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Original Research

Measurement of lipid profile in obese and non-obese subjects

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ABSTRACT:

Background: The excess body fat that results from consuming more energy than being expended is referred to as obesity. The present study was conducted to assess lipid profile in obese and non-obese subjects. **Materials & Methods:**60 subjects in age ranged from 20- to 60 years of both genders were selected. Two groups were formed. Subjects with normal BMI made up Group I, whereas those with elevated BMI made up Group II. Measurements were made of the lipid profile, including TGLs, total cholesterol, HDL cholesterol, and LDL cholesterol. **Results:** The mean age in group I was 33.4 years and in group II was 35.4 years. BMI was 34.1 Kg/m^2 in group I and 22.5 Kg/m^2 in group II. The difference was significant ($P< 0.05$). The mean total cholesterol in group I was 188.2 mg/dl and in group II was 167.4 mg/dl, triglyceride was 159.6 mg/dl in group I and 128.7 mg/dl in group II, HDL cholesterol was 45.2 mg/dl in group I and 44.1 mg/dl in group II and LDL cholesterol was 134.5 mg/dl in group I and 114.3 mg/dl in group II. The difference was significant ($P< 0.05$). **Conclusion:** The authors found that between obese and non-obese patients, there was a substantial difference in LDL and total cholesterol levels.

Keywords: lipid profile, Obese, Triglyceride

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INTRODUCTION

The excess body fat that results from consuming more energy than being expended is referred to as obesity. Adults who are obese are at a higher risk of developing metabolic syndrome.[1] Obesity-related metabolic abnormalities include elevated levels of free fatty acids due to insulin resistance, elevated LDL, VLDL, and triglyceride levels, and a reduction in HDL cholesterol.[2] The overproduction of VLDL is most likely caused by the liver's presentation of increased free fatty acids as a result of obesity, and this is likely the key to increased LDL via the sequence VLDL→ intermediate density lipoprotein (IDL)→ LDL. Moreover, a direct correlation between VLDL production and insulin levels and body fat percentage has been demonstrated.[3]

Obesity increases the risk of cardiovascular diseases and diabetes especially when the extra fat is accumulated to central and intra-abdominal depots. The increased cardiometabolic risk in obesity is at least partly mediated through atherogenic dyslipidemia characterized by an increase in plasma triglycerides, large very low- density lipoprotein (VLDL) particles, small dense low- density lipoprotein (LDL) particles as well as low concentrations of high- density lipoprotein (HDL) cholesterol.[4] It is also recognized that changes in the function of individual lipids due to peroxidation, imbalanced fatty acid composition or their altered flux from peripheral atherosclerosis and diabetes.[5]Research has indicated that male obesity in the reproductive age range has contributed to a rise in male infertility, which may be linked to lower rates of pregnancy and higher rates of pregnancy loss among couples undergoing artificial reproductive treatment.[6]The present study was conducted to assess lipid profile in obese and non- obese subjects.

MATERIALS & METHODS

The present study comprised 60 subjects in age ranged 20- to 60 years of both genders. All were recruited after obtaining their written consent.

Data such as name, age, gender, etc. was recorded. In addition to the standard physical examination,

measurements of height, weight, and blood pressure were taken, and the BMI was then computed. Two groups were formed. Subjects with normal BMI made up Group I, whereas those with elevated BMI made up Group II. The individuals were asked to fast, and their blood was drawn into yellow-topped gel vacuum tubes. After being collected for thirty minutes, the samples were centrifuged. Measurements were made of the lipid profile, including TGLs, total cholesterol, HDL cholesterol, and LDL cholesterol. Results were compared and analysed using chi- square test. P value less than 0.05 was considered significant.

RESULTS

Table I Comparison of parameters

Parameters	Group I	Group II	P value
Age (years)	33.4	35.4	0.71
BMI (Kg/m^2)	34.1	22.5	0.01

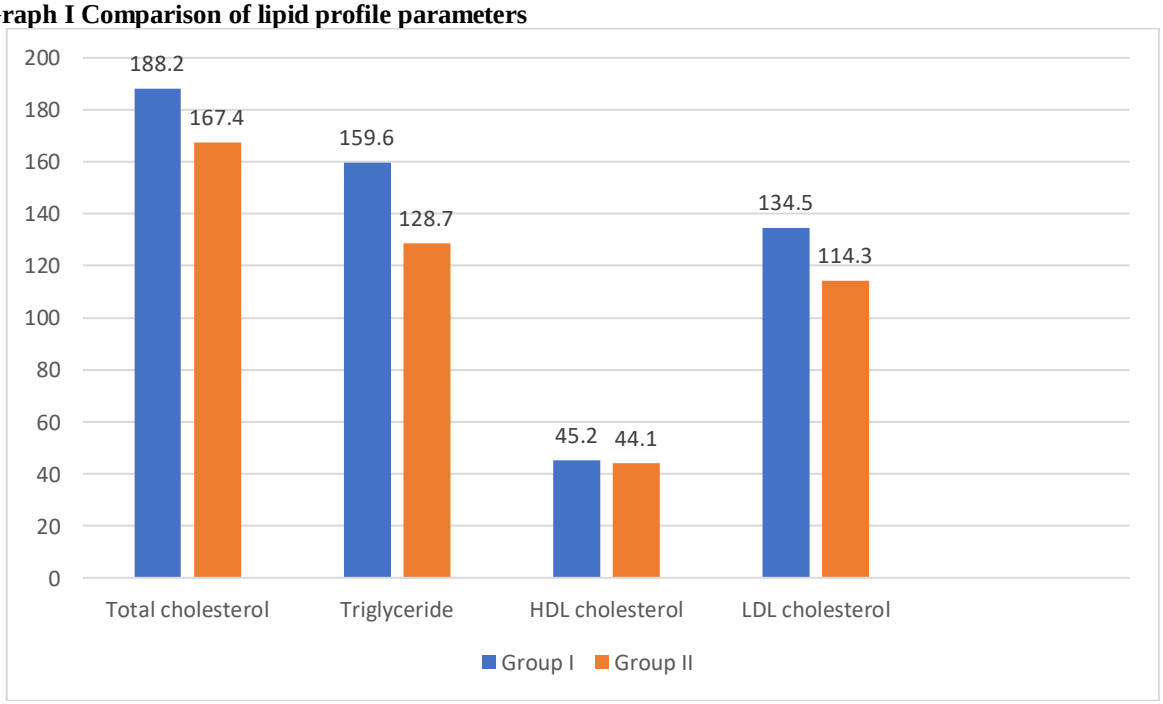
Table I shows that the mean age in group I was 33.4 years and in group II was 35.4 years. BMI was 34.1 Kg/m^2 in group I and 22.5 Kg/m^2 in group II. The difference was significant (P< 0.05).

