Possible connections among job stress, depressive symptoms, lipid modulation and antioxidants.

Tsuboi H, Tatsumi A, Yamamoto K, Kobayashi F, Shimoi K, Kinae N.

Department of Epidemiology and Public Health, School of Health Promotional Science, University of Hamamatsu, 1230 Miyakoda-cho, Hamamatsu 431-2102, Japan.

BACKGROUND: Oxidative/antioxidative status may be related to psychological stress or pathogenesis of depression.

SUBJECTS AND METHODS: Participants were selected from 381 female nurses working in a university hospital, and the Brief Job Stress Questionnaire was utilized to assess them. Nurses with high job stress (JS) (n = 18) and with low JS (n = 15) consented to participate in this study. Depressive symptoms were assessed by the Centre for Epidemiologic Studies Depression scale (CES-D). Cholesterols, lipid peroxidation (malondialdehyde, MDA) and antioxidants in the plasma were measured.

RESULTS: High JS participants exhibited significantly higher CES-D scores (t = 3.34, p < 0.005), and significantly lower concentrations of total cholesterol (TC), low density+very low density lipoprotein cholesterols (LDL+VLDL), alpha-tocopherol, and beta-carotene compared with low JS participants (t = 2.69, p < 0.05; t = 3.46, p < 0.005; t = 2.96, p < 0.05; t = 2.98, p < 0.05, respectively). However, the reductions in plasma indicators were substantially weakened after controlling for lifestyle factors with the exception of LDL+VLDL and alpha-tocopherol. In addition, the significance of alpha-tocopherol concentrations appeared to depend on cholesterol levels. CES-D scores correlated positively with plasma MDA levels, the MDA/TC ratio and the MDA/LDL+VLDL ratio among the low JS group (r = 0.69, p < 0.001; r = 0.79, p < 0.001; r = 0.75, p < 0.005, respectively), whereas there were no correlations among the high JS group. After controlling for lifestyle covariates, the relationship between CES-D scores and the MDA/LDL+VLDL ratio remained significant (beta = 0.95, p < 0.05) using a multiple linear regression model (F = 3.61, p < 0.05).

LIMITATIONS: Sample numbers in each JS group were relatively small.

CONCLUSIONS: Psychological stress may reduce the plasma levels of LDL+VLDL accompanying an alpha-tocopherol decrease. There appeared to be a correlation between elevated MDA and depressive symptoms in low JS participants.

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