

Magnetic resonance imaging focused ultrasound thalamotomy, assesment of factors affecting risk of recurrence by Clinical Rating Tremor Scale scores: clinical and gender influence?

*Patrizia Sucapane*¹, G. Saporito², C. Marini³, D. Cerone¹, T. Russo¹, F. Bruno², A. Catalucci⁴, A. Splendiani², F. Pistoia²

¹Department of Neurology, San Salvatore Hospital, L'Aquila, Italy

²Department of Biotechnological and Applied Clinical Sciences, University of L'Aquila, L'Aquila, Italy

³Department of Life, Health and Environmental Sciences, University of L'Aquila, L'Aquila, Italy

⁴Neuroradiology and Interventional Radiology, San Salvatore Hospital, L'Aquila, Italy

Introduction: Magnetic resonance imaging-guided focused ultrasound (MRgFUS) thalamotomy is an innovative treatment for medically refractory tremor. The recurrence rate of tremor after thalamotomy is about 11% within six months after surgery. No studies comprehensively analyze the factors influencing tremor recurrence at follow-up.

Objective: To evaluate the influence of anagraphical and clinical parameters on post-treatment clinical outcomes.

Methods: We retrospectively evaluated all patients showing a tremor recurrence, defined as an increase in Clinical Rating Scale (CRST) score ≤ 2 or ≥ 5 . All patients underwent clinical follow-up at one month, six months and one year after treatment.

Results: Forty-five patients (mean age 67.6 ± 8.9 ; mean disease 15.7 ± 14.3) with ET (n=24) and PD-related tremor (n=21) were included. Considering the whole sample, it was observed that one year after treatment both the total CRST (12.2%) as well as Part A (15.6%) showed a slight increase in scores. Stratifying the sample by gender, the analysis showed that women, at one year after treatment, presented a slight flare-up of tremor with a rate of 19.3% (16.6 ± 13.4 Vs 19.8 ± 16.3) as compared to 10.4% (16.7 ± 8.3 Vs 18.4 ± 12.1) of men in total CRST scores. When considering patients separately a slight increase (19.8%) is recognized in PD patients at one year post treatment in total CRST scores (15.5 ± 10.3 Vs 17.5 ± 13.0) as well as in part A 19.2% (5.6 ± 3.6 Vs 6.7 ± 4.0) as compared to 11.7% (total CRST 17.7 ± 8.6 Vs 19.7 ± 12.9) and 12.9% (CRST part A 6.4 ± 3.2 Vs 7.2 ± 4.1) of ET patients. In contrast, stratifying the sample by gender and diagnosis a slight increase in CRST scores is observed in ET women (15.3 ± 8.9 Vs 27.0 ± 19.6) and PD men (14.8 ± 7.7 Vs 18.0 ± 12.7).

Conclusions: Clinical variable and gender, together with neuroradiological parameters, should be considered to investigate and predict the recurrence rate in patients undergoing MRgFUS thalamotomy.