

Diagnostic and prognostic role of thalamic volume in progressive supranuclear palsy

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Introduction: Progressive supranuclear palsy (PSP) is an atypical parkinsonism, characterized by vertical supranuclear gaze palsy, postural instability with falls, akinesia, and cognitive dysfunction [1]. Different diagnostic MRI markers have been proposed [2,3]. Little is known about thalamic volume and its diagnostic and prognostic utility in PSP.

Objectives: to verify if 1) thalamic volumes and subsections are smaller in PSP patients compared to Parkinson’s disease (PD) and healthy controls (HC); 2) regional thalamic volumes can predict the evolution of disease according to specific milestones (loss of unaided gait, wheelchair dependence, dementia, unintelligible speech).

Methods: Thalamic volumes were calculated according to Johansen-Berg atlas [4]. ANCOVA was used to detect differences among thalamic volumes of PSP, PD and HC, adjusted for age and total brain volume. Cox regression analyses were used to measure the effect of thalamic volumes on disease milestones. The significance level for both analyses was set at $\leq 0,05$.

Results: Thirty-three PSP, 33 PD and 33 HC were enrolled. Data on disease milestones were available only for 18 PSP. Thalamic volumes were significantly smaller in PSP than in PD and HC ($F= 26, 978, p < 0,01$). On the other hand, thalamic volumes could not predict the evolution towards specific disease milestones ($p > 0,05$).

Conclusions: Thalamic volumes may be useful to distinguish PSP from PD and HC. These data confirm previous studies [5,6] and further reinforce the potential utility of new MRI diagnostic markers. Survival analyses regarding disease milestones did not show any significance, but were limited by the small sample size. Therefore, further studies are warranted to better define the role of thalamus atrophy in PSP.

References:

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