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MRgFUS thalamotomy in dystonic and essential tremor: a prospective study with one year follow up

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Introduction: MRgFUS thalamotomy has been shown to be a safe and effective surgical option for treating disabling tremor in patients with Essential Tremor (ET) and Parkinson's Disease. Thalamic VIM nucleus is the target of choice for surgical therapies in drug-resistant ET. Currently, there is no consensus on the best target for the surgical treatment of Dystonic Tremor (DT) [1].

Objective: To investigate effectiveness, safety and lesion coordinates of MRgFUS thalamtomy in patients with DT compared with ET.

Methods: Between January 2019 and January 2022, 55 patients with ET and 12 with DT underwent MRgFUS thalamotomy in our Institute. Patients were evaluated before surgery and after 1, 6 and 12 months from thalamotomy. Initial targeting for thalamotomy followed previous indications in literature [2]. During the visits we evaluated the clinical severity of tremor with The Essential Tremor Rating Assessment Scale (TETRAS) and collected the adverse events. The position of the lesion was determined on 3T T1-weighted MRI performed one month after thalamotomy.

Results: 10 patients with DT and 35 with ET completed the one-year evaluations and were included. Effectiveness of MRgFUS thalamotomy in significantly improve activities of daily living (ADL) and tremor scores resulted similar between the two groups. The thalamotomic lesion was positioned significantly more anterior in DT compared with ET. No significant difference in the incidence of adverse events related to thalamotomy was found between the two groups. However, considering the whole sample, a more anterior placement of the lesion was associated with a reduced odds ratio for incident adverse events.

Conclusions: MRgFUS thalamomy is safe and efficacious in patients with DT and ET; a more anterior initial targeting may be considered for DT patients [2-3], instead of classical Vim coordinates. This may allow improvement in ADL and tremor with a particularly safe adverse event profile in DT.

References:

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