"Retrospective Study of Incidence of Abdominal Obesity and Metabolic Syndrome in ASRAM Hospital"

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ABSTRACT *Background: The prevalence of obesity and metabolic syndrome is rapidly increasing in India and other South Asian countries, leading to increased mortality and morbidity due to CVD and T2DM, Hence the need to find a reliable screening method for identifying such individuals. Methods: 100 patients of abdominal obesity were selected and assessed whether they were fulfilling the Modified NCEP ATP III criteria for Metabolic Syndrome. Inclusion Criteria - Age 20 to 80yrs with Waist Circumference >90cm in Males & >80cm in Females.Exclusion Criteria - Other causes of abdominal distension. Results: Males accounted for 55% and Females 45% in the study population among whom 72% had Metabolic Syndrome. Waist Circumference is better than BMI for Metabolic Syndrome. Conclusion: Among the widely used anthropometric measures, waist circumference had the highest correlation with Metabolic Syndrome*

Introduction

The metabolic syndrome (syndrome X, insulin resistance syndrome) consists of a constellation of metabolic abnormalities that confer increased risk of cardiovascular disease (CVD) and diabetes mellitus.[1]

The prevalence of obesity and metabolic syndrome is rapidly increasing in India and other South Asian countries, leading to increased mortality and morbidity due to CVD and T2DM.

South Asians also seem to have a peculiar body phenotype known as "South Asian Phenotype", characterized by increased waist circumference, increased waist hip ratio, excessive body fat mass, increased plasma insulin levels and insulin resistance, as well as an atherogenic dyslipidemia, with low levels of HDL cholesterol and increased triglyceride levels.[2,3]

All such factors predispose South Asians not only to T2DM but also to premature CHD. Cardiovascular risk cluster also manifests at a lower level of adiposity and abdominal obesity.[2,3]

Many studies now show a link between central adiposity, notably visceral adipose tissue, and an increased risk of metabolic disturbances, morbidity, and mortality [4,5]

Aims and Objectives

The present study was undertaken to observe the incidence of Metabolic Syndrome and to show that abdominal circumference can be a used as a reliable screening tool for identifying such individuals.

Methods

100 patients of abdominal obesity from the general medicine wards of ASRAM hospital, Eluru were selected for the study.

Patients were in the age group of 20 to 80 years.

Males with waist circumference of >90cm and Females with waist circumference of >80cm were included in the study.

Laboratory investigations were obtained such as Fasting Blood Sugar (FBS), Postprandial Blood Sugar(PPBS), Fasting Lipid Profile(FLP).

Individuals were then assessed whether they met the Modified NCEP ATP III criteria for Metabolic Syndrome which is -

Three or more of the following:
- Central obesity: waist circumference >90 cm (M), >80 cm (F)
- Hypertriglyceridemia: triglyceride level ≥150 mg/dL or specific medication
- Low HDL cholesterol: <40 mg/dL and <50 mg/dL for men and women, respectively, or specific medication
- Hypertension: blood pressure ≥130 mmHg systolic or ≥85 mmHg diastolic or specific medication
- Fasting plasma glucose level ≥100 mg/dL or specific medication or previously diagnosed type 2 diabetes

Results

There were a total of 100 subjects among whom 55 were males and 45 were females.
The following are the mean values for the various parameters -
The Age in males and females are 51years and 54years respectively.
The Waist Circumference in males and females are 102.1cm and 88.9cm respectively
The BMI in males was 28.7 kg/m^2 and that of females was 26.08kg/m^2
The HDL in males was 38.2 mg/dl and that of females was 41.9 mg/dl
The Triglycerides in males was 186.5 mg/dl and that of females was 159.4 mg/dl
The Systolic BP in males was 143.6 mmHg and that of females was 138.3 mmHg
The Diastolic BP in males was 90.1 mmHg and that of females was 85.4 mmHg
The FBS in males was 145.3 mg/dl and that of females 136.7 mg/dl

Discussion

The prevalence of Metabolic Syndrome increases with Age [6]. 78% of individuals above the age of 60 years meet the criteria of Metabolic Syndrome in our study among whom, women are more commonly affected than men. However this sex distribution doesn't hold true in younger age groups where the men are more commonly affected than the women.

Age and Sex Distribution
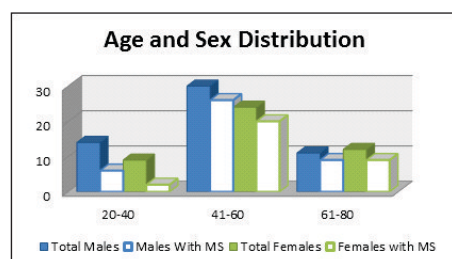
Central obesity, notably the relatively small visceral adipose tissue compartment, is considered a more important marker of the physiological disturbances that accompany excess weight gain than total body adipose tissue. Visceral obesity causes a decrease in insulin-mediated glucose uptake, and is clearly related to insulin resistance. The mechanisms for this probably involve adipocytokines, which are made by adipose tissue, that modulate crosstalk between metabolism and vascular function [7].

In insulin resistance, adipose, muscle and liver cells do not respond appropriately to insulin, and circulating glucose levels remain high, which leads to pathology. Men had higher blood glucose than women and 90% of the study group had elevated FBS.

In this study only 26% of patients were identified as having Metabolic Syndrome if BMI (body fat) was considered as criteria whereas Waist Circumference measuring Abdominal Obesity proved to be significantly better criteria.
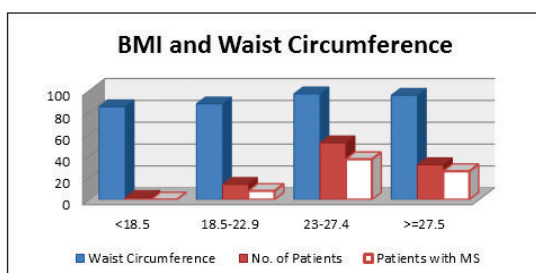
Accumulated visceral adipose tissue produce and secrete a number of adipocytokines, such as leptin, tumor necrosis factor-α (TNF-α), interleukin-6 (IL-6), angiotensinogen, and non-esterified fatty acids (NEFA), which induce development of hypertension[8]. In this study over 70% of the patients had hypertension. Hypertension in metabolic syndrome causes left ventricular hypertrophy, progressive peripheral arterial disease, and renal dysfunction[9].

Dyslipidemia ie elevated Triglycerides and low HDL levels, both of these lipoprotein changes may contribute to atherogenic risk in patients with the metabolic syndrome. Trilyceride levels are significantly more elevated in males than in females in the present study.

Conclusion

Waist circumference is an important component of the most recent and frequently applied diagnostic criteria for the metabolic syndrome.

This study shows that Waist Circumference can be used as an effective screening tool for Metabolic Syndrome.

Waist circumference is a better tool than BMI in identifying Metabolic Syndrome

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