



Lipid Profile in Sudanese Obese Women

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ABSTRACT

Objectives: The aim of this study was to investigate the concentration of serum triglyceride, cholesterol and cholesterol profile in Sudanese obese women.

Materials and Methods: Case – control study included Sudanese women in Wad Medani – Gezira State, Central Sudan, in period from March to May 2011. A total of 100 Sudanese obese women were compared with 100 non obese women as control group. Serum samples were taken and cholesterol, triglyceride, LDL and HDL levels were analyzed using colorimetric methods.

Results: The (mean \pm SD) serum triglyceride, total cholesterol, HDL and LDL in non obese women were 131.85 \pm 35.82 mg/dl, 166.86 \pm 27.52 mg/dl, 56.32 \pm 38.30 mg/dl, 113.75 \pm 25.94 mg/dl, while that of obese women, the (mean \pm SD) of serum triglyceride, total cholesterol, HDL and LDL were 168.52 \pm 48.30 mg/dl, 222.65 \pm 24.95 mg/dl, 56.88 \pm 7.46 mg/dl, 138.15 \pm 35.53 mg/dl, respectively. Serum level of triglyceride, total cholesterol and LDL is significant elevated in obese women when compared with their control group (P<0.05).

Conclusion: This study concluded that, the obesity causes significant increase of serum triglyceride, total cholesterol and LDL.

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INTRODUCTION:

Obesity can be defined as a disease of extensive fat accumulation and body fat distribution to the extent that health and wellbeing are affected (WHO, 1997). However, the degree of excess fat, its distribution within the body and obesity duration is associated with health consequences vary between obese individuals (Ishikawa-Takata, *et al.*, 2002 and WHO, 1997). It is generally accepted that obesity, particularly, central obesity, is health hazard because it is associated with numerous metabolic complications such as hypertension, dyslipidaemia, impaired glucose tolerance, diabetes mellitus, hyperuricemia, and cardiovascular diseases. These patients are more likely to present silent diseases and as cluster of metabolic syndrome. The most commonly recognized risk factors in metabolic syndrome are highly correlated with each other and presumed to reflect common metabolic pathway and they interact to increase risk in synergistic fashion (Kopelman, 2000; Reaven, 1995). The adverse effect of excess weight tends to be delayed, sometimes for ten years or longer (Nyholm, *et al.*, 2004). This information supports and justifies conducting this study to determine the factors behind biochemical abnormalities indicators of early stage of some chronic metabolic diseases in Sudan. It is important that these factors should be addressed in any coordinated strategy to tackle the problem of obesity and related diseases. The aim of this study was to investigate the concentration of serum triglyceride, cholesterol and cholesterol profile in obese Sudanese women.

MATERIALS and METHODS:

Reagents:

All chemical reagents were purchased from Bio system company (Spine Company for Analytical material and chemical Reagents).

Subjects and study population:

The case – control study included Sudanese women in Wad Medani, the Gezira State, Central Sudan, in the period from March to May 2011. The Subjects ages for this study ranged from 40 – 50 years. All participants were absent of medical of illness as substantiated by medical history and physical examination. Non had weight fluctuation more than 2 kg during the last six months prior to testing and lived most of their lives in Sudan. All participants were classified into two groups, normal body weight and obese as indicated by body mass index (BULC: $<25730 \text{ kg/m}^2$), respectively based on report (WHO, 1977).

Blood Samples:

Five ml blood from each individual of study population, were collected from both cases and control, the blood was centrifuged at 3000 rpm. for 10 minutes and serum was obtained. Serum samples obtained were subjected to colorimetric methods to determine: cholesterol, TGS, HDL and LDL.

Statistical analysis:

Data were analyzed by computer program (SPSS). Student T. test was used for the calculation. $P \leq 0.05$ was considered significant.

RESULTS and DISCUSSION:

Table 1: Serum triglycerides, total cholesterol, HDL and LDL (mean \pm SD) of obese and non obese women

Parameters	Non obese (n = 100)	Obese (n = 100)
Triglyceride	131.85 \pm 35.82*	168.52 \pm 48.30*
Total cholesterol	166.86 \pm 27.82*	222.65 \pm 24.95*
HPL	56.32 \pm 38.30	56.88 \pm 7.46
LDL	11.75 \pm 35.94*	138.15 \pm 35.53*

* The means is a significant difference between different values, (P<0.05).

Total cholesterol and LDL-cholesterol showed higher levels in obese participants and that might be related to the direct effect of obesity. Obesity, leads to hypercholesterolemia and increases susceptibility to cardiovascular diseases. These results were in agreement with that achieved by WHOM (1997). Also these findings agreed with that obtained by Balasubramanian (2003) and Modan *et al.*, (1987), who reported: accumulation of fat is associated with hypercholesterolaemia as seen in the metabolic syndrome or hibernation.

Triglycerides level was greater in obese women serum when compared to non-obese ones. Justification of that might be due to increasing adiposity, lead to increase cell size in addition to insufficient receptors found in cell surface that cause glucose intolerance, which reflects as hyperglycemia and Insulin resistant syndrome (Sometimes with normal insulin level or even hyperinsulinaemia). This result agreed with that achieved by Kopelman (2000) and Reaven (1995) and Ko, *et al.*, (1999) and Ishikawa-Takata, *et al.*, (2002) & Nyholm, *et al.*, (2004) and Lin, *et al.*, (2002). Who documented: A higher level of body mass index is associated with risk of having insulin resistance, hyperglycaemia, hyperlipidaemia and diabetes mellitus HDL-cholesterol level revealed no significant difference between non-obese and obese women. This result might be due to direct effect of age, dietary habits, life

style, and lack of physical activity among study participants. This result also agreed with that achieved by Prentice, and Jeb, (1995), who cite that in the modern affluent society, energy-sparing devices had reduced energy Expenditure and may enhance the tendency to become fat. In epidemiological studies the highest frequency of overweight is found in with sedentary occupations. Also this finding was similar to that obtained by Bener, *et al.*, (2004), who reported Obesity and physical inactivity is more prominent among women than among men.

In spite of obese participants showed, higher levels of lipids profile, but they could not be clinically diagnosed as dyslipidaemia or cardiovascular patients, that means disease was in silent stage these results agreed with that obtained by Kopelman (2000) and Reaven (1995).

Conclusion:

This study concluded that, the obesity causes significant increases of serum triglyceride, total cholesterol and LDL in women.

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