

Oxytocin Effects on Levodopa-induced Dyskinesias

Dyskinesia Challenge, 2013

Objective/Rationale:

The objective of this project is to describe the potential antidyskinetic properties of the hormone oxytocin. Oxytocin is found in brain areas that are negatively affected in Parkinson's disease (PD), such as the striatum. Oxytocin may reverse levodopa-induced dyskinesias by reducing the activity of a subset of neurons in the striatum. The researchers will test doses of oxytocin to show which may have beneficial effects against dyskinesias in a pre-clinical model.

Project Description:

They will remove dopamine from the brains of models to cause PD-like symptoms and then treat them with levodopa, which causes measurable dyskinesias. Researchers will treat these models with different doses of oxytocin and determine which dose may have good therapeutic potential. In addition, they will put a sampling probe into the brains to determine how oxytocin treatment causes changes in brain chemistry. In particular, they expect oxytocin will lower the activity of a particular type of neuron in the striatum that projects to another brain area called the globus pallidus. This will allow scientists to draw conclusions about the precise mechanism of action of oxytocin effects and its impact on dyskinesia.

Relevance to Diagnosis/Treatment of Parkinson's Disease:

Levodopa-based therapies remain the gold standard for PD. However, this treatment presents a major challenge for clinicians since constant treatment will inevitably lead to levodopa-induced dyskinesias. This research will aid in the development of a new approach to treating this side effect.

Anticipated Outcome:

The researchers anticipate that they will find the best dose of oxytocin to decrease levodopa-induced dyskinesias in a Parkinson's model. They expect that this dose will be associated with reduced neurotransmitter release in the globus pallidus. If this is correct, their next step will be to use oxytocin in a clinical setting with patients experiencing levodopa-induced dyskinesias.

RESEARCHERS

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