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ORIGINAL ARTICLE

Lipid profile in obese and non-obese subjects

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ABSTRACT:
Background: Obesity is the term used to describe the extra body fat that arises from consuming more calories than is expended. Obese adults have an increased chance of getting metabolic syndrome. The present study was conducted to assess lipid profile in study subjects. **Materials & Methods:** 66 subjects of both genders were selected. 2 groups were formed. Subjects with normal BMI made up group I, whereas those with elevated BMI made up group II. The BMI was calculated after height, weight, and blood pressure readings were obtained. The lipid profile, comprising TGLs, total cholesterol, HDL cholesterol, and LDL cholesterol, was measured. **Results:** The mean age in group I was 31.4 years and in group II was 34.4 years. BMI was 33.1 Kg/m^2 in group I and 23.5 Kg/m^2 in group II. The difference was significant ($P< 0.05$). The mean total cholesterol in group I was 190.2 mg/dl and in group II was 170.4 mg/dl, triglyceride was 161.6 mg/dl in group I and 131.7 mg/dl in group II, HDL cholesterol was 46.2 mg/dl in group I and 45.1 mg/dl in group II and LDL cholesterol was 136.5 mg/dl in group I and 116.3 mg/dl in group II. The difference was significant ($P< 0.05$). **Conclusion:** Levels of total and low-density lipoprotein cholesterol differed significantly between patients who were obese and those who were not.
Keywords: cholesterol, lipid profile, Obesity

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INTRODUCTION

Obesity is the term used to describe the extra body fat that arises from consuming more calories than is expended. Obese adults have an increased chance of getting metabolic syndrome. Metabolic problems associated with obesity include decreased HDL cholesterol, increased LDL, VLDL, and triglyceride levels, and high free fatty acid levels brought on by insulin resistance.[1] Obesity-related increased liver presentation of free fatty acids is most likely the origin of the overproduction of VLDL, and this is likely the mechanism by which increased LDL is achieved via the sequence VLDL→ intermediate density lipoprotein (IDL)→ LDL. Furthermore, it has been shown that there is a clear relationship between body fat percentage, insulin levels, and VLDL generation.[2]

Diabetes and cardiovascular illnesses are made more likely by obesity, particularly when the excess fat accumulates in the central and intra-abdominal depots.[3] Atherogenic dyslipidemia, which is characterized by an increase in plasma triglycerides, large very low-density lipoprotein (VLDL) particles, small dense low-density lipoprotein (LDL) particles, and low concentrations of high-density lipoprotein (HDL) cholesterol, is at least partially responsible for the increased cardiometabolic risk associated with obesity.[4]Furthermore, acknowledged are modifications in the way that specific lipids work as a result of peroxidation, an unbalanced fatty acid composition, or their altered flow from diabetes and peripheral atherosclerosis. According to research, there is a correlation between male infertility and lower rates of conception and pregnancy loss among couples using artificial reproductive treatment. Male obesity in the reproductive age range has also been associated to an increase in male infertility.[5]The present study was conducted to assess lipid profile in study subjects.

MATERIALS & METHODS

The present study comprised 66 subjects of both genders. All were selected after obtaining their written consent.

Data such as name, age, gender, etc. was recorded. 2 groups were formed. Subjects with normal BMI made up group I, whereas those with elevated BMI made up group II. Aside from the customary physical assessment, the BMI was calculated after height, weight, and blood pressure readings were obtained. The subjects were instructed to fast before having their blood extracted into gel vacuum tubes with a yellow cap. The samples were centrifuged thirty minutes after they were collected. The lipid profile, comprising TGLs, total cholesterol, HDL cholesterol, and LDL cholesterol, was measured. Results were compared and analysed. P value less than 0.05 was considered significant.

RESULTS

Table I Baseline characteristics

Parameters	Group I	Group II	P value
Age (years)	31.4	34.4	0.82
BMI (Kg/m^2)	33.1	23.5	0.04

Table I shows that the mean age in group I was 31.4 years and in group II was 34.4 years. BMI was 33.1 Kg/m^2 in group I and 23.5 Kg/m^2 in group II. The difference was significant ($P< 0.05$).

