

Essential tremor and Parkinson's - frontiers of therapeutics (Insightec)

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Patients with severe tremor due to essential tremor (ET) and Parkinson's disease (PD) benefit from lesioning of the ventral intermediate nucleus of the thalamus. Lesioning is effective but involves significant complications rate, mainly due to inaccuracy of targeting and ablation. Transcranial MRgFUS is a new non-invasive method of gradual lesioning using high intensity focused ultrasound waves to ablate the chosen target. The procedure is done without incisions under MRI monitoring of the target localization and temperature, gradually increasing the temperature until thermal ablation is achieved.

We have used this technology since 2013. We have so far treated 58 patients 29 Essential tremor (ET), 24 Parkinson's disease (PD), 4 ET-PD (ET patients which developed PD years later) and 1 Multiple System Atrophy (MSA) patient with severe refractory tremor. Effect was evaluated using validated scales.

With MRgFUS tremor stopped in the treated arm in all but one patient immediately following treatment. Tremor in chin, leg and head, when present, was stopped, in most patients. At one month and one year follow-up tremor had decreased significantly and quality of life had improved. Adverse events were mostly mild and all were reversible. Significant adverse events included unsteady feeling when walking, gait ataxia, unilateral taste disturbances and hand ataxia that lasted up to 3 months.

This innovative technique is an efficacious and safe non-invasive and non-pharmacological approach for the beneficial treatment of medication resistant moderate to severe tremor.