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Preliminary experience in Taiwan of magnetic resonance-guided focused ultrasound surgery for patients with essential tremorWei Chieh Chang¹, Wei C Y¹, Yang S K¹, Chen J L¹ and Taira T²¹Show Chwan Memorial Hospital, Taiwan²Tokyo Women's Medical University, Japan

Background & Aim: The Magnetic Resonance-guided Focused Ultrasound (MRgFUS) technology offers feasible results in unilateral thalamotomy with optimized accuracy. We describe here the initial result of MRgFUS surgery for patients with Essential Tremor (ET) in Show Chwan Memorial Hospital.

Methods: The authors describe the results of MRgFUS in 12 patients with ET during the period from June 2017 to February 2018. A unilateral Ventralis Intermedius (VIM) thalamotomy was performed in patients with dominant hand tremor and medications refractory. In all treatments, a 1.5-T MRI scanner was used for planning and monitoring. Primary relief symptoms were evaluated with subjective statement and tremography. The Clinical Rating Scale for Tremor (CRST) and the MR examinations were performed before the treatment and immediately, 3 and 6 months after operation.

Results: During the study period, a total of 12 patients (10 males and 2 females, age from 27 to 76 years-old and symptoms persisted from 6 to 35 years) with ET were successfully underwent MRgFUS unilateral VIM thalamotomy (10 left VIMs and 2 right VIMs). All the enrolled patients were evaluated before the treatment and after with a clinical control of the treatment effectiveness. The target was defined real time with patient's subjective statements during low power sonication. As a consequence, the treatment protocol was adapted by applying repetition of the final temperatures 56 °C to 59 °C. MRI showed thermal lesions on VIM in T2-weighted (T2w) images after sonication. All the ET treated patients who completed the procedure showed immediately free from tremor, with no intra or post operation severe permanent side effects.

Conclusion: This is the first experience in Taiwan of a unilateral thalamotomy using the MRgFUS. Our experience demonstrated the feasibility, safety and accuracy of the MRgFUS thalamotomy in treating ET. In the treatment of movement disorders, the MRgFUS may be an alternative choice.

Biography

Wei Chieh Chang is presently working in Department of neurosurgery in Focused Ultrasound Brain Treatment Cente at Show Chwan Memorial Hospital, Taiwan.

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