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ANTIDEPRESSANT TREATMENT RESTORES BRAIN-DERIVED NEUROTROPHIC FACTOR (BDNF) SERUM LEVELS AND AMELIORATES MOTOR FUNCTION IN PARKINSON'S DISEASE PATIENTS

V. Ricci¹, M. Pomponi², G. Martinotti², A. Bentivoglio³, G. Loria³, C. Caltagirone¹, P. Bria², F. Angelucci¹

¹Department of Clinical and Behavioural Neurology, IRCCS Santa Lucia Foundation,

²Institute of Psychiatry, Catholic University, ³Institute of Neurology, Catholic University, Rome, Italy

Introduction: Depression is a common psychiatric disorder in Parkinson's disease (PD). It has been proposed that antidepressant drugs may boost brain production of trophic factors, such as brain-derived neurotrophic factor (BDNF) and glial cell derived neurotrophic factor (GDNF), an effect associated with improvement of clinical symptoms. However, BDNF and GDNF play also a role in the maintenance of dopaminergic neurons, which undergo to neuronal death during PD course.

Aims: Based on these findings we explored the hypothesis that PD depressed patients may have altered BDNF or GDNF serum levels and that antidepressant drugs may restore them and potentially have beneficial effects not only for depressive but also parkinsonian symptoms.

Methods: We measured by enzyme linked immunosorbent assay (ELISA) the serum levels of BDNF and GDNF in depressed PD patients, non depressed PD patients and healthy subjects and correlated them with clinical observations.

Results: We found:

- (1) BDNF serum levels were decreased in PD depressed as compared to non depressed patients and control subjects;
- (2) antidepressant therapy restored BDNF serum levels to those of controls; and
- (3) antidepressant therapy in association with Parkinson's therapy significantly ameliorated motor performance in PD depressed patients.

Conclusion: Our data suggest that PD patients are characterized by a reduction of BDNF serum levels and that depression may exacerbate this effect and worsen PD symptoms. It is proposed that association between anti-parkinsonian treatment and SSRI could be a good therapeutic chance not only for treating depression in PD but also for improving PD symptoms.