

Effect of oxytocin on response inhibition in Parkinson's disease: a pilot study

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Introduction: Cumulating evidence has shown the role of the neuropeptide OXT in social behavior and cognition [1]. Recent studies have also revealed that OXT has a modulatory role on inhibitory control [2-3]. The overlap pro-saccade task and anti-saccade task are two established saccadic paradigms that allow for an objective assessment of response inhibition, which is known to be impaired in PD patients.

Objective: To observe the effect of oxytocin (OXT) on response inhibition in Parkinson's disease (PD) patients using dedicated saccadic tasks.

Methods: This was a randomized, placebo-controlled, double blind, crossover, monocentric pilot study. We recruited 11 male PD patients. Participants received 24 IU of a synthetic OXT nasal spray or placebo before saccadic assessment, consisting of an overlap pro-saccade and an anti-saccade task. Eye movements were recorded using an eye tracker (Tobii TX300).

Results: Participants made less anticipatory errors in the overlapping pro-saccade task ($p=0.003$) after intake of OXT compared to placebo. Reaction time in correctly performed anti-saccade task were shorter after OXT intake, although this did not reach significance ($p=0.07$). There were no differences in error rate in the antisaccade task after OXT or placebo intake ($p>0.05$).

Conclusions: Our results show a significant reduction of the anticipatory error rate in the overlapping pro-saccade task after intake of intranasal OXT. This is in line with previously shown correlation of OXT with behavioral performance, specifically impulsivity control [2-3]. The improvement in motor impulsivity described in this eye tracking study may be reflected by a clinical improvement of overall impulsivity, particularly in PD patients with addictive behaviors. Ours is a small pilot study, and these results warrant further validation in bigger cohorts.

References

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