Table II Comparison of lipid profile parameters

Parameters	Group I	Group II	P value
Total cholesterol	188.2	167.4	0.05
Triglyceride	159.6	128.7	0.92
HDL cholesterol	45.2	44.1	0.85
LDL cholesterol	134.5	114.3	0.01

Table II, graph I shows that the mean total cholesterol in group I was 188.2 mg/dl and in group II was 167.4 mg/dl, triglyceride was 159.6 mg/dl in group I and 128.7 mg/dl in group II, HDL cholesterol was 45.2 mg/dl in group I and 44.1 mg/dl in group II and LDL cholesterol was 134.5 mg/dl in group I and 114.3 mg/dl in group II. The difference was significant (P< 0.05).

Graph I Comparison of lipid profile parameters



DISCUSSION

According to the World Health Organization, obesity is one of the global public health issues that is currently receiving the least attention. Between 1980 and 2008, the prevalence of obesity roughly doubled globally. Being overweight or obese causes at least 2.8 million deaths worldwide each year.[7] In India, the prevalence of obesity has risen to epidemic proportions, with 5% of the population suffering from morbid obesity. According to the World Health Survey, 15.2% of Indian women and 9.3% of Indian males reported being physically inactive.Obesity and diabetes are growing worldwide, and this is a health and economic concern.[8] The two main factors contributing to the shift in social and economic situations are a sedentary lifestyle and poor eating habits. Up to high middle-income levels, the prevalence of elevated BMI rises with a country's income level.[9] Research has indicated that obesity among men within the reproductive age range has

contributed to a rise in male infertility. This, in turn, may have an impact on the likelihood of conception and pregnancy loss in couples undergoing artificial reproductive treatments.[10]The present study was conducted to assess lipid profiles in obese and non-obese subjects.

We found that the mean age in group I was 33.4 years and in group II was 35.4 years. BMI was 34.1 Kg/m^2 in group I and 22.5 Kg/m^2 in group II. Kanwar et al[11] attempted to determine whether lipid profile and obesity are related. A total of 50 cases and 50 control samples were collected. The completely Automated Analyzer ERBA EM 360 was used to separate the serum and estimate the levels of the serum lipid profile. In comparison to controls, cases exhibit significantly higher values for all blood lipid profile parameters, except HDL-cholesterol, and they also strongly positively correlate with BMI. All serum lipid profiles, with the exception of HDL cholesterol, are elevated in obesity. It is therefore advised to look into obesity in patients who present with this metabolic aberration and vice versa. In a study on BMI and lipid profiles in obese and non-obese individuals, Bhatti MS, Akbri MZ, and Shakoor M12 used a BMI threshold of > 25 kg/m2 to classify as obese. They discovered that, except S. HDL, whose level significantly decreased with BMI, all lipid profile parameters—S. TC, S. TG, S. VLDL, and S. LDL—showed significant increases in obese individuals.

We observed that the mean total cholesterol in group I was 188.2 mg/dl and in group II was 167.4 mg/dl, triglyceride was 159.6 mg/dl in group I and 128.7 mg/dl in group II, HDL cholesterol was 45.2 mg/dl in group I and 44.1 mg/dl in group II and LDL cholesterol was 134.5 mg/dl in group I and 114.3 mg/dl in group II.Obese and nonobese men's lipid profiles were compared by Babu et al.[12] The study comprised 80 males between the ages of 20 and 47. Of these, 40 men were classified into group I based on their normal body mass index (BMI) of 18 to 25, and another 40 men were classified into group II based on their increased BMI of 30 and above. A number of lipid profile parameters were determined for them, including total cholesterol, HDL cholesterol, LDL cholesterol, and triglycerides (TGLs). A p-value of 0.040 indicated a statistically significant difference in the total cholesterol levels, while a p-value of 0.040 indicated a statistically highly significant difference in the LDL cholesterol levels.

CONCLUSION

The authors found that between obese and non-obese patients, there was a substantial difference in LDL and total cholesterol levels.

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