Epidermal Growth Factor Is Associated With Postural Instability And Gait Disorders Motor Phenotype In Early, Drug-naïve Parkinson's Disease

Picillo M¹, Erro R², Amboni M¹, Moccia M⁴, Santangelo G³, Pivonello R⁶, Longo K³, Pivonello C⁶, Vitale C³, Buonomenna VM¹, Orefice G⁴, Colao A⁶, Barone P¹, Pellecchia MT¹*

¹Center for Neurodegenerative Diseases (CEMAND), Department of Medicine, University of Salerno, Baronissi (SA), Italy
²Sobell Department of Motor Neuroscience and Movement Disorders, University College London (UCL) Institute of Neurology, London, United Kingdom
³IDC Hermitage-Capodimonte, Naples, Italy
⁴Department of Neurological Sciences, University Federico II, Naples, Italy
⁵Neuropsychology Laboratory, Department of Psychology, Second University of Naples, Caserta, Italy
⁶Department of Molecular and Clinical Endocrinology and Oncology, Federico II University, Naples, Italy
⁷University of Naples Parthenope, Naples, Italy
*Corresponding author

Postural instability and gait disorders (PIGD) phenotype has been associated with a worse prognosis in Parkinson's disease (PD). Evidence shows that Epidermal Growth Factor (EGF) acts as a neurotrophic factor for dopaminergic neurons and may be a biomarker of cognitive impairment in PD. However, the relationship between EGF and motor phenotype in PD has not been investigated to date. This pilot study sets out to evaluate whether serum EGF levels are associated with a specific motor phenotype in early, drug-naïve PD.

Serum EGF was measured at baseline in 37, early, drug-naïve PD patients. Patients were evaluated with the Unified Parkinson's disease rating scale part II and III and classified as having PIGD or Tremor-dominant (TD) phenotype at baseline and after 2-year follow up. Multiple regression analysis was conducted to correlate baseline serum EGF levels with motor phenotype both at baseline and at 2-year follow-up. Patients who showed PIGD phenotype at follow up presented significantly higher baseline serum EGF levels compared to those presenting TD phenotype (805.8±222.4 versus 583.5±243.7, p=0.007). The regression model showed baseline serum EGF levels as the best independent variable associated with PIGD phenotype both at baseline and at follow up, considering age and baseline motor impairment as covariates. However, the analysis failed to demonstrate that EGF levels may predict the emergence of PIGD phenotype at 2-year follow up. Further studies with larger cohorts and longer follow up involving both PD patients and healthy controls are needed to clarify the role of EGF as a biomarker in PD.