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From basic neuroscience to a medical device: A non-invasive neuromodulation therapy for an incurable voice disorder

Abstract

Spasmodic dysphonia (SD) is a rare disease that leads to a permanently hoarse voice that makes speech very effortful and exhausting. It is not uncommon that people with SD have to give up their job or take long breaks from work, because they cannot communicate. SD is considered a form of focal dystonia. The only treatment option are injections of Botulinum toxin into the laryngeal muscles controlling speech, which leads to partial muscles paralysis and temporary symptom relief. A few years ago, research in my lab documented that SD is associated with somatosensory deficits, which manifest themselves even in body parts that show no motor symptoms. We then developed a neuromodulation technique that applies vibration to the skin above the voice box with the aim to modulate the activity of the somatosensory-motor cortical activity. Testing this approach in a small sample of patients showed that about 70% of them improved their voice after about 30 minutes of vibro-tactile stimulation. We now conduct a phase 2 clinical trial and are designing a wearable, smartphone controlled medical device that can apply vibro-tactile stimulation.

IIT@UNIFE seminar – Monday September 30th, 