Lipid Profile in Obese Libyans

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Abstract: Background: obesity is an increasingly prevalent metabolic disorder affecting developed and developing world as well. This study was aimed to examine the relationship between obesity and lipid profiles and to compare them with those with normal body weight. **Methods:** 52 adult Libyans (42 obese and 10 control) were recruited with age ranging from 30-50 years. Body mass index (BMI) was calculated using the formula: Weight (kg)/Height (m)². Blood samples were withdrawn for analysis of total Cholesterol, Triglycerides(TG), High-density lipoprotein(HDL), Low-density lipoprotein(LDL), FBS, HbA1c, Urea, Creatinine, TSH, and liver enzymes. Lipid profile values in obese subjects(BMI > 30) were compared with those with normal body weight(BMI < 25). **Results:** The obese group had higher total cholesterol Tc, triglycerides TG, and low density lipoproteins LDL with the significant differences ($P < 0.05$) when compared to normal body weight group, where's high density lipoproteins HDL-c was significantly lower in obese subjects. **Conclusion:** Our study showed a significant association between obesity and dyslipidemia. With several complications associated obesity, in particular the lipid abnormalities which are a leading cause of morbidity, and mortality, it is of importance, that the prevalence of obesity should be reduced.
[Ali A. Fadella and Ibrahim A. Boufaris. **Lipid Profile in Obese Libyans.** *J Am Sci* 2014;10(5):179-181]. (ISSN: 1545-1003). http://www.jofamericanscience.org. 23

Keywords: Obesity, lipid profile, body mass index (BMI).

1. Introduction

Death from non-communicable chronic diseases is higher than those for all communicable diseases.(1.2) Cardiovascular diseases remain the leading cause of premature mortality, morbidity, and high healthcare costs.(3) The majority of cardiovascular disease is caused by risk factors that can be controlled, treated or modified such as high blood pressure, cholesterol, overweight/obesity, tobacco use, lack of physical activity, and diabetes.(4) According to the World Health Organization, obesity is one of the 10 most preventable health risks.

During the past three decades, there has been a considerable increase in prevalence of obesity in both developed and developing countries.(5-7) About 64% of Libyan adults are either overweight or obese, obesity progressively increasing with age, and two times more common among Libyan women than men.(8)

Obesity has been thought to simply be related to an imbalance between energy intake and expenditure. However, research has suggested that genetic, physiological, and behavioral factors also play a significant role in the etiology of obesity.(9)

Obesity is strongly associated with disorders such as hypertension, coronary heart disease, hyperlipidemias, type 2 diabetes, liver disease, gallbladder disease, osteoarthritis, obstructive sleep apnea, metabolic syndrome, hyperuricemia, and certain types of cancer. (10-17). The consequences of these co-morbidities and conditions obviously increase the likelihood of high rates of disability in this group of people. Obese individuals have an increased overall morbidity and mortality rates compared to the normal weight population. (18)

Until recently the relation between obesity and coronary heart disease was viewed as indirect, through hypertension, dyslipidemia, and impaired glucose tolerance. However, long-term longitudinal studies indicate that obesity as such not only relates to but independently predicts coronary atherosclerosis (19.20).

Aim of study

To establish the correlation between lipid profile and obesity in adult Libyans and to compare them with values obtained from normal body weight group.

2. Subjects and Methods

From outpatients clinic (Al Baida), 52 (42 obese and 10 control) subjects were recruited with age ranging from 30-50 years. Subjects with history of diabetes, hypertension, cardiovascular, renal, liver, or thyroid disease were excluded.

Detailed history and complete clinical examination were carried out. Subjects were asked to remain in an overnight fasting state (12-14hours). Height was measured in centimeter, weight in kilogram, and body mass index (BMI) was calculated using the formula: Weight (kg)/Height (m)². Blood samples were withdrawn for analysis of Total Cholesterol (Tc), Triglycerides (TG), High-density lipoprotein (HDL), Low-density lipoprotein (LDL), FBS, HbA1c, Urea, Creatinin, TSH, and liver enzymes.

Those with BMI < 25 were considered normal, and BMI > 30 were considered obese, according to World Health Organization (global database on body mass index BMI).

Data were presented as means ±SD. Lipid profile values in obese subjects (BMI > 30) were compared with those with normal body weight (BMI < 25). For the significance of the difference in the mean values, student t-test was applied, $P < 0.05$ was considered statistically significant.

3. Results

The sample size of 52 Libyan persons presented in table -1, comprised of 42 obese, among them 26 females (61.9 %), 16 males (38.1%), and 10 control normal persons, 6 females (60%), and 4 males (40%). Distribution of males,females, and age between obese and control group was not different statistically.

Table 1: Sample size and mean age group

	Obese BMI > 30	Normal BMI < 25
Studied number	42	10
Males	16 (38.1 %)	4 (40%) n
Females	26 (61.9 %)	6 (60 %) n
Age mean ±SD	40.3±7.6	42.1±9.3 n

n= statistically non-significant $P > 0.0$

The obese group had higher total cholesterol Tc, triglycerides TG, and low density lipoproteins LDL with the significant differences ($P < 0.05$) when compared to normal body weight group, where's high density lipoproteins HDL-c was significantly lower in obese subjects.

Table2: shows a comparison between obese and normal body weight lipid profile Libyans.

Lipid profile (mg/dl)	Obese BMI > 30	Normal BMI < 25
Total cholesterol -Tc	209±21.24	148±23.4*
Triglycerides TG	194.5±19.3	135.2±15.6 *
Low density lipoproteins LDL-c	131±14.3	76.18±4.6 *
High density lipoproteins HDL-c	37.3±4.9	46.4±3.8 *

* Statistically significant $P < 0.05$

4. Discussion

From table-1 there was no significant statistical difference between obese and normal weight groups in sex distribution and mean age. Other possible factors for lipid abnormalities (diabetes, hypertension, renal, liver, thyroid disorders), smokers, alcoholics, and taking drugs like diuretics, steroids, and lipid lowering drugs were excluded from the study.

The findings of this study indicated that there were higher total cholesterol Tc, triglycerides TG, and

low density lipoproteins LDL-c among the obese group (statistically significant $P < 0.05$). However, HDL-c was lower for the same group(statistically significant, as well $P < 0.05$), which concurs with the reports of previous studies.(21)

The increased levels of total cholesterol, triglycerides, LDL, and low levels of HDL associated with obesity showing the higher risk of cardiovascular diseases in obesity.

With several complications associated obesity, in particular the lipid abnormalities which are a leading cause of morbidity, and mortality, it is of importance, that the prevalence of obesity should be reduced. Early detection and prevention of obesity and abnormal lipid profile can help to reduce morbidity, and mortality through improving public awareness about healthy lifestyle and food habit.

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5/2/2014