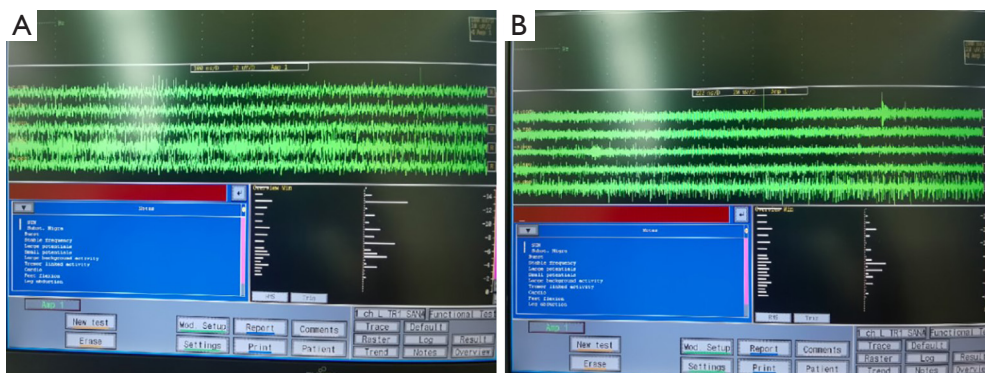


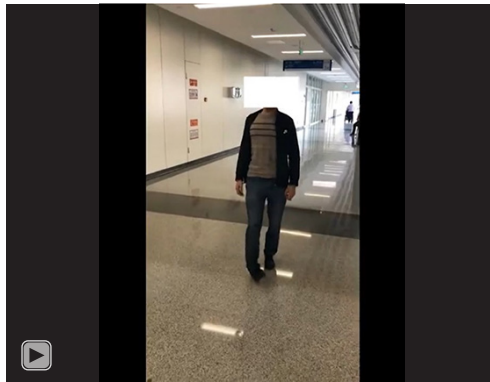
**Figure S1** Preoperative MRI of the patient. (A) Axial T2-weighted MRI. (B) Sagittal T1-weighted MRI. (C) Coronal T2-weighted MRI. MRI, magnetic resonance imaging.



**Figure S2** Microelectrode recording results of GPi during the second operation. (A) Left hemisphere. (B) Right hemisphere. GPi, globus pallidus internus.



**Video S1** Video of our patient at different follow-up period before and after DBS surgery. Before surgery, his main complaints were serious muscle spasm inflicting two arms, right leg, back and waist, which made him lean to the left, and involuntarily tilt his head back. There was no significant improvement of dystonia after high frequency GPi-DBS, and the symptoms became even more serious. High frequency STN-DBS provided significant improvement, but it didn't last. After it was turned to 60 Hz STN-DBS, stable improvement was achieved, and it has been persisting for 2 years. This video is published with the consent of the patient's father. DBS, deep brain stimulation; GPi, globus pallidus internus; STN, subthalamic nucleus.



**Video S2** Video of the patient's father. The patient's father was also a *DYT1*-dystonia patient with the same *TOR1A* gene mutation, but his symptom was not so serious, that he can live a normal life. This video is published with the consent of the patient's father.