

Efficacy and safety of MRgFUS: a 4-years follow up following treatment

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Introduction: MRgFUS is a useful and innovative tool in the treatment of medically refractory tremor. A few data are available on long-term outcomes of patients undergoing MRgFUS thalamotomy.

Objectives: We report the 4-year follow-up outcomes after MRgFUS thalamotomy.

Methods: Out of the 184 patients consecutively treated with MRgFUS at the San Salvatore Hospital of L'Aquila, 30 patients had a 4-years follow-up and were included in the study. Seven patients were later excluded as dead (n=4) or unavailable for control visits (n=3). The final sample consisted of twenty-three patients (mean age 65.3±8.5; mean disease duration 23.0±12.7 years) with ET (n=15; 65%) and PD-related tremor (n=8; 35%). Clinical Rating Scale for Tremor (CRST), MDS-Unified Parkinson's Disease Rating Scale (MDS-UPDRS), Montreal Cognitive Assessment (MOCA) and Quality of life in Essential Tremor Questionnaire (QUEST) scores were assessed before and after the treatment at 6, 12, 24 and 48 months. A paired-samples T-test or Wilcoxon signed rank test was performed. After Bonferroni correction (0.05/7), a p value of 0.007 was considered statistically significant.

Results: At four years there was a significant improvement after thalamotomy in the motor domains, as reported by the CRST total score (from 34.8±8.5 to 17.2±10.6, p <001), Part A (from 13.5±4.9 to 6.9±3.4, p <001) and treated extremity score (from 5.4±1.8 to 2.2±1.8, p <001). Quality of life as measured by QUEST also improved (from 41.2±13.8 to 19.1±15.3, p <001). There were no significant changes between preoperative and postoperative scores for psychometric tests exploring global cognitive function. Scores of the MDS-UPDRS (from 64.2±17.0 to 52.1±11.8, p=0.094) and MDS-UPDRS-III (from 35.7±10.2 to 25.1±6.7, p=0.094) were improved following the treatment and the improvement was stable at the 4 years follow-up.

Conclusions: MRgFUS shows a stable safety and efficacy profile at 4 years after the treatment.