



Background

Tremor affects 30-40% of MS patients and can be disabling. Holmes' (rubral or midbrain) tremor is a complex type of tremor. It is a combination of rest, postural and action tremor, with prominent proximal component. It is rarely seen in Multiple Sclerosis patients and it is commonly refractory to pharmacological treatment.

Deep Brain Stimulation (DBS) is very effective in essential and parkinsonian tremor, but its effectiveness in Holmes' tremor in MS has not been established yet.

Objective

To report the effect of the Deep Brain Stimulation on the severity of Holmes' tremor and on the quality of life in MS patients.

Methods

- Retrospective chart review of 342 patients who visited the Maxine Mesinger MS Clinic from July 2008 to December 2008.
- Four patients with MS (3 adults and 1 child) and intractable bilateral Holmes' tremor were identified.
- All patients underwent bilateral VIM (ventralis intramedius thalamic nucleus) DBS.
- Tremor severity was measured on Bain and Findley Rating Scale (4: inability to perform the task, 3: severe disability, 2: moderate disability, 1: minimal disability, 0: none).
- Data regarding patients' demographics, onset, type, severity and duration of tremor, past medical history, medications and impairment of daily activities were collected.
- Arm function, duration of benefit and adverse events post-DBS were also collected.

Results

- Patients' demographics are shown in table 1.
- Tremor severity was decreased to 2 post-DBS
- Mean follow-up period was 4 years.
- Two patients (50%) had deterioration of their pre-existing dysarthria
- Another patient (25%) had recurrence of his tremor 10 months post-DBS, therefore the procedure was repeated.
- Our youngest patient (25%) developed atonic seizures refractory to medications. His seizures improved after removal of his stimulators.
- Adverse events post-DBS are summarized in Fig. 1

Conclusions

- Tremor in MS affects quality of life and it can be the only cause of disability in MS patients.
- DBS decreases the severity of tremor and improves quality of life, even though it did not abolish the tremor
- Long term improvement was seen in all, but one patient.
- Adverse events post-DBS were present and limit its use.
- Larger studies are needed in order to evaluate the effect of DBS in a larger number of patients and to decrease its side effects that may limit its use.

References

- Ventral Intermediate Thalamic Stimulation in Complex Tremor Syndromes. N.Diedrich, L.Metman, R. Bakay, F. Alesh. Stereotact Funct Neurosurg 2008; 86:167-172
- Multiple Target DBS for MS Related and Poststroke Holmes' Tremor. D.Lim, S.Khandar, S. Health, J. Ollstrom, N. Ringel, P. Starr. Stereotact Funct Neurosurg 2007:85:144-149

Mean age in years	32.75 (13-43)	
Gender	Men	50%
	Women	50%
Race	African-American	50%
	Caucasian	25%
	Hispanic	25%
Type of MS	SPMS	75%
	RRMS	25%
Tremor severity	4	
Tremor duration in years	3.5	

Table 1. Patients' demographics

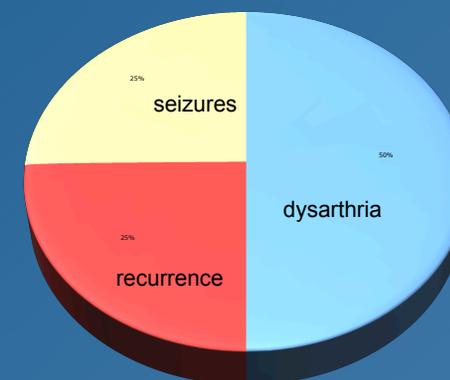


Figure 1. Adverse events after DBS