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## Assessment of lipid profile among Sudanese postmenopausal women in Khartoum state

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### Abstract

**Introduction:** Postmenopause is a reduction to female reproductive system due to physiological, pathological or surgical removal of any female reproduction system parts making a broad hormonal change that affect normal metabolism and body functions making the postmenopausal female at risk factor for serious metabolic diseases as diabetes mellitus or dyslipidemia.

**Aim:** The aim of this study to measure triglycerides, cholesterol, HDL, and LDL among apparently healthy postmenopausal women.

**Methods:** In a case cross sectional study conducted in the period from March 2016 to June 2016, a total of a 50 postmenopausal women and 50 healthy appearance premenopausal women as control group the age group ranged from (17-89) years old were enrolled in this study.

**Results:** The total number of subjects included in the study was 100 females, the study conducted in Khartoum state during the period from 1st of March 2016 until 30th June 2016(1 month). This study showed that the mean of plasma, cholesterol, triglycerides, HDL, LDL level, of test group significantly increased when compared with control group (P-value 0.000, 0.000, 0.000, 0.000) respectively.

**Conclusion:** There was increased level of plasma Cholesterol, Triglyceride and LDL in postmenopausal women.

**Keywords:** Lipid profile, Sudanese postmenopausal, Khartoum state, plasma cholesterol

### 1. Introduction

Menopause is a natural event in the ageing process and signifies the end of reproductive years with cessation of cyclic ovarian functions as manifested by cyclic menstruation [1]. It is heralded by menopausal transition, a period when the endocrine, biological and clinical features of approaching menopause begins [2, 3, 4]. Studies have shown that women are at a lesser risk of developing cardiovascular disease than their male counterparts before menopause, but this advantage is abolished after menopause. Studies suggest that female coronary heart disease (CHD) morbidity rates accelerate more quickly than do those of males after the age of 45 years [5]. The hormonal changes associated with menopause e.g. low plasma levels of estrogen and marked increase in luteinizing and follicle stimulating hormone levels exerts a significant effect on the metabolism of plasma lipids and lipoproteins. The behavior of lipoproteins during the menopausal transition and their relationship with the sex hormones and body fat distribution is still unclear, but changes in sex steroid concentrations are related to changes in lipid concentrations, which are associated with menopausal status [1, 6, 7, 8]. The incidence of cardiovascular disease after menopause may be partly caused by changes in the plasma lipid levels that occur following the menopausal transition. Low-density lipoprotein has been implicated in the development of Coronary Heart Diseases (CHD). Deposition of fatty plaques on arterial walls (arteriosclerosis) is a predisposing factor for CHD. Despite the extensive research on the effects of estrogens and progestagens on lipid and lipoprotein metabolism, it is not yet clear whether changes in sex steroid concentrations are related to changes in lipid concentrations, which are associated with menopausal status. Coronary Artery Disease (CAD) is clearly polyfactorial, and data on endogenous hormones may improve our prediction of CAD [3].

### 2. Material and methods

#### 2.1 Subjects

The study was conducted from March 2016 to June 2016 at Fedail Hospital and Khartoum Teaching Hospital. A total of a hundred subjects were enrolled in this study.

The local ethics committee approved the study. Before participation, volunteers were fully informed of the nature and purpose of the study and written consent was obtained from each.

## 2.2 Samples

Blood samples were obtained following an overnight fasting, samples were withdrawn from a cubital vein into blood tubes, and then the plasma was separated from the cells by centrifugation at 3000 r/min for 10 min and immediately stored on ice at 4.

## 2.3 Measurement of lipid profile

Plasma for total cholesterol, triglyceride, LDL and HDL cholesterol was measured spectrophotometrically on Roche analyzer Cobas c 311. All samples were analyzed in the laboratory of Fedail Hospital.

## 2.4 Statistical evaluation

Data were expressed as mean  $\pm$  standard deviation (SD). The means were compared using Independent sample t. test and a p-value  $\leq$  0.05 was considered as statistically significant.

## 3. Results

The total number of subjects included in the study was 100 females, the study conducted in Khartoum state during the period from 1st of March 2016 until 30th April 2016 (1 month). The targeted subjects of the study were 50 fasting postmenopausal females (50%) who was the plasma samples taken from, their mean age is 57.8 years (43-89 years) (table1, figure1). the other 50 subjects (50%) were fasting premenopausal females their mean age 25.9(17-48 years) included as control group.

A result shows that there is an increase in plasma total cholesterol, triglyceride, HDL and LDL levels in hypothyroidism patient Mean (237.6 $\pm$ 27.6, 197.9 $\pm$ 48.4, 53.0 $\pm$ 9.6, 168.9 $\pm$ 26.2) versus (152.5 $\pm$ 24.4, 78 $\pm$ 31.1, 26.8 $\pm$ 7.0, 84.6 $\pm$ 23.8) (P-value 0.000, 0.000, 0.000, 0.000) respectively (table1, figure1).

