MR-guided focused ultrasound treatment of essential tremor

Essential Tremor (ET) is a common movement disorder affecting an estimated 10 million Americans. In most cases, ET is a slowly progressive condition that causes significant problems with normal daily functions such as eating, writing, self-care and driving. Severely affected patients are unable to feed or dress themselves. ET tremor is typically a “kinetic” or “action” tremor, meaning that the tremor is greatly increased with movement. First-line therapy for ET involves medications such as primidone and propranolol. However, these drugs often do not work and can cause side effects such as fatigue.

What is MR-guided Focused Ultrasound?

MR-guided Focused Ultrasound (MRgFUS) combines two advanced technologies: focused ultrasound and magnetic resonance imaging (MRI). MRI delivers real-time 3D images of the brain that allow the neurosurgeon to target the structure responsible for tremor. Focused ultrasound involves converging beams of ultrasound that pass through the skin and skull to intersect at the targeted location, heating the tissue and creating a lesion, called an ablation, which provides therapeutic effect. MRgFUS was FDA-approved in 2016. Approval is for treatment of one side of the brain only. Patients must be at least 22 years of age. MRgFUS is indicated for patients with ET who have significant difficulty with activities of daily living due to their tremor and for whom medications have not been effective.

Procedure details

The day of the procedure your head will be completely shaved. This allows the ultrasound beams to pass through your head effectively. An IV will be placed, this will allow us to administer medications if needed. Your head will be placed in a head frame, this will keep your head steady and prevent it from moving. Next, a silicone membrane like a “swim cap” will be placed on your head. The membrane seals the space where the cold water will circulate. The water barrier helps keep your scalp cool and makes sure there is adequate contact between your head and the ultrasound equipment. Then, you will lie flat on the MRI bed, which slides in and out of the scanning area. The head frame is locked into position so you cannot move your head. Several scans will be taken to help identify the targeted area. You will be awake during the procedure as your participation is required. You will be asked to draw spirals and write your name after each sonication in order to assess your tremor and any immediate potential side effects. We are aiming for at least 80-90% elimination of tremor during the treatment. Once we have reached that goal, the procedure is complete. The procedure typically lasts about 2 hours.

Postprocedural care and outcome

After your procedure you will be transferred to recovery for 30-60 minutes for observation. An MRI scan will be done the following day to assess the treated area. Patients may travel immediately and return to normal activity within days.

http://www.memorialcare.org/OCTremorTreatment