Short-term effect of bilateral subthalamic stimulation for advanced parkinsons disease

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摘要

Abstract

BACKGROUND: Subthalamic nucleus (STN) hyperactivity is a pathophysiological phenomenon of Parkinson's disease (PD). Inhibition of this hyperactivity by chronic deep brain stimulation (DBS) can possibly reset the aberrant function of the cortico-striato-thalamal circuit and improve the parkinsonian symptoms. DBS was introduced as a safe and alternative way of performing functional stereotaxic surgery for treating PD. METHODS: Seven advanced PD patients with complicated motor fluctuations and dyskinesia were enrolled in the study. A quadripolar electrode was bilaterally installed in the STN. Patients were evaluated before and 6 months after implantation using a battery of clinical assessments, including the motor score of the unified Parkinson's disease rating scale (UPDRS), modified Hoehn and Yahr (HY) staging, and the Schwab and England activities of daily living scale (SEADL). Preoperative baseline evaluations included both "off-medication" periods and "on-medication" periods, while postoperative evaluations included a cross-over of the above 2 periods with and without DBS. RESULTS: The motor disability, HY staging, and SEADL all significantly improved in both the off- and on-medication periods 6 months after STN DBS. Compared to the baseline off-medication score, a significant improvement was found in the UPDRS motor and other subscores including tremors, rigidity, and bradykinesia. The SEADL score showed a great improvement of 205.6%. Ballism/chorea, mood changes, and blepharospasm may have been induced by DBS. Neither serious nor permanent side effects appeared. CONCLUSIONS: Bilateral STN DBS improved the motor symptoms in advanced PD patients in both the off- and on-medication periods. They showed improvements not only in motor disabilities of tremors, rigidity, bradykinesia, and postural and gait instability, but also in levodopa-related dyskinesia and psychosis.