## 4. Discussion

Our study revealed a significant increase in Lipid profile in the postmenopausal females than premenopausal females, revealing the significant role of estrogen in lipid metabolism and distribution leading to increase causes of morbidity and mortality in the world<sup>[9]</sup>.

Our findings show a significant difference between the means of plasma level of cholesterol (mg/dl) in the healthy appearance postmenopausal women test group when compared with control group (p=0.000). This result agree with the result of Usoro, *et al.* (2006)<sup>[10]</sup>. Who reported that total cholesterol significantly increased in postmenopausal females, also agreed with Jensen, *et al.* (1990)<sup>[11]</sup>. That reported there was increase in total cholesterol for postmenopausal women.

Our investigation showed a highly significant positive correlation between the plasma level of cholesterol and age (r=+0.823, p=0.000). This result was line with result of C.A.O; Usoro, *et al.* (2006)<sup>[10]</sup>. Who reported that the increase of total cholesterol correlated positively with age.

The results of current study show a significant difference between the means of plasma level of T.G (mg/dl) in the healthy appearance postmenopausal women test group when compared with control group (p=0.000). Which agreed with Jensen; J, *et al.* (1990)<sup>[11]</sup>. That reported there was increase in

T.G level for postmenopausal women. And this result disagrees with the result of Usoro, *et al.* (2006)<sup>[10]</sup>. Who reported that T.G level not affected in postmenopausal females. And also demonstrated Insignificance correlation with age (year) (r=0.109, P=0.019), this result agree with de Aloysio D, *et al.* (1999)<sup>[12]</sup>. Who reported that there is no relation between level of T.G and age.

In the present study there is significant difference between the means of plasma level of LDL-cholesterol (mg/dl) in the healthy appearance postmenopausal women test group when compared with control group (p=0.000). This result agree with the result of Usoro, *et al.* (2006)<sup>[10]</sup>. Who reported that LDL-cholesterol level significantly increased in postmenopausal females, also agreed with Jensen; J, *et al.* (1990)<sup>[11]</sup>. That reported there was increase in LDL-c level for postmenopausal women. Also demonstrated Insignificance correlation between age and HDL-c.

## 5. Conclusion

There was increased level of plasma Cholesterol, Triglyceride and LDL in postmenopausal women.

There was decreased level of plasma HDL in postmenopausal women.

## 6. Acknowledgment

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## 7. Conflict of interest

No potential conflicts of interest relevant to this article were reported.

## 8. References

- O'Sullivan M, Overton C. Managing debilitating menopausal symptoms, 2016; 260(1791):17-21- 2-3.
- Anagnostis P, Stevenson JC, Crook D, Johnston D, Gand Godsland IF. The effect of altered estrogen and progesterone on lipid profile in menopause state, doi: 10.1016. 2015; 81(1):62-8.
- Kim CJ, Kim TH, Ryu WS, Ryoo UH. Influence of menopause on high density lipoprotein-cholesterol and lipids, 2000; 15(4):380-6.
- Pauciullo P. Lipoprotein transport and metabolism: a brief update. *NutrMetab Cardiovasc*, 2002; 12:90-97(10):511-516.
- Carmena R, Duriez P, Fruchart JC. Atherogenic lipoprotein particles in atherosclerosis 2004; 16:287-294.
- Godsland, I.F. The effect of altered estrogen and progesterone on lipid profile in menopause state, doi: 10.1016. 2015; 81(1):62-8.
- Hazzard WR. Atherogenesis why women live longer than men, 1985; 40(1):42-51, 54.47.
- Erbagci AB, Tarakcioglu M, Aksoy M. Diagnostic value of CRP and Lp (a) in coronary heart disease. *ActaCardiol*, 2002; 57:197-204.
- Robert H. Knopp and Xiaodong Journal of endocrinology and metabolism. USA, Multiple Beneficial Effects of Estrogen on Lipoprotein Metabolism. 1997; 82(12).
- C.A.O, Usor. Of Chemical Pathology, 2Department of Surgery, College of Medical Sciences, University of Calabar. Nigeria, Pakistan Journal of Nutrition ISSN 1680-5194. 2006; 5(1):79-82.

11. Jensen J, Nilas L, Christiansen C. Influence of menopause on serum lipids and lipoproteins. *Maturitas*. 1990; 12(4):321-31.
12. de Aloysio D, Gambacciani M, Meschia M, Pansini F, Bacchi Modena A, Bolis PF *et al*. The effect of menopause on blood lipid and lipoprotein levels. The Icarus Study Group. *Atherosclerosis*. 1999; 147(1):147-53.