



ISSN: 0976-3031

Available Online at <http://www.recentscientific.com>

International Journal of Recent Scientific Research
Vol. 6, Issue, 7, pp.5089-5092, July, 2015

**International Journal
of Recent Scientific
Research**

RESEARCH ARTICLE

CORRELATION BETWEEN ESTROGEN AND TRIGLYCERIDES LEVELS IN POSTMENOPAUSAL WOMEN

SK.Deepthi¹, G.Amar Raghu Narayan² and J.N.Naidu³

^{1,3}Department of Biochemistry, Narayana Medical College, Nellore

²Department of Plastic Surgery, Narayana Medical College and Hospital, Nellore

ARTICLE INFO

Article History:

Received 2nd, June, 2015
Received in revised form 10th,
June, 2015
Accepted 4th, July, 2015
Published online 28th,
July, 2015

Key words:

Triglycerides (TG), Estrogen,
Total cholesterol (TC)

ABSTRACT

Menopause is the permanent cessation of menstruation due to loss of ovarian follicular function. Which results in decreased production of estradiol and other hormones. The behavior of lipoproteins during the menopausal transition and their relationship with sex hormone is still unclear. Our aim was to evaluate lipid profile, serum estradiol, total cholesterol in postmenopausal women and to find the relationship between serum estradiol and triglyceride levels in postmenopausal women to assess risk for coronary artery disease. Study includes 70 subjects, 30 healthy premenopausal women (25-40 yrs) and the healthy postmenopausal women in the age group of 55-65 yrs). Serum estradiol was estimated in both cases and controls. Reduced estradiol was noticed which was significant statistically p value 0.0001, there was a negative correlation found between serum estradiol and triglycerides.

Copyright © SK.Deepthi et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

Menopause is the permanent cessation of menstruation it occurs at a mean age of 51 years. After menopause, the ovaries cease to produce significant amount of oestrogen, therefore, symptoms and diseases which are associated with oestrogen deficiency are of increasing importance to women's health (Larry R, Laufer et al Elsevier) data from the Framingham study suggest that female coronary heart disease (CHD) morbidity rates accelerate more quickly than do those of males after the age of 45 years (Lerner DJ, Kannel W.B et al, 1996)

The hormonal changes associated with menopause eg: low plasma levels of estrogen and marked increase in luteinizing and follicle stimulating hormone levels exert a significant effect on the metabolism of plasma lipids and lipoproteins (Sacks F.M, AM et al).

Lipid profiles are affected by metabolic condition and alterations in lipid metabolism; have been implicated in atherosclerosis and coronary heart disease. Alterations in lipid profile have also been associated with age. The TC, TG in postmenopausal women may be at higher risk of having a stroke. A new study by researcher at New York found that traditional risk factors for stroke such as high cholesterol are not as accurate at predicting risk in postmenopausal women as

previously thought. Instead researcher say they should focus more on triglyceride levels to determine which women are at highest risk of suffering fatal cardiovascular event. Our study was done to support their views and using TG to predict the cardiovascular risk in postmenopausal women.

Triglycerides or neutral fats are esters of glycerol and fatty acids. A large portion of carbohydrates from food goes into triglycerides before it is used for energy purposes. The consequence of this is that the fatty acid triglyceride is probably the main source of energy for many tissues (Taddec S, et al 1996, J Igwch et al 2005). The aim of the study was to determine the difference in the concentration of cholesterol and triglyceride in postmenopausal women and premenopausal women and to assess the correlation between estrogen and triglycerides in both cases and controls.

MATERIAL AND METHODS

The study was conducted in patients attending outpatient department in gynecology department in Narayana Medical College, Nellore.

A total number of 70 subjects participated in the present study 30 healthy premenopausal women volunteer (25- 40 yrs) and 40 healthy postmenopausal women in age group of (55-65 yrs) were participated.

*Corresponding author: **SK.Deepthi**

Department of Biochemistry, Narayana Medical College, Nellore

SK.Deepthi et al., Correlation Between Estrogen And Triglycerides Levels In Postmenopausal Women

5ml of venous blood was collected aseptically from antecubital vein after 12 hours fasting and serum was separated by centrifugation and serum was separated by centrifugation and analyzed or stored at 2-8°C in plain tubes.

