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Letter to Editor

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Is Subthalamic Nucleus Deep Brain Stimulation Efficacious in Treating Axial Symptoms in Patients with a Suboptimal Levodopa Response?

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Dear Sir,

We read with great interest the article by Nassehi et al. titled 'Subthalamic deep brain stimulation in a patient with severe axial symptoms and suboptimal levodopa responsive Parkinson's disease', in which they describe a subject with Parkinson's disease (PD) with a levodopa-unresponsive tremor and severe axial symptoms who benefitted significantly from subthalamic nucleus deep brain stimulation (STN-DBS) therapy (3). However, we would like to comment on their report in an effort to foster a better understanding of this interesting case.

As Nassehi et al. note, there remains controversy regarding the efficacy of STN-DBS in treating axial symptoms (3). Some authors suggest STN-DBS to improve axial symptoms, with an effect size similar to that of the preoperative effects of dopaminergic medication (1), whereas others submit that its impact on axial symptoms is not sustained in the long term (4). As a consequence, the conclusion that STN-DBS results in a greater degree of improvement in axial symptoms than dopaminergic treatment is very ambitious given the lack of supporting evidence in the literature. Thus, we believe that the evaluation of the patient as having suboptimal levodopa-responsive axial symptoms needs to be further interrogated.

Nassehi et al. state that the patient's Unified Parkinson's Disease Rating Scale (UPDRS)-III motor score 'off/on' medication was 111/94 before the STN-DBS therapy. However, they also state that, post-operatively, the patient's on-medication/off-stimulation UPDRS-III score was 82 points, which was lower when compared with the pre-surgical state. Considering that the assessments were performed at the third month after surgery, this difference is difficult to be explained based on the microlesion effect of the surgery. Hence, we question how the authors explain this difference in the patient's UPDRS-III score when the stimulation was switched off. Remarkably, the STN-DBS therapy appeared to provide a substantial decrement in the LED, meaning that the levodopa required to provide an 'on' medication state also reduced, which might have enabled the authors to make a more optimal 'on' medication assessment. Overall, we consider that the levodopa dosage prescribed pre-operatively might have been insufficient to ensure the accuracy of the 'on' medication state assessment. It would be beneficial to also note that the levodopa dosages prescribed for the 'on' medication assessments could have been described in a more detailed manner (i.e. separately for the pre-operative and post-operative dosages). For instance, what dosage did the authors increase the apomorphine to before deciding that it failed to improve the patient's symptoms?

In addition, Nassehi et al. interpret the observed improvement in the patient's axial symptoms following high-frequency stimulation as data supporting the hypothesis that the improvement in the severe tremor could have been an underlying cause of the improvement in gait. Nevertheless, the patient's neurological exam also revealed severe bradykinesia in both the upper and lower limbs, which appears compatible with a mixed subtype of PD. Therefore, as demonstrated in the video footage, we believe that the patient's axial symptoms might have improved indirectly due to the amelioration of the appendicular motor manifestations, including bradykinesia and rigidity, which also respond well to high-frequency stimulation and are certainly more closely associated with the change in the axial symptoms. Another explanation may be related to the established benefit of STN-DBS therapy in relation to gastric mobility (2), which might have resulted in the more optimal bioavailability of the levodopa prescribed post-surgery.

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In conclusion, we certainly agree with the interesting nature of the reported case, although we believe that future reports involving a large number of patients with atypical scenarios might contribute substantially to the still-unknown aspects of the efficacy of STN-DBS in relation to axial symptoms.

AUTHORSHIP CONTRIBUTION

The authors (HO, SC) confirm responsibility for the following: study conception and design, data collection, analysis and interpretation of results, and manuscript preparation.

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