

LETTER TO EDITOR

SERUM LEVELS OF INTERLEUKIN-6, BRAIN-DERIVED NEUROTROPHIC FACTOR AND RETURN TO WORK IN PATIENTS WITH MAJOR DEPRESSION: PRELIMINARY STUDY

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Description

Peripheral levels of InterLeukin-6 (IL-6) play an important role in the pathophysiology of Major Depression (MD) [1]. Higher plasma IL-6 activity is related to refractory depression, and its levels might be a predictor of the response to selective serotonin reuptake inhibitors or serotonin and norepinephrine reuptake inhibitors [2]. Peripheral levels of IL-6 are reduced after recovery from MD [3]. Brain-Derived Neurotrophic Factor (BDNF) is also associated with the pathophysiology of MD [4,5]. Peripheral levels of BDNF in patients with MD are reduced, and are increased by the use of antidepressants and electroconvulsive therapy [6,7]. These findings suggest that peripheral levels of IL-6 and BDNF may be useful biomarkers for recovery from MD. Till date, no reports have demonstrated that serum levels of IL-6 and BDNF can predict the Return To Work (RTW) in patients with MD. We investigated the relationship between serum levels of IL-6 and BDNF at baseline (T0) and at week 8 (T8), and the outcome of RTW in patients with MD. This study comprised 24 patients who met the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) criteria for MD (M/F: 14/10, Age: 29-57 years).

The severity of depressive state was evaluated using the Hamilton Rating Scale for Depression (HAMD) at T0 and T8, following treatment with antidepressants. All patients achieved remission within week 12 (T12). The patients succeeding in RTW within 6 months following remission were categorized as the succeeding group, whereas the others were categorized as the failure group. Blood samples were taken at 7:00 am before breakfast (at least 12 hrs after the last medication) at T0 and T8, following treatment with antidepressants; 15 ml of venous blood was drawn after the patient had rested overnight. The serum samples were separated in a centrifuge (2000 g, 10 min, and 4°C) and stored at -80°C until assay. Serum levels of IL-6 and BDNF were measured using ELISA [8]. The study protocol was approved by the Ethics Committee of the University of Occupational and Environmental Health, Kitakyushu, Japan (approval number: H25-13; May 8, 2013) and was conducted while upholding its ethical standards. All participants signed an informed consent document explaining the study protocol and the potential risks involved. No differences were found in age, sex, HAMD scores, serum IL-6 levels, and serum BDNF levels between the succeeding and failure groups (Table 1).

Table 1. Demographics of the succeeding group and the failure group

	Succeeding group	Failure group	p-value
Age	45 (39-51)	43 (38-51)	0.86
Female (%)	36 (%)	50 (%)	0.68
HAMD 0 W	21 (19-23)	20 (18-21)	0.30
BDNF 0 W	5.9 (4.1-7.4)	7.8 (5.9-9.2)	0.095

IL-6 0 W	1.2 (0.8-2.1)	1.4 (0.9-1.7)	0.81
BDNF (0 W-8 W)	-0.2 (-0.7-0.2)	0.5 (-0.7-1.3)	0.70
IL-6 (0 W-8 W)	0 (-0.2-0.3)	0.3 (0.1-0.5)	0.26

Logistic regression analysis was also performed with RTW success or failure as the objective variable. Age, sex, changes in serum IL-6 levels,

and serum BDNF levels were independent of RTW (Table 2).

Table 2. Odds ratios of each variable

	Odds ratio (95% CI)	p-value
Age	0.98 (0.89-1.09)	0.76
Sex (Female)	1.34 (0.23-7.79)	0.75
BDNF (0 W)-8 W)	1.09 (0.59-2.03)	0.79
IL-6 (0 W-8 W)	5.49 (0.31-97.4)	0.25

The preliminary results indicate that peripheral levels of IL-6 and BDNF during the acute phase of MD did not predict the success or failure of RTW within 6 months following remission.

Further studies using a larger sample and longer follow-up must be performed to confirm the preliminary results.

Conflict of Interest Statement

The authors declare that they have no competing interests. This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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