Serum estradiol was estimated by direct immune enzymatic assay (Chinyera Adanna opara usoro 2007) (Beck Jensen Je, Kollereu P.G 1997) in both cases and controls.

Similarly estimation of cholesterol was done by cholesterol oxidase –peroxidase method(Jacob S N.1960)(Koditschek L.K 1969)(Okada 1998) estimation of triglycerides was done by glycerol 3-phosphate oxidase peroxidase method(Gordan T et al 1977)(Izawa S et al).

And the estimation of LDL cholesterol was done by enzymatic colorimetric test (Gore. Langton 1988)(Hall P.F, 1976)(MC Nasty K.P et al 1976) and direct homogenous test for the determination of HDL-cholesterol enzymatic colorimetric test (Jenner M.R 1982)(Carr M.C 1998)The above procedures were adopted for both cases and controls.

RESULTS

The results were expressed in terms of mean ± standard deviation (S.D)

The p value <0.05 was considered as significant.

Within a study group relationship between estradiol and lipid profile was assessed using pearson’s correlation test with p value <0.05 as significant lim

Table I Comparison of Lipid profiles in cases (post menopausal) and controls (pre menopausal)

Parameters	Cases n = 40 (post mw)	Control n = 30 (pre mw)	P value	T value
T.Chol	174.72±39.00	149.03±28.78	0.003	3.038
TG	127.05±51.08	65.76±18.50	0.0001	6.260
HDL	32.57±11.93	43.20±8.86	0.0001	4.097
LDL	121.37±33.37	93.60±21.38	0.0002	3.982

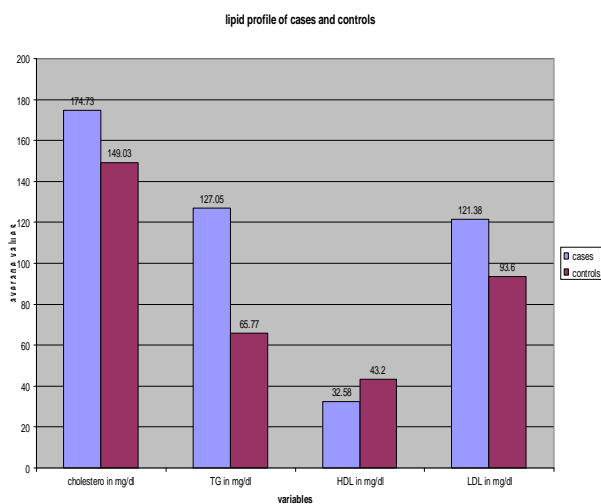


Figure I Comparison of Lipid profiles in cases (post menopausal) and controls (pre menopausal)

The Mean values of the parameters except HDL were higher in cases compared to controls. The P value is highly significant per total cholesterol triglycerides and LDL.

Table II Comparison of Estradiol Levels between cases (post menopausal)and Controls (pre menopausal) pg/ml

Parameters	Cases n = 40 (post mw)	Control n = 30 (pre mw)	P value	T value
Oestradiol	39.33±13.36	73.76±36.20	0.0001	5.543

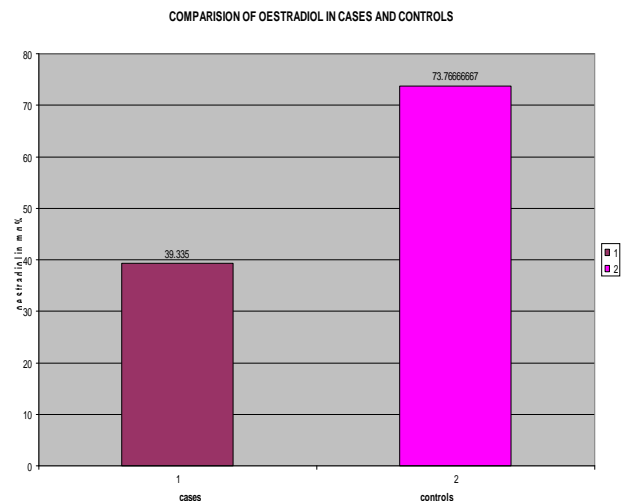


Figure II Comparison of Estradiol Levels between cases (post menopausal)and Controls (pre menopausal) pg/ml

