

Original Research

Assessment of lipid profile in obese and non- obese subjects

Dr. Nitin Agarwal

Assistant Professor, Department of Biochemistry, Gouri Devi Institute of Medical Sciences & Hospital, Durgapur, West Bengal, India

ABSTRACT:

Background: Obesity has been associated with an increased risk for metabolic syndrome in adults. The present study was conducted to assess lipid profile in obese and non- obese subjects. **Materials & Methods:** 84 subjects in age ranged 20- 60 years of both genders were enrolled. 2 group were made. Group I comprised of subjects with normal BMI and group II had subjects with increased BMI. Lipid profile such as TGLs, total cholesterol, HDL cholesterol, and LDL cholesterol were measured. **Results:** Group I had 44 males and 40 females and group II had 38 males and 46 females. Mean age in group I was 34.2 years and in group II was 38.4 years. BMI was 32.1 Kg/m² in group I and 21.5 Kg/m² in group II. The mean total cholesterol in group I was 184.2 mg/dl and in group II was 163.4 mg/dl, triglyceride was 155.6 mg/dl in group I and 124.7 mg/dl in group II, HDL cholesterol was 43.2 mg/dl in group I and 42.1 mg/dl in group II and LDL cholesterol was 130.5 mg/dl in group I and 110.3 mg/dl in group II. The difference was significant (P< 0.05). **Conclusion:** There was significant difference in total cholesterol and LDL level in obese and non- obese subjects.

Key words: Cholesterol, lipid profile, Obese

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Corresponding author: Dr. Nitin Agarwal, Assistant Professor, Department of Biochemistry, Gouri Devi Institute of Medical Sciences & Hospital, Durgapur, West Bengal, India

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INTRODUCTION

The World Health Organization has described obesity as one of today's most neglected public health problems, affecting every region of the globe. The worldwide prevalence of obesity has nearly doubled between 1980 and 2008.¹ Worldwide, at least 2.8 million people die each year as a result of being overweight/obese. Obesity has reached epidemic proportion in India with morbid obesity affecting 5% of the country's population. In the World Health Survey, the prevalence of physical inactivity in India was 9.3% in men and 15.2% in women.²

Obesity refers to excess of body-fat which is due to greater energy intake compared to the energy expenditure. Obesity has been associated with an increased risk for metabolic syndrome in adults.³ The metabolic defects that ensue in obesity include increased levels of free fatty acids resulting from insulin resistance, increased LDL-cholesterol, VLDL and triglycerides and decrease in HDL-cholesterol. It is most likely that presentation of increased free fatty acids to liver as a function of obesity is primarily responsible for over production of VLDL and this is

probably the key to increased LDL via the sequence: VLDL→ intermediate density lipoprotein (IDL)→ LDL.⁴ VLDL production has also been shown to be directly related to insulin levels and per cent body fat. Studies have shown that obesity in males in the reproductive age group has led to an increase in male infertility, which may be associated with decreased pregnancy rates and increased pregnancy loss in couples who undergo artificial reproductive treatment.⁵ The present study was conducted to assess lipid profile in obese and non- obese subjects.

MATERIALS & METHODS

The present study comprised of 84 subjects in age ranged 20- 60 years of both genders. All were recruited after taking their written consent.

Data such as name, age, gender etc. was recorded. The general physical examination was carried out along with measurement of blood pressure, height, and weight followed by calculation of BMI. 2 group were made. Group I comprised of subjects with normal BMI and group II had subjects with increased BMI. Fasting blood samples were collected from the

subjects in yellow-topped gel vacuum tubes. The samples were centrifuged after 30 minutes of collection. Lipid profile such as TGLs, total cholesterol, HDL cholesterol, and LDL cholesterol

were measured. 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
M:F	44:40	38:46	0.91
Mean age	34.2	38.4	0.81
BMI (Kg/m ²)	32.1	21.5	0.01

