

Abstract

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Lymphocyte vitamin C levels as potential biomarker for progression of Parkinson's disease.

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OBJECTIVES: Vitamin C is a major antioxidant and also is known as a neuromodulator in dopaminergic neurons. The aim of this study was to investigate the association between lymphocyte and plasma vitamin C levels in various stages of Parkinson's disease (PD).

METHODS: Sixty-two individuals with PD (age 71 ± 8.8 y [mean \pm SD]) being treated at Shizuoka General Hospital from December 2007 to August 2013 were consecutively recruited. PD severity was classified using the Hoehn-Yahr scale for staging PD. Fasting blood samples were collected, and plasma and lymphocyte vitamin C levels were measured. The association between PD severity and vitamin C levels was estimated by ordinal logistic regression with confounding variables.

RESULTS: The distribution of Hoehn-Yahr stages in patients was as follows: stage I, 7; II, 28; III, 16; and IV, 11. Lymphocyte vitamin C levels in patients with severe PD were significantly lower (odds ratio [OR], 0.87; 95% confidence interval [CI], 0.80-0.97; $P < 0.01$) compared with those at less severe stages. Plasma vitamin C levels also tended to be lower in patients with severe PD; however, this was not significant (OR, 0.98; 95% CI, 0.96-1.00; $P = 0.09$).

CONCLUSION: Our findings suggest that lymphocyte vitamin C levels in the peripheral blood may be a potentially useful biomarker for the progression of PD.

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