

Association of Dyslipidemia and Obesity After Menopause

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Abstract

- Background** Aging and hormonal changes in menopause are factors which may play the most important role in the development of all events of this stage of women's life. Of importance in this respect is obesity and related events as insulin resistance, oxidative stress, dyslipidemia and consequent increase in the risk of cardiovascular disease.
- Objective** To evaluate the association of dyslipidemia with the development of obesity and related events as lipid peroxidation after menopause, and to correlate the different parameters with each other.
- Methods** Thirty seven premenopausal women aged (33.95±7.9 years) and 41 postmenopausal women aged (59.9±7.2 years) were involved in this study. All were normal and without a previous history of any disease or illness. Blood specimens were collected after 12 hour fast for measurement of serum lipids (total cholesterol TC, Triglycerides TG, and high density lipoprotein cholesterol HDL-C) by enzymatic spectrophotometric methods. Low density lipoprotein cholesterol (LDL-C) was estimated by calculation. The atherogenic index (AI) indicates the ratio of LDL-C to HDL-C, while sex hormones (estradiol, E₂, follicle stimulating hormone, FSH and luteinizing hormone, LH) and oxidized LDL (ox-LDL) were measured by ELISA methods. All participants were subjected to anthropometric measurements including body mass Index (BMI) and waist circumference (WC).
- Results** Marked significant increase in BMI and WC in the postmenopausal women as compared with the premenopausal women and was associated with a significant low E₂, high serum TG, TC, LDL-C, AI and ox-LDL with low HDL-C.
- Conclusion** Changes in serum levels of sex hormones at menopause may be the trigger for the development of post-menopausal obesity, dyslipidemia and elevated Ox-LDL, and that at a given age all these factors should be considered for evaluation of body fat distribution and related health risks.
- Key Words** menopause, obesity, dyslipidemia, sex hormones, ox-LDL

Introduction

The main circulating estrogen during the premenopausal age is 17β- Estradiol. Levels of this hormone are controlled by the developing follicle and resultant corpus luteum. Essentially all estradiol in post-menopausal women is derived from peripheral conversion from estrone ⁽¹⁾.

This is due to estrone production, resulting largely from peripheral aromatization of androstendione. This aromatase activity increases with aging by two to four folds; this is further amplified by increased adiposity that typically accompanies the aging process ⁽²⁾.

Menopause was found to associate changes in body weight or distribution of body fat.