The Study of Metabolic Syndrome in Obese Persons

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Abstract:
Background: *The metabolic syndrome is a constellation of risk factors of metabolic origin that are accompanied by increased risk for cardiovascular disease and type 2 diabetes. The two major underlying risk factors for the metabolic syndrome are obesity and insulin resistance; exacerbating factors are physical inactivity, advancing age, and endocrine and genetic factors. The condition is progressive, beginning with borderline risk factors that exactly progress to categorical risk factors.*
Indians have a characteristic obesity phenotype, they have relatively low BMI with abdominal obesity. Fat distributed in the abdominal region is more metabolically significant than other fat depots. Various studies shows that increased abdominal(visceral) fat accumulation is an independent risk factor for CAD, hypertension, stroke, and type 2 diabetes there b leading to metabolic syndrome. However there is paucity of data and studies regarding the relationship between abdominal obesity and metabolic syndrome in our part of country.
Aim : *The aim of this study was to study the relationship between abdominal obesity and metabolic syndrome.*
Materials And Method: *A total of 100 patients with abdominal obesity (waist circumference > 102 cm in males.> 88.0 cm in females) were enrolled for this study between July-2014 to June-2016 are included in the study.*
Results: *Of the total 100 subjects, 57 males and 43 females, 71% had MS. 68% had systolic BP>135mmhg, 52% had diastolic BP> 85 mmhg, 68% were on anti hypertensive drugs, 20% were on insulin treatment, 20% were on oral hypoglycemic. 91% had fbs more than 100mg/dl. The mean level of total cholesterol , LDL cholesterol, triglyceride is increased whereas the mean level of anti-atherogenic HDL cholesterol is low in subjects with MS*
Prevalence of MS significantly high in older age groups. Age is positively associated, alcohol use is negatively associated, HDL(decreasing) and triglycerides are positively associated with the incidence of metabolic syndrome, patients of diabetic treatment are more likely to develop metabolic syndrome, Waist circumference is the better predictor of MS when compared to BMI independently.

I.   Introduction
The Metabolic syndrome has become one of the major public health challenges worldwide[1]. There has been growing interest in this constellation of closely related cardiovascular risk factors.

A diagnostic of metabolic syndrome can be made if a person has there of the following five features[2].
- Increased waist circumference (102 cm in men and 88 cm in women).
- Elevated triglycerides (150 mg/dl).
- Reduced HDL cholesterol (40 mg/dl in men and 50 mg/dl in women).
- Elevated blood pressure (130/85 mm hg or treatment for hypertension).
- Elevated fasting glucose (100 mg/dl).

When the waist circumference is 102 cm or more in men or 88 cm or more in women, the term abdominal obesity can be applied. Various definitions and diagnostic criteria are available but Asian Indians have an increased predisposition not only to diabetes[4] but also to premature coronary artery disease[3]. This has been attributed to the so called 'Asian Indian Phenotype[4,5] characterized by less of generalized obesity as measured by body mass index (BMI) but greater central body obesity as shown by greater waist circumference (WC) and waist-to-hip ratios (WHR)[4,5]. Thus many Asian Indians fit into the category of metabolically obese, normal weight individuals.

II.   Materials And Methods
Prospective study of 100 cases (out patients and in patients) with increased abdominal waist circumference were enrolled in the study. Every patient was evaluated by detailed history, clinical examination, weight, height, abdominal circumference and these patients were undergone investigations like lipid profile, fbs,

ppbs, ECG etc. Patients with waist circumference >102cm in men and >88cm in women,Serum triglycerides >150mg/dl ,HDL cholesterol <40mg/dl in men and <35 in women, Blood pressure >130/85mmHg,Serum glucose >100mg/dl were all included in the study. Patients with other causes of abdominal distention /obesity such as conditions like hypothyroidism, paralytic ileus, ascites were excluded from the study.

III. Results

1. Total 100 subjects, 57 males and 43 females.
2. The mean age in males and females are 50.91 ± 12.96 yrs and 52.12 ± 14.99 yrs respectively
3. The mean waist circumference in males and females are 107.18 ± 10.54 cm and 98.99 ± 6.84 cm respectively
4. The mean BMI in male group was 27.91 ± 3.97 kg/m^2 and that of female group was 25.97 ± 8.14kg/m^2.
5. The mean systolic BP in male group was 139.54 ± 23.62 and that of female group was 138.28 ± 21.59 mm Hg.
6. The mean diastolic BP in male group was 86.91 ± 13.15 and that of female group was 85.12 ± 12.88 mm Hg
a) 68 % had systolic BP > 135 mmHg.
b) 52% had diastolic BP > 85 mug.
c) 68% were on anti hypertensive drugs.

7. The mean FBS in male group was 152.49 ± 46.54 mg/dl and that of female group was 150.51 ± 61.84 mg/dl and that of female group was 150.51 ± 61.84 mg/dl irrespective of the treatment status.
8. The mean PPBS in male group was 205.96 ± 74.66 mg/dl and that of female group was 188.21 ± 73.40 mg/dl irrespective of the treatment status
a) 20% were on insulin treatment
b) 20% were on oral hypoglycemics
c) 91% had FBS more than 100 mg/dl.
9. The mean total cholesterol in male group was 206.96 ± 47.25 mg/dl and that of female group was 224.60 ± 62.37 mg/dl]

10. The mean LDL in male group was 124.79 ± 40.80 mg/dl and that of female group was 137.53 ± 55.99 mg/dl
11. The mean HDL in male group was 38.11 ± 5.30 mg/dl and that of female group was 42.30 ± 23.17 mg/dl
12. The mean total cholesterol in male group was 206.96 ± 47.25 mg/dl and that of female group was 224.60 ± 62.37 mg/dl.

a) The mean level of total cholesterol, LDL cholesterol, triglyceride is increased whereas the mean level of anti-atherogenic HDL cholesterol is low in subjects with MS
13. Prevalence of MS significantly less in lower age groups (particularly in 20-30 years)
14. Age is positively associated, alcohol use is negatively associated, HDL(decreasing) and TGL are positively associated with the incidence of metabolic syndrome.
15. Waist circumference is the better predictor of MS when compared to BMI independently.

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