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Two-year follow-up of anterior thalamus deep brain stimulation for intractable epilepsy

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Background and aims: Deep brain stimulation (DBS) is a last-chance treatment for intractable epilepsy. The aim of this study was to evaluate the feasibility, efficacy and safety of anterior thalamic nuclei (ATN) DBS for intractable epilepsy in a long-term follow-up.

Methods: Three patients, one female and two males aged 26–42 diagnosed with intractable epilepsy were qualified for ATN DBS. One patient had secondary generalized seizures and two others had primary generalized seizures with a history of seizures between 8 and 36 years. The patients underwent bilateral stereotactic implantation of quadripolar stimulating electrodes to the ATN (Activa PC, Medtronic). The IPG was activated 4 weeks after implantation (5V, 145 Hz, 90 μs, cyclic mode: 1 min ON, 5 min OFF). All the patients and caregivers kept seizure diaries. Seizure frequency was compared to the pre-implantation baseline.

Results: ATN DBS decreased seizure frequency, with a mean reduction of 63.6%. Two patients had seizure frequency reduction of > 90%. One of the patients suffered from an intraventricular hemorrhage that was clinically silent. No serious complications were observed.

Conclusions: ATN DBS is a safe and effective treatment for intractable seizures. The efficacy and safety was confirmed in a long-term follow-up.

Key words: deep brain stimulation, epilepsy, anterior thalamic nuclei

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