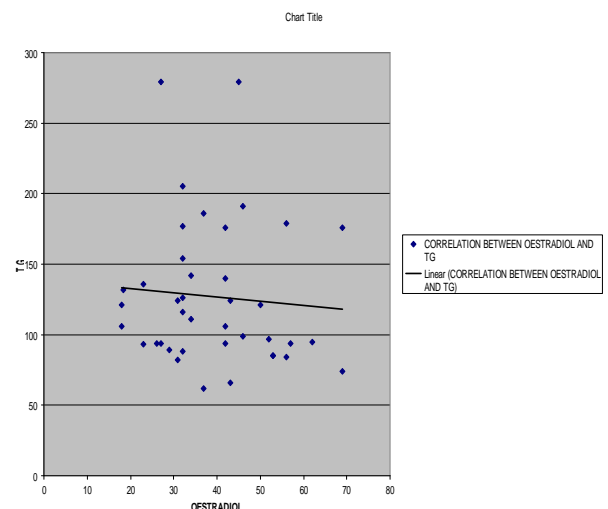
Table II shows the mean serum estradiol in cases (post menopausal) and controls(pre menopausal) are 39.33±13.36 and 73.76±36.20 respectively P value 0.0001. There is highly significant elevation in estradiol levels in post menopausal in comparison with pre menopausal women.

Table III Correlation Between Estrogen And Lipids

Parameter	Correlation coefficient	P value
Total cholesterol	0.51	0.003
TG	-0.02	0.91

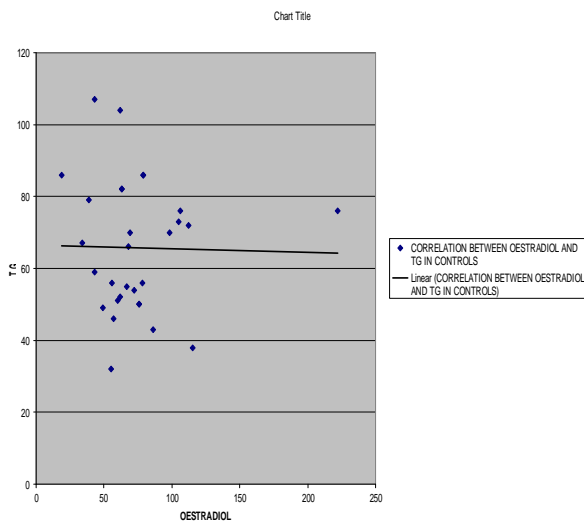
Controls(pre menopausal) (n = 30)

Scattered diagram showing correlation between Oestradiol and TG in post meno pausal women



Correlation coefficient of oestradiol and TG in cases:- 0.078098. There is very poor or insignificant correlation. $p=0.6319$

Scattered diagram showing correlation between Oestradiol and TG in controls(pre menopausal)



Correlation coefficient of oestradiol and TG in control:- 0.020365. There is very poor or insignificant correlation. $p=0.9149$

DISCUSSION

After menopause the reduced oestrogen production from ovaries results in derangement of lipoprotein profile adverse changes in glucose and insulin metabolism, body fat distribution, coagulation and fibrinolysis and dysfunction of vascular endothelium. (Bales A C, 2000, Spences CP 1997). Estrogens have several cardio protective mechanisms that change the vascular tone by increasing nitrous oxide production. Estrogens stabilize the endothelial cells, they enhance antioxidant effects and their fibrinolytic protein, all these are cardio protective mechanisms which get lost with onset of menopause (Taddec.S, 1996, JC Igweh 2005)

Changes in the lipid profile that occur in menopause such as increase in cholesterol and triglycerides were accepted as one of the risks for cardiovascular disease in menopausal women, though results of resent studies have shown the so called metabolic syndrome which occurs in 60% of menopausal women, and therefore, have an increased risk of cardiovascular disease. (Berg G, Muzzio MI et al 2004).

According to our pervious study we have noticed that there was increase in total cholesterol in post menopausal women (SK.Deepthi, J.N.Naidu and Amar Raghu Narayan 2012).

In our present study there was increase in total cholesterol and serum TG, along with decrease in estrogen in postmenopausal women when compared to premenopausal women.