Table II Comparison of lipid profile

Parameters	Group I	Group II	P value
Total cholesterol (TC)	190.2	170.4	0.05
Triglyceride (TG)	161.6	131.7	0.04
HDL cholesterol (HDL)	46.2	45.1	0.91
LDL cholesterol (LDL)	136.5	116.3	0.02

Table II shows that the mean total cholesterol in group I was 190.2 mg/dl and in group II was 170.4 mg/dl, triglyceride was 161.6 mg/dl in group I and 131.7 mg/dl in group II, HDL cholesterol was 46.2 mg/dl in group I and 45.1 mg/dl in group II and LDL cholesterol was 136.5 mg/dl in group I and 116.3 mg/dl in group II. The difference was significant ($P< 0.05$).

DISCUSSION

The World Health Organization states that obesity is one of the major public health challenges that is not getting enough attention right now. Globally, the prevalence of obesity nearly doubled between 1980 and 2008. Overweight and obesity are linked to at least 2.8 million deaths globally annually. In India, the rate of obesity has exploded, accounting for 5% of the population who are morbidly obese.[6] 15.2% of Indian women and 9.3% of Indian men reported not being physically active, per the World Health Survey. Global obesity and diabetes rates are rising, which is concerning for both health and the economy. Sedentary lifestyles and unhealthy eating habits are the two main causes of the change in social and economic conditions.[7]The prevalence of increased BMI increases with a country's income level up to high middle-income levels. Studies have revealed that an increase in male infertility can be attributed to obesity in males who are within the reproductive age range. In turn, this could affect the chances of conception and miscarriage in couples using artificial reproductive procedures.[8]The present study was conducted to assess lipid profile in study subjects.

We found that the mean age in group I was 31.4 years and in group II was 34.4 years. BMI was 33.1 Kg/m^2 in group I and 23.5 Kg/m^2 in group II. The goal of Kanwar et al.'s[9] investigation was to find any connections between obesity and lipid profile. Fifty cases and fifty control samples were gathered in total. The serum was separated and the serum lipid profile levels were estimated using the fully automated analyzer, ERBA EM 360. All blood lipid profile measurements, with the exception of HDL-cholesterol, show significantly higher levels in cases compared to controls. Additionally, there is a strong positive correlation between the case and BMI. Obesity raises blood lipid profiles in all categories except HDL cholesterol. Therefore, it is recommended to investigate obesity and vice versa in patients presenting with this metabolic abnormality. They found that all lipid profile parameters- S. TC, S. TG, S. VLDL, and S. LDLshowed substantial increases in obese individuals, with the exception of S. HDL, whose level dramatically decreased with BMI.

We found that the mean total cholesterol in group I was 190.2 mg/dl and in group II was 170.4 mg/dl, triglyceride was 161.6 mg/dl in group I and 131.7 mg/dl in group II, HDL cholesterol was 46.2 mg/dl in group I and 45.1 mg/dl in group II and LDL cholesterol was 136.5 mg/dl in group I and 116.3 mg/dl in group II. Babu et al[10] studied the lipid profiles of men who were obese and those who weren't.12 There were 80 men in the study, ranging in age from 20 to 47. 40 of these men were categorized as belonging to group I on the basis of their normal body mass index (BMI) of 18 to 25, and 40 more men were categorized as belonging to group II on the basis of their elevated BMI of 30 and higher. They were found to have several lipid profile measures, such as total cholesterol, HDL cholesterol, LDL cholesterol, and triglycerides (TGLs). A statistically significant difference in the LDL cholesterol levels was suggested by a p-value of 0.040, whereas a statistically highly significant difference in the total cholesterol levels.

Bhatti et al[11] in their study fifty adult subjects who were obese (body mass index > 25 Kg/m) and non-smokers were selected along with thirty non obese non- smokers as controls. Lipid profile was studied including total lipids, total cholesterol, HDL, LDL, VLDL and chylomicrons. Various ratios like LDL/HDL, VLDL/HDL, TG/HDL and TC/HDL ratios were calculated to find the risk of atherosclerosis and coronary heart disease.All the parameters except serum HDL level showed significant increase in obese persons while HDL level was significantly decreased.

CONCLUSION

The authors found that levels of total and low-density lipoprotein cholesterol differed significantly between patients who were obese and those who were not.

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