Dexterity

Manual dexterity.

Effect of subthalamic deep brain stimulation on upper limb dexterity in patients with Parkinson's disease

The efficacy of deep brain stimulation of the subthalamic nucleus (STN-DBS) on dexterity remains controversial despite its recognition as an effective strategy for Parkinson's disease (PD). The present study investigated the efficacy of STN-DBS for ameliorating bradykinesia and dexterity in comparison to dopaminergic medications.

METHODS: Part III of the unified Parkinson's disease rating scale was employed for the evaluation of bradykinesia while the Purdue Pegboard Test and the Box and Block test were selected for dexterity.

RESULTS: Our findings indicate that bradykinesia is significantly improved with both DBS and dopaminergic medication, whereas dexterity is improved only with DBS. Dopaminergic medication did not exhibit a satisfactory efficacy on dexterity, and there was little synergistic effect of dopaminergic medication and STN-DBS for improving dexterity associated with PD.

CONCLUSIONS: Our results suggest that DBS is potentially more effective than dopaminergic medications for improving dexterity. The disparities in efficacy for bradykinesia and dexterity between DBS and dopaminergic medication hint at the potential mechanisms of STN-DBS. We speculate that DBS follows at least two different mechanisms for improving Parkinsonian symptoms: 1) the dopaminergic system, primarily for the improvement of bradykinesia; and 2) the non-dopaminergic system, for the improvement of dexterity. This hypothesis requires further verification and investigation [1)].

1)
Nozaki T, Asakawa T, Sugiyama K, Koda Y, Shimoda A, Mizushima T, Sameshima T, Namba H. Effect of subthalamic deep brain stimulation on upper limb dexterity in patients with Parkinson's disease. World Neurosurg. 2018 Apr 11. pii: S1878-8750(18)30730-7. doi: 10.1016/j.wneu.2018.04.014. [Epub ahead of print] PubMed PMID: 29654953.