.09
Total	23	27	54

Demographic and clinical characteristics of 50 patients with Acute MI according to the presence of Normal / Increased NC:

Variables	Normal NC (n=23)	Increased NC(n=27)
Mean Age (years)	59.56	54.25
Gender (M/F)	14/9	14/13
B.M.I <18.5 18.5 – 24.99 25.0 – 29.99 > 30	2 17 4 0	0 6 8 13
Diabetes	9	13
Hypertension	12	16

Smoking	6	10
Alcoholic	6	9

Association of NC in AMI :

VARIABLES	Patients with AMI (n=50)
Mean Age	56.70
Gender	28/22 (M/F)
BMI	25.38
Neck Circumference	36.18 cm males-37.16, females-34.93
History of Diabetes	22
History of Hypertension	28
Smokers	16
Alcoholic	15

DISCUSSION

NC is easy, less cumbersome and practical method but rarely used in clinical practice. In present study, significantly higher mean NC was found in study subjects having CVD risk when compared to the subjects that do not have CVD.

Studies like that by Ravikiran M et al [6] have showed that metabolic syndrome and cardiovascular risk in Asian Indians/South Asians are increased by their relative increase in body fat mass, truncal subcutaneous fat mass, intra-abdominal fat mass, and also by ectopic fat deposition like neck region. Kumar S et al [7] had hypothesized that NC could be a predictor of obesity and overweight in rural Indian population and that higher tertile of neck circumference may be associated with higher prevalence of cardiovascular risk factors like hypertension and diabetes.

In a study to identify overweight patients by measuring neck circumference Ben-Noun L et al [8-10] in 2001, reported that Men with NC less than 37 cm and women with NC less than 34 cm may not to be considered overweight. It was found that NC more than 37 cm for men and more than 34 cm for women were the best cutoff levels for determining the subjects with higher BMI of more than 25.0 kg/m2.These Novel findings presumably reflect NC is an indicator of central obesity and other cardio-metabolic risk factors .

The study has several limitations. Sample size was small that cannot be generalized over the whole population. Age group-specific cutoff points were not determined. Urban and rural stratification was not done. NC was not studied in relation to metabolic components as well. Despite the limitations, the study has important implications that points that in detection of overweight/obesity in adults NC can be a practical and an easier alternative tool.

CONCLUSION

NC measurement as a simple and time-saving screening measure could be used to identify overweight and obese population. It is a straightforward, easy, and inexpensive tool that can be performed in any situation with a tape measure. Upper body fat distribution has long been recognized as related to increased cardiovascular disease risk and NC could be used as an index. Patients with abnormal NC should be screened for cardiovascular risk factors and followed up at regular intervals to detect abnormality at earliest for appropriate intervention.

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