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Prokineticin-2 levels are increased in serum of patients with Parkinson's disease

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Introduction: Prokineticin-2 (PK2) is a chemokine involved in many CNS functions. Parkinson's disease (PD) animal models showed that PK2 is highly expressed in early phases of nigrostriatal degeneration to mediate a neuroprotective response. However, to date, there are no data from PD patients.

Objective: To perform a pilot assessment of PK2 in serum of PD patients in order to estimate its value in clinical perspective.

Methods: PK2 levels were measured in serum of 31 PD patients and 14 control subjects, also providing ROC curve analysis. In the PD group, a correlation analysis was run with main clinical parameters, including UPDRS III and Hoehn and Yahr scale, MMSE adjusted score, Non Motor Symptoms Scale, and levodopa equivalent daily dose. In five patients the associations with CSF levels of lactate, albumin CSF/serum ratio, amyloid-β-42, total-tau and phosphorylated-tau were also explored.

Results: Serum PK2 was significantly higher in PD patients (mean±dev.st.: 6.3±3.6 ng/ml) than controls (3.1±1.7), and differentiated the groups with moderate accuracy (AUC=0.75; Sensitivity=71%; Specificity=64%). Serum PK2 levels were directly associated with amyloid-β-42 (R=0.96, p=0.008), even independently from age and sex; moreover, an inverse association with lactate resulted (R= -0.89, p=0.04).

Conclusions: We demonstrated that PK2 pathway was activated at systemic level in PD patients, probably in a defensive manner. These findings, although preliminary, focus attention on PK2 in PD either as a disease biomarker of early neuronal damage or as a novel target for disease-modifying treatments. Future studies are now needed for confirmation.