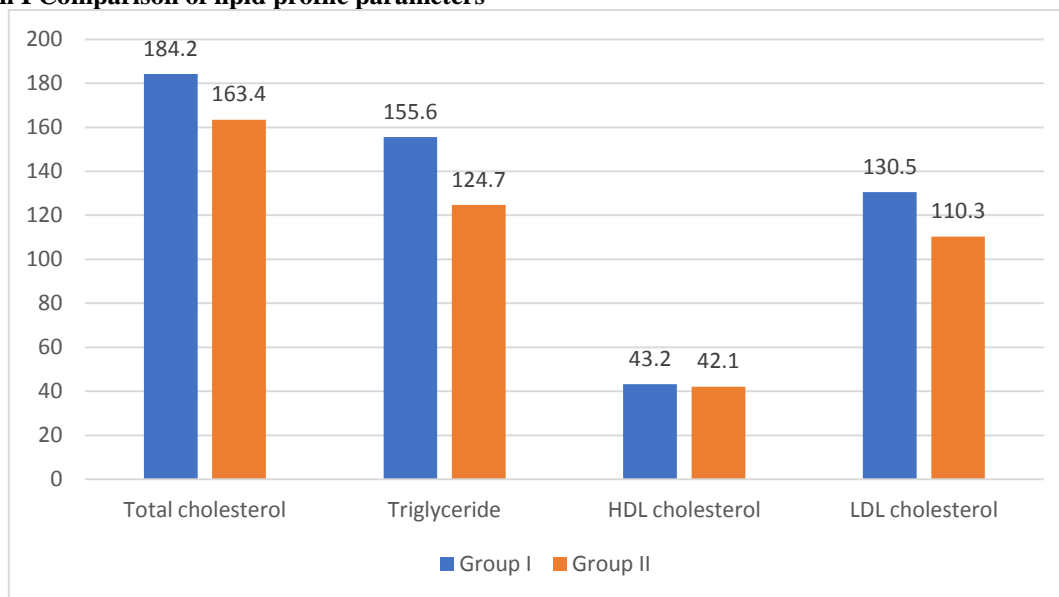
Table I shows that group I had 44 males and 40 females and group II had 38 males and 46 females. Mean age in group I was 34.2 years and in group II was 38.4 years. BMI was 32.1 Kg/m² in group I and 21.5 Kg/m² in group II. The difference was significant (P< 0.05).

Table II Comparison of lipid profile parameters

Parameters	Group I	Group II	P value
Total cholesterol	184.2	163.4	0.05
Triglyceride	155.6	124.7	0.91
HDL cholesterol	43.2	42.1	0.84
LDL cholesterol	130.5	110.3	0.01

Table II, graph I shows that mean total cholesterol in group I was 184.2 mg/dl and in group II was 163.4 mg/dl, triglyceride was 155.6 mg/dl in group I and 124.7 mg/dl in group II, HDL cholesterol was 43.2 mg/dl in group I and 42.1 mg/dl in group II and LDL cholesterol was 130.5 mg/dl in group I and 110.3 mg/dl in group II. The difference was significant (P< 0.05).

Graph I Comparison of lipid profile parameters



DISCUSSION

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.⁶ 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.⁷ The global emergence of obesity and diabetes is as much an economic issue as it is a health issue. Physical inactivity and unhealthy diet are major causes for the change in social and economic conditions.⁸ The prevalence of raised BMI increases with income level of countries up to upper middle income levels. Studies have shown that obesity in males in the reproductive age group has led to an increase in male infertility, which may be associated

with decreased pregnancy rates and increased pregnancy loss in couples who undergo artificial reproductive treatment.⁹ The present study was conducted to assess lipid profile in obese and non-obese subjects.

In present study, group I had 44 males and 40 females and group II had 38 males and 46 females. Mean age in group I was 34.2 years and in group II was 38.4 years. BMI was 32.1 Kg/m² in group I and 21.5 Kg/m² in group II. Babu et al¹⁰ compared the lipid profile levels of obese and nonobese men. 80 men in the age group of 20 to 47 years were included in the study, out of which 40 men with normal body mass index (BMI) of 18 to 25 belonged to group I and 40 men with increased BMI of 30 and above belonged to group II. Lipid profile parameters, such as triglycerides (TGLs), total cholesterol, high-density lipoprotein (HDL) cholesterol, and lowdensity lipoprotein (LDL) cholesterol were estimated in them. Statistically significant difference was found in the total cholesterol levels with a p-value of 0.040 while the difference in LDL cholesterol was statistically highly significant with a p-value of 0.040.

We found that mean total cholesterol in group I was 184.2 mg/dl and in group II was 163.4 mg/dl, triglyceride was 155.6 mg/dl in group I and 124.7 mg/dl in group II, HDL cholesterol was 43.2 mg/dl in group I and 42.1 mg/dl in group II and LDL cholesterol was 130.5 mg/dl in group I and 110.3 mg/dl in group II. Kanwar et al¹¹ tried to find out association of lipid profile with obesity. 50 case samples and 50 control samples were taken. Serum was separated and serum lipid profile levels were estimated by fully Automated Analyzer ERBA EM 360. Cases have significantly higher values for serum lipid profile levels except HDL-Cholesterol as compared to controls and have significant positive correlation with BMI. Obesity is associated with increased serum lipid profile levels except HDL-Cholesterol. Therefore, patients presenting with this biochemical abnormality are recommended to be investigated for obesity and vice versa. Bhatti MS, Akbri MZ, Shakoor M¹² conducted a study on BMI and Lipid Profile among obese and non- obese taking BMI > 25 kg/m² as cut off for obese. They found out that all lipid profile parameters S.TC, S.TG, S. VLDL and S. LDL showed significant increase in obese

except S.HDL whose level showed significant decrease with BMI.

CONCLUSION

Authors found that there was significant difference in total cholesterol and LDL level in obese and non-obese subjects.

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