Factors that increase triglyceride synthesis and secretion of VLDL in the liver included a diet rich in carbohydrates

(especially if it contains sucrose and fructose). High levels of free fatty acids alcohol intake, and high levels of insulin (Hokanson JE, Austin MA et al 1996) .

Effects of triglycerides on cardiovascular disease in women are included in different data, but they mostly refer to triglycerides together with high LDL and these are so called small dense LDL particles increasing cardiovascular risk especially in women (Lamarche B, Moorjani S, et al 1997).

Menopause itself is a risk factor for cardiovascular disease the results of our study in postmenopausal women showed a significant negative correlation between estrogen a dn total cholesterol, estrogen and triglycerides in postmenopausal women. In conclusion: from our study we can state that primary prevention activities should focus on adequate education about nutrition and healthy lifestyle because with the occurrence of menopause the risk of developing cardiovascular disease is leveled between women and men.

Reference

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.

Berg G, Muzzion ML. et al A new approach to the quantitative measurement of dense LDL subfractions Nutr Metab cardiovasc dis 2004;14:73-80.

Chinyera Adanna opara Usoro, 2007, Biochemical bone turnover markers in postmenopausal women in calabal municipality. Asian Journal of biochemistry2(2) 130-135,.

Do.K.AA, Green et al. Longitudinal study of risk factors for coronary heart disease across menopausal transition Am.J.Epidemiology 151, 584-593.

Gordan T et al AM.J Med 62, 707 (1977)Izawa S.etal j.Med and phas M sci37; 1385-1388.

Gore.Langton, R.E and AMS trongd D.S, 1988. In the physiology of reproduction. Raven Press, 331-385.

Hall P.F, testicular steroid synthesis, organization and regulation In:seei,975-998.

Hokanson JE, Austin MA plasma triglycerides is a risk factor for cardiovascular disease independent of high density lipoprotein cholesterol level a meta analysis of population based prospective studies j Cardiovasc Risk 1996; 3:213-19.

Izawa S. et al J.Med and pharm sci37, 1385-1388.

JC Igweh et al, the effects of menopause on the serum lipid profile of normal females of south east Nigeria Journal of Physiological Sciences 2005:20(1-2):48-53.

Koba.S, Hirano T et al small dense low desnity lipoprotein in Japanese men with coronary artery diseas. Ann intern Med 2002; 132;762.

Lamarche B, Moorjani S Cantin B, Dagenais GR, lupier PJ, Despers Jp Association of HDL, and HDL subfractions with ischemic heart disease in men prospective results from the Qubee cardiovascular study arterioscler romb Vasc Biol 1997;17:1098-105.

Larner DJ, Kannel WB et al. Patterns of coronary heart disease morbidity and mortality in the sexes. A 26 year

- follow up of the framing ham population. Am.Heart J. 1986-383-90.
- Larry R, Laufer, Joseph C *et al* editors Hackeer eta l essentials of obstetrics and Gyneocology , 4the editon Elsevier Saunders.
- MannjenV, Tenkanen L, *et al*. Joint effects of serum triglyceride and LDL cholesterol nd HDL cholesterol concentrations on coronary heart disease risk in the Helsinki Heart study. Circulation 1992.92:11430-36.
- Sacks F.M, A.M Murray *et al* hormone therapy to prevent disease and 123, prolong life in post menopausal women Ann – Int Med 673-675.
- SK.Deepthi, J.N.Naidu and Amar Raghu Narayan, relationship between estrogen and lipid profile status in postmenopausal women. International Journal of Applied Biology and pharmaceutical technology, vol 3, issue-3, July sept 2012.
- Spences CP.Godslan H.stevenson JC.Is there a menopausal metabolic syndrome? Gynecol.Endocrinol.1977:11;341-55.
- Taddec S. Viridis A *et al* menopause is associated with endothelial dysfunction in women hypertension. 1996;28:576-82.
- Triglyceride levels predict stroke risk in postmenopausal women. Sciencedaily [http: //WWW.science daily.com/releases/2012/02/12 0202164536.htm](http://WWW.science daily.com/releases/2012/02/12 0202164536.htm).

How to cite this article:

SK. Deepthi *et al.*, Correlation Between Estrogen And Triglycerides Levels In Postmenopausal Women. *International Journal of Recent Scientific Research* Vol. 6, Issue, 7, pp.5089-5092, July, 2015
