Parkinson's disease and oxidative stress: evaluation by BAP and d-ROMs tests.

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Parkinson's disease (PD) is a common adult-onset neurodegenerative disorder. Typically PD is a sporadic neurological disorder, and over time affected patients see their disability growing and their quality of life declining. Oxidative stress has been hypothesized to be linked to both the initiation and the progression of PD. Preclinical findings from both in vitro and in vivo experimental models of PD suggest that the neurodegenerative process starts with otherwise healthy neurons being hit by some etiological factors, which sets into motion a cascade of deleterious events. In these models initial molecular alterations in degenerating dopaminergic neurons include increased formation of reactive oxygen species, presumably originating from both inside and outside the mitochondria.

The aim of the present study is to evaluate the oxidative status in a sample of patients with PD by a specific serum tests: BAP and d-ROMs tests.

21 outpatients, (8 F, 13 M) mean age 70 years (SD 11.5), range 44-86 years, suffering PD (Hoehn & Yahr scale: 1-3) were enrolled. The mean duration of disease was 3.8 (SD 2.4) years, range 1-8 years. 2 patients was affected also of the dementia and in 8 patients concomitant vascular disease.

Serum total oxidant capacity was determined by performing the d-ROMs test (derived Reactive Oxygen Metabolites), whose chemical principle is based on the ability of a biological sample to oxidize N,N-diethylparaphenylenediamine (DPPD) and serum total antioxidant capacity was assessed by means the BAP tests (Biological Antioxidant Potential) which measures the ability of a serum sample to reduce iron from the ferric to the ferrous ionic form.

The results of our study indicates that the mean values of d-ROMs tests is 369,8 (SD 82.5) (range normal values is 250-300 U.CARR (Carratelli Unit; 1 U. CARR = 0.8 mg/L H2O2.) The mean value of BAP test is 1641,4 (SD 412.7) (range normal values is 2200-4000 microMol/L).

These data showed that signs of systemic oxidative stress, represented by high values ??of hydroperoxides serum, are present in subjects with Parkinson's disease and they can be quantified easily with a simple and inexpensive method as the D-ROMs test.