Deep Brain Stimulation for Tardive Dyskinesia and Akathisia

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OBJECTIVE

To describe a patient treated with bilateral GPi deep brain stimulation (DBS) for severe, medically-refractory tardive dyskinesia (TD) and akathisia (TA).

BACKGROUND

TD and TA are hyperkinetic movement disorders causally related to dopamine receptor blocking drug (DRBD) exposure. Besides tetrabenazine, treatment options are limited and there are no trials of surgical interventions.

METHODS

•A 61-year-old right-handed retired female teacher presented for evaluation of restlessness and involuntary movements. During her teens, she displayed excessive eye blinking and other subtle motor tics, but no phonic tics.
•These movements remitted spontaneously, but recurred in her late 20s with head/arm/leg jerking and "bouncing" of her body. Simultaneously, she developed obsessive compulsive behaviors (OCB) such as touching walls before leaving a room.
•She was treated with haloperidol and other DRBDs over 4 years. The aforementioned symptoms improved and she required no pharmacologic intervention for 20 years.
•At age 54, without any clear precipitating event, she noted gradual onset of an intense feeling of "inner restlessness" debilitating enough to force her into an early retirement. She also became aware of involuntary movements in the face and upper body.
•She was diagnosed with tardive akathisia/dyskinesia and tried over 100 medications, including tetrabenazine, DRBDs, beta-blockers, benzodiazepines, antidepressants, anticholinergics, anticonvulsants, dopaminergics, opiates, botulinum toxin, and more, without lasting benefit.
•On examination, she displayed oro-facial lingual stereotypy, cranial cervical dystonia, and continuous pacing about the room associated with a feeling of restlessness and an urge to move.

RESULTS

After obtaining informed consent, the patient underwent bilateral GPi-DBS without any adverse events. We captured the patient's degree of psychologic and physical impairment using several scales (Table 1). After 6-month follow-up, involuntary movements decreased 55%; akathisia decreased by 21% according to the Barnes Akathisia Scale and 57% using the Prince Henry Hospital Akathisia Rating Scale. Anxiety decreased by 35% on the Hamilton Anxiety Rating Scale while depressive and OCB scores improved minimally.

TABLE 1: Clinical Endpoints

	Baseline/Pre-operation	3-month Follow-up	6-month Follow-up
Abnormal Involuntary Movement Scale (AIMS)	**38**	**23**	**17**
Prince Henry Hospital Akathisia Rating Scale	**30**	**22**	**13**
Barnes Akathisia Scale	**14**	**13**	**11**
Beck Depression Index (BDI)	**15**	**6**	**12**
Hamilton Anxiety Rating Scale (HAM-A)	**26**	**8**	**17**
Yale-Brown Obsessive Compulsive Scale (Y-BOCS)	**25**	**20**	**24**

CONCLUSIONS

Although a single case, this first report suggests that GPi DBS may be a safe and effective treatment of disabling akathisia; TD also improved.

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