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A comparative study of circulating plasma lipid components and superoxide dismutase activity in pre and postmenopausal women

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Abstract

Background: Menopause is associated with increased oxidative stress and decreased antioxidative activity in females which leads to increased risk of cardiovascular and many other diseases. The objective was to compare the lipid profiles and superoxide dismutase (SOD) activity of pre and postmenopausal women in an attempt to establish the fact that menopause is associated with increased oxidative stress.

Methods: A hospital based cross-sectional study was done at the department of obstetrics and gynaecology and biochemistry, Shri Mahant Indiresh Hospital, Dehradun, India. Out of total of 120 women, 60 women were in premenopausal group aged between 30-45 years and 60 women of 55-70 years of age group in post menopause status. Assessment of lipid profile was done by an automated chemistry analyzer (Vitors 5, I FS) and SOD activity was measured by colorimetric activity kit. Statistical analysis was done by Standard Microsoft Excel software.

Results: Mean serum SOD level in premenopausal women was 4.80±1.73 U/ml and in postmenopausal was 1.35±0.58 U/ml. This variation was found to be extremely significant ($p < 0.0001$). Changes in lipid components in pre and postmenopausal women showed that total cholesterol and triglycerides levels were higher in postmenopausal than premenopausal participants. These variations were also significant ($p = 0.0003$). Levels of HDL-C were lower in postmenopausal women than pre-menopausal group with a mean±SD of 51.5±12.20 mg/dl and 54.05±14.03mg/dl respectively.

Conclusions: Findings of this study corroborate the hypothesis that gradual loss of ovarian function is associated with a decrease in antioxidant status. Menopause also leads to changes in lipid components, which can predispose women to cardiovascular diseases.

Keywords: Antioxidants, Estrogen, Menopause, Oxidative stress, Superoxide dismutase, Total cholesterol, HDL-cholesterol, LDL-cholesterol, VLDL-cholesterol, Triglycerides

Reference

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