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WFN15-0929

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Cortical thinning pattern in Parkinson's disease stages

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It has been well described the subcortical areas are the first affected; however, the progression to cortical involvement and how it correlates with disease severity are still unclear. 56 patients with PD (59.52 ± 9.9) according to the UK Parkinson's Disease Society Brain Bank criteria were compared with 27 healthy controls (HC) (57.77 ± 10.06). Anatomical T1-weighted MRI images were obtained on a 3 T scanner. We used the civet pipeline and the SurfStat toolbox on MatlabR2012b to process and analyze the images. We divided patients into 3 groups according to disease severity measured by H&Y scale and compared each group with healthy controls (HC). We also correlated patients' cortical thickness with H&Y, NMS, UPDRS, UPDRS III and SCOPA scores. There was a correlation between patients CT and UPDRS scores in the right superior temporal gyrus ($p < 0.05$). The comparison between group 1 and HC revealed decreased cortical thickness in left superior temporal gyrus, left gyrus rectus and left olfactory cortex ($p < 0.05$); Regarding the group 2, the areas with lower CT were right postcentral gyrus, right supplementary motor area and right inferior frontal gyrus ($p < 0.05$). For group 3 significant lower CT was found in left inferior frontal gyrus, left precentral and postcentral gyrus, left SMA, left inferior frontal gyrus, left gyrus rectus, right temporal pole, right fusiform gyrus, right middle temporal gyrus, and right occipital gyrus ($p < 0.05$). Our results show that there is an increase in cortical thinning across PD stages; Progression of PD has been well demonstrated using other neuroimaging methods and cortical thickness measure is also a useful tool to assess disease stages.

doi:10.1016/j.jns.2015.08.221

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WFN15-1165

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Neuropsychiatric changes in patients with primary dystonia: influence of pallidal deep brain stimulation

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Background: In primary dystonia patients (PTD), along with motor symptoms neuropsychiatric changes are often found.

Abnormalities of mood and behavior contribute a lot to decrease in quality of life.

Objective: To reveal neuropsychiatric abnormalities in PTD and to trace their evolution following pallidal deep brain stimulation.

Methods: We assessed 62 patients operated for bilateral GPi-DBS: 16 patients with pharmaco-resistant cervical, 22 patients with segmental, and 24 patients with generalized PTD. Mean age at surgery was 41.7 ± 13.7 years; mean disease duration was 13.1 ± 11.7 years. Quantitative neuropsychiatric testing was performed prior to surgery and at 3, 6, and 12 months following GPi-DBS. For assessment of anxiety we used Spilberger scale; for depression – Beck inventory (BDI); for obsessive–compulsive disorder – Goodman screening test; for impulsivity – Barratt scale; for apathy – Starkstein scale; for hypomania symptoms – checklist HCL-32; for quality of life – SF-36 questionnaire.

Results: 61.3% of PTD patients had primarily elevated personal anxiety score, reactive anxiety was increased only in 21.0%. 51.6% of patients suffered moderate to severe depression. In 24.2%, obsessive–compulsive behavior was a considerable issue. 17.7% of patients had pathological impulsivity, 29.0% had apathy. In the course of GPi-DBS, depression scores significantly decreased ($p < 0.01$). From the 6th month of follow-up, reactive anxiety reduced ($p < 0.05$). Personal anxiety changed insignificantly. OCD-symptoms ameliorated ($p < 0.05$), however, apathy features showed increment. Impulsivity was not significantly influenced. Tendency to hypomanic shift was observed. Altogether, improvement in physical component of health following GPi-DBS was more pronounced than in mental component (SF-36).

Conclusions: In PTD, neuropsychiatric changes are frequent. GPi-DBS is safe for neuropsychiatric profile of patients. Moreover, GPi-DBS might lead to some extent of functional improvement in mood and behavior. Nevertheless, mental component of health seems not to be normalized.

doi:10.1016/j.jns.2015.08.222

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WFN15-0818

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Gamma knife thalamotomy for essential tremor: the first preliminary Chilean experience

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Background: The nucleus ventralis intermedius (VIM) has been widely considered as the preferred target for tremor treatment using different techniques such as radiofrequency ablation (RF), deep brain stimulation (DBS) and more recently gamma knife radiosurgery (GKRS).