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Assessment of Lipid Profile among Healthy Sudanese Post Menopausal Ladies

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ABSTRACT

Several changes occurs in menopausal phase in women which may lead to changes in metabolism of lipids, protein and carbohydrates. The objective of this study was to assess the concentration of total serum lipid profile, in pre and post menopausal Sudanese women. This is descriptive case control study carried in Babanosawestkord of an .One hundred (100) apparently healthy, non pregnant females (40premenopausal and 60 post menopausal) were recruited for the study. Serum total cholesterol and the fractions- high-density lipoproteins (HDL), low-density lipoproteins (LDL), and triglycerides (TG) were estimated using enzymatic and established mathematical methods. The (mean \pm SD)of total Cholesterol, HDL, LDL and Triglyceride in post menopause respectively were (159.5 \pm 14.5, 62.6 \pm 8, 79.1 \pm 9.7, 104.6 \pm 9.4).while The (mean \pm SD)of total Cholesterol, HDL, LDL and Triglyceride in pre menopause Respectively were(137.2 \pm 12.5, 84,8 \pm 6,5,31.7 \pm 8,5,103.4 \pm 7.3). The results showed that there was significant difference in the total serum cholesterol between the two groups. There was however, a significant reduction of HDL in the postmenopausal group (P value <0.005) and a significant increase in the level of LDL in the postmenopausal group (P value <0.005). The elevated LDL and the reduction of cardio protective HDL is an indication that menopause is an independent risk factor for developing cardiovascular disease in our environment. There was no significant difference in the triglycerides between the two groups (p value > 005). The result was concluded that there was significant increase of total Cholestrol and low density lipoprotien LDL in post menopausal group ,also there was significant decrease of high density lipoprotien HDL when it compared with premenopuase group,(p value 0.00).Triglyceride remind unchanged and no significant difference between the pre and post menopausal groups(p value .517).

Keywords: Cardio vascular disease, High density lipoprotein, Low density lipoprotein coronary heart disease, menopause.

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INTRODUCTION

Cardiovascular disease is a leading cause of death among women in the developed world. In the United States, more than 500,000 women die of cardiovascular disease and about half are due to coronary artery disease (CAD). Multiple risk factors have been identified as contributory to the development of CAD. These risk factors are important in both men and women and are present in both Caucasians and Africans. They include cigarette smoking, hypertension, Diabetes mellitus and hypercholesterolemia¹. Hypercholesterolemia is a key factor in the pathophysiology of atherosclerosis². Thus dyslipidemia can be modified by efforts aimed at cholesterol reduction^{3,4}. Studies have shown that women are at less risk of developing CAD than their male counterparts, but this is a polished after 60 years of age⁵. High levels of LDL and low levels of HDL are strongly associated with the risk of CAD⁶. After menopause, there is loss of ovarian function. This results in adverse changes in glucose and insulin metabolism, body fat distribution, coagulation, fibrinolysis and vascular endothelial dysfunction⁷. There is also derangement of lipoprotein profile independent of age⁸. A number of changes that occur in the lipid profile after menopause are associated with increased cardiovascular disease risk. Lack of estrogen is an essential factor in this mechanism. Apart from maintaining friendly lipid profile, estrogen changes the vascular tone by increasing nitrous oxide production. It stabilizes the endothelial cells, enhances antioxidant effects and alters fibrinolytic protein⁹. All these are cardio protective mechanisms, which are lost in menopause. The objective of this study was to assess the concentration of total serum lipid profile, in premenopausal with that of their post menopausal counterparts.

MATERIALS AND METHOD

Study population

This is descriptive case control study was carried in babanosa west Kurdofan in a period from March to May 2015. A group of 100 women, 40 premenopausal aged between 25-45 years and 60 postmenopausal aged between 55-70 years were studied. They were of the same social class and selected from workers and students of the University of western Kurdofan and babanosa Teaching Hospital, Some of the postmenopausal women were relatives of the workers. They were randomly selected by a lucky dip of yes or no after an informed consent and ethical consideration.

Including criteria

Healthy women.

Excluding criteria

Obesity, pregnancy, diabetes mellitus, hypertension, hormonal contraception, smoking and heavy exercise.

Blood sample

Fasting venous samples (5ml) were collected in heparinized bottles. This however, was done on the 7th day of the L.M.P. for the premenopausal group. Sample was centrifuged and plasma separated and stored in plastic tubes at 4C. Total cholesterol was measured using established enzymatic method¹⁰ with the Randox cholesterol kit. HDL-C was isolated by HDL-C precipitant method¹¹. LDL was calculated with a formula from total cholesterol and triglycerides¹². Triglyceride was isolated enzymatically and the expert panel on detection, evaluation and treatment of high blood cholesterol in adults. then concentrations was measured by spectrophotometer¹¹.

Statistical Analysis

Statistical analysis was done using Excel. Showing the mean and standard deviation. Comparison of mean was by student t-test. Permission was obtained. P value calculated by independent test.

RESULTS AND DISCUSSION

In table (1) comparing between means and standard division the two groups.

Total cholesterol show significant increase in postmenopausal group when it compared with premenopausal group, p value 0,00. High density lipoprotein show significant decrease in postmenopausal group when it compared with premenopausal group, p value 0, 00. Low density lipoprotein show significant increase in postmenopausal group when it compared with premenopausal group, p value 0,00. Triglyceride remind unchanged and no significant difference between the pre and post menopausal groups p value 0.517.

Table 1: Show mean \pm SD of study population

Parameter	Post menopaus MEAN \pm SD	Pre menopaus MEAN \pm SD	P value
Total Cholestrol mg/dl	159.5 \pm 14,5	137,2 \pm 12.5	0.00
HDL mg/dl	62.6 \pm 8	(84,8 \pm 6,5	0.00
LDL mg/dl	75,1 \pm 9,7	31,7 \pm 8,5	0.00
Triglyceride mg/dl	104,6 \pm 9,4	103,4 \pm 7,3	0.517

There are variations in lipid levels obtained in different individuals based on race, age, sex, obesity, exercise, smoking, alcohol, diet, diseases like hypertension, chronic liver and renal diseases¹². However, in this study we tried to exclude the co founding variables and results obtained can be taken as the standard normal in our environment. The premenopausal values are similar to values obtained in other studies in different parts of the country². However Studies in some centers in developed countries showed higher values with dyslipidemia being taken as cholesterol >240mg% (6.21mmol/l) and occurs in 25-33%of women¹². As a result of racial, genetic and technical differences, it has been suggested that our own cut off level should be adjusted to suit our peculiar circumstances. In determining the risk of cardiovascular disease, the absolute cholesterol value is not the most important factor; rather the concentrations of the various

subclasses of cholesterol. In the present study there was significant differences in the total cholesterol level and there was significant reduction in the cardio protective HDL-C and significant increase in artherosclerotic LDL-C. This is in agreement with findings in other studies^{2,13}. It has also been estimated that for any 1mg/dl (0.026mmol/ml) increase in HDL-C, there is a 3% decrease in risk of coronary artery disease and a 4.7% decrease in the risk of mortality from cardiovascular disease⁽¹⁴⁾. In this study this protective effect was lost by five fold. Again the HDL/LDL ratio was increased in the post menopausal group and it has been shown that HDL/LDL ratio is a significant predictor for the development of artherosclerosis both in Caucasians and africans¹⁵. There is no doubt from this study that the changes that occur in the lipid profile after menopause is not friendly for the cardiovascular health of our women. It is generally believed that post menopausal symptoms are less in our women than their Caucasian counterparts. This may not be true because several studies in the past have shown psychological, physical, biochemical, hormonal and vasomotor parameters that are not of great variance with what is obtained elsewhere¹⁶. The problem is that the harsh climatic and poor socioeconomic environment overwhelms our women that they hardly ever complain about menopausal symptoms unless it is severe. The elevated LDL and the reduction in the cardio protective HDL is an indication that menopause is an independent risk factor for developing cardio vascular disease in our environment. Several studies have shown the beneficial effects of hormonal replacement therapy on the lipid profile of menopausal women¹⁷. However, controversy exists as to whether these changes culminate to reduced risk of cardiovascular heart disease. Observational studies over the years have touted the beneficial effects of hormone replacement therapy (HRT) in prevent ingcoronary heart disease in post menopausal women¹⁸. More recent studies have however; cast some doubts on the beneficial effects of HRT especially in patients with established cardiovascular disease¹⁹. It should be noted that our postmenopausal women have unfriendly lipid profile; it is thus important to note this and device means of correcting the dyslipidemia since the use of HRT and lipid lowering drug is still controversial. It is important to counsel on proper dietary, social and physical habits.

CONCLUSION

The result was concluded that there was significant increase of total Cholesterol and low density lipoprotien LDL in post menopausal group , also there was significant decrease of high density lipoprotien HDL when it compared with pre menopause group , (p value 0.00) .Triglyceride remind unchanged and no significant difference between the pre and post menopausal groups(p value .517)

REFERENCES

1. Ariyo AA, Villablanca AC. Estrogen and Lipid: Can HRT, design estrogens and phyto estrogens reduce cardiovascular risk markers after menopause? Post grad. Med.2002;111(1) 23- 30.

2. Igweh, J.C. Aloamaka, C.P. (2003). Cholesterol Profile of Adults Resident in Eastern Nigeria. *O.J.Med* 15(3&4) 46-50.
3. Fick MH, Elo O, Haapa K, Hheinonen O. Pand et al, Helsinki heart study: Primary Prevention trial with gemfibrozil in middle-aged men with dyslipidemia. Safety treatment changes in risk factors and incidence of coronary heart disease *N.Engl. J. Med.* 317- 1245.
4. Davidson MH, Implications for the present and Direction for the future. *Am J Cardiol.*1993;71: 32B-36B.
5. Couderc R, Machi M. Lipoprotein (a): risk factor for atherosclerotic vascular Disease important to take into account in practice. *Ann-Biol-Clin* 1999; 57(2):157-67.
6. McNamara JR., Jenner JL, Li Z, Wilson PW, Schaefer EJ. Changes in Serum lipid and menopause 53 LDL Particle size is associated with change in plasma triglyceride concentration. *Arterioscler. Thromb.* 1992; 12:1284-1290.
7. Spencer CP, Godsland H, Stevenson JC. Is there a menopausal metabolic syndrome? *Gynecol.Endocrinol.* 1977;11: 341-355.
8. Bales AC. In search of lipid balance in older women; new studies raise questions about what works best. *Postgrad. Med.* 2000; 108 (7) : 57-72.
9. Taddec S, Virdis A, Ghiadoni L, Mattec P, Sudano I, Bernini G. Menopause is associated with endothelial dysfunction in women. *Hypertension* 1996;28: 576-582.
10. Allain CC, Poon LS, Chan CSG, Richmond W, Fu PC. Enzymatic determination of total serum cholesterol. *Clin. Chem.* 1974;20: 470-75.
11. Randox Laboratories Limited, 55 Daimond Road, Crumin, Country Antrim, BT29 4Qy, United Kingdom.
12. Gordon DJ., Trost DC, Hyde J, Whaley FS., Hannan PJ, Jacobs DR, Ekelund LG: High density lipoprotein cholesterol and cardiovascular disease: Four prospective American Studies. *Circulation* 1987; 79(1):8-15.
13. Jensen J, Nilas, L, Christiansen C. Influence of menopause on serum lipid and lipoprotein. *Matruita*1990; 12: 321-31.
14. Okonofua EE, Lawal A, Bamgbose JK. Features of Menopause and Menopausal age in Nigerian women. *Int. J. Gynaecol. Obstet.* 1990;31(4) 341-5.
15. Aina AO. An investigation into climacterics in Nigerian women. *J. Med. Assoc. Thai.* 1992;75(3):168-72.
16. Grundy SM. Guidelines for cholesterol Management: Recommendations for the natural cholesterol Education Programs. Adult treatment Panel II. *Heart Dis. Stroke* 1994;3(3) 123-7.

17. Abbot RD, Wilson PWF, Kannel WB, Castelli WP: High-density lipoprotein cholesterol, total cholesterol screening and myocardial infarction. The Framingham study. *Arteriosclerosis* 1988; 8:207.
18. Hulley, S, Grady, D, Bush T. The randomized trial of estrogen plus progestin for secondary prevention of coronary heart disease in postmenopausal women: Heart and strogen/progestin replacement study (HERS) Research group. *JAMA* Igweh, J. C., Aloamaka, C.P. 2003; 7:605-13.
19. Cheng, GS. Cardiac events increased in the first 2 years of HRT. *Intern. Med. News* 2000;33(9) 1-2.

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