

**Prevalence of headache in a cohort of patients with Parkinson's disease**

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*Introduction:* Although Parkinson's disease (PD) is preeminently considered a movement disorder, most patients also present non-motor features, including autonomic and gastrointestinal dysfunction, cognitive impairment, psychiatric and sleep disturbances, and sensory symptoms. Until now, data about the prevalence of headache and migraine in PD are variable, the studies conducted so far are extremely heterogeneous and the results controversial.

*Objective:* Our aim was to assess the lifetime and last year prevalence and the phenomenology of the headache in a cohort of PD patients in comparison with control subjects (Ctrl).

*Methods:* We recruited 80 patients (36 F; 44 M) and 76 Ctrl (37 F; 39 M) selected among spouses and not consanguineous caregivers, comparable for age, sex and education. All participants underwent Beck Depression Inventory scale and a questionnaire assessing the presence of a history of headache and days with headache during the last year, describing characteristics of pain as well. Only patients were clinically evaluated by the motor section of Unified PD Rating Scale (UPDRS-III) and Hoehn and Yahr(HY) scale.

*Results:* Forty-seven patients (57%; 24 M/23 F) and 46 Ctrl (60%; 24 M/22 F;  $p=0.871$ ) presented headache during the whole lifetime, whereas 28 patients (35%; 12 M/16 F) and 34 Ctrl (45%; 18 M/16 F;  $p=0.514$ ) had suffered in the last year. No significant difference was observed in the overall prevalence of lifetime migraine among PD patients (30%; 5 M/9 F;  $p=0.387$ ) compared to Ctrl (39%; 6 M/12 F;  $p=0.178$ ), as well as the prevalence of tension-type headache (TTH) was comparable between the two groups (70% vs 61%;  $p=0.619$ ). Migraine prevalence was significantly higher among women in both groups (11% M vs 25% F;  $p=0.067$ ; 15% M vs 32% F; Ctrl:  $p=0.016$ ). We found higher occurrence of headache family history (40% vs 13%;  $p=0.004$ ), more common headache remission with age ( $p<0.001$ ), particularly after the onset of motor symptoms (23%;  $p=0.037$ ), among PD subjects rather than Ctrl. Furthermore, patients reported more common gradual onset of the pain (6% vs 16%  $p=0.068$ ), less frequent visual aura (46% vs 64%  $p<0.001$ ), and shorter attack duration than Ctrl (2% vs 13%;  $p=0.058$ ).

*Conclusions:* The prevalence of migraine and TTH did not differ between PD subjects and controls. PD does not seem to act as a risk factor in the development of headache, but the dopaminergic pathway degeneration and progressive loss of DA activation on the trigeminal-vascular system might affect the severity and duration of the attacks and favor the improvement and remission of the headache in these patients.