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Magnetic Resonance guided Focused UltraSound as interventional therapy in movement disorders: design and management of a highly complex pathway

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Introduction: High-intensity focused ultrasound ablation therapy under Magnetic resonance guidance (MRgFUS) is a non-invasive modality for the treatment of essential tremors and unilateral tremors in Parkinson's Disease [1]. Fondazione IRCCS Carlo Besta of Milan is one of the Italian institutes where it is available the 1.5T MRI for ablation treatments and where, since 2019, we perform the procedure.

Objective: To develop and apply a diagnostic-therapeutic care pathway (PDTA) for patients with movement disorders who are candidates for MRgFUS treatment. The secondary objective is to define and verify indicators that measure: appropriateness in the selection phase, correctness of the selection modalities, and effectiveness of the intake and follow-up phase.

Methods: A literature review was conducted that considered different study designs, including scientific evidence regarding Health Technology Assessment, which was examined and discussed. Based on the collected data [2], validated protocols, and analysis tools, the new PDTA was constructed and tested.

Results: First, a systematic and rigorous in-progress assessment process was set up as a basis for the analysis of context and environmental factors. Then a 3-stage PDTA (screening/treatment/follow-up) was developed, defining specific outcome indicators for each. Since 2020, more than 500 patients have been referred to our center: each year, the indicators have remained above the established threshold (>0.85). No adverse events, near missing, or sentinel events were reported; data on procedure-related side effects and remission times are similar to data reported in the literature.

Conclusions: The MRgFUS PDTA has created a new cross-sectional operating model. Given the multidisciplinary characteristics of the highly complex pathway, a coordination figure was implemented, which proved to be a strategic figure in the PLAN, DO, CHEK, and ACT phases.

References:

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