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Corticobasal syndrome and Parkinson's disease at the beginning: usefulness of different asymmetrical patterns for early diagnosis

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Introduction: Differential diagnosis between Parkinson's Disease (PD) and Cortico-basal syndrome (CBS) could be challenging, especially at the early stage, due to the asymmetric onset of the diseases [1]. Despite the clinical overlap, the anatomical circuits involved in the occurrence of these disorders are different.

Objectives: To evaluate R2 Blink Reflex Recovery Cycle (R2BRRC) and cortical thickness in drug-naïve PD patients and in CBS patients for characterizing pathophysiological mechanisms underlying these conditions.

Methods: Patients with diagnosis of PD and CBS were recruited. R2BRRC was evaluated bilaterally at interstimulus intervals (ISIs) of 100-150-200-300-400-500-750 ms. Asymmetry index (AI) of R2BRRC for each ISI was computed [2]. Patients underwent a structural brain MRI using a 3-D T1-weighted and cortical thickness and MRI-AI was calculated.

Results: Fourteen drug-naïve PD patients and 10 patients with early CBS diagnosis were enrolled. R2BRRC of PD patients showed an increased brainstem excitability for less affected side (LAS) stimulation at ISIs of 100 and 150 ms ($p<0.001$) compared to most affected side (MAS), whereas no differences between LAS and MAS were found in CBS. R2BRRC-AI at ISI of 100 ms showed significant difference between groups, being higher in PD. Cortical thickness analysis showed significant differences between groups in left medialorbitofrontal, superiorfrontal and superiorparietal gyri, and conversely, MRI-AI was significantly higher in CBS group.

Conclusions: Drug-naïve PD patients exhibited an asymmetric pattern of brainstem excitability, compared to CBS. Conversely, CBS patients showed an asymmetric pattern of cortical atrophy. This opposite pattern of neurophysiological and structural abnormalities involving cortical and subcortical brain structures could highlight the different pathophysiological mechanisms underlying these neurodegenerative disorders

References:

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