ELECTROPHYSIOLOGICAL INVESTIGATION OF THE EFFECTS OF LEVODOPA ON SEMANTIC COMPREHENSION OF ACTION WORDS IN PARKINSON'S DISEASE

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Introduction: In contrast to the growing literature about the neurophysiological and biochemical substrates of speech in Parkinson's Disease (PD), little attention has been paid to the influence of dopamine on language abilities in PD.

Aim: The current manuscript reports an electrophysiological investigation of the effects of levodopa on semantic comprehension of action words in PD.

Methods: In seven patients with advanced PD, we investigated the dopaminergic effects on action-word comprehension by means of event-related potentials. The patients were asked to silently read a randomized series of verbs, consisting of hand action and non-action verbs. Using LORETA-analysis, ten brain areas of interest were studied over a time window from 150 to 260 msec after word onset.

Results: The results of this study demonstrate focal activity between 200 and 230 msec after word onset in 5/7 patients. Generally higher current densities were found after levodopa administration, which were in some patients clearly lateralized.
Conclusion: These results demonstrate that motor tuning doesn't equal language tuning in PD and that dopamine is involved in semantic processing of action verbs. Although the present sample is relatively small, the patient by patient analyses demonstrate a number of determining variables which advocate an individualized approach in PD language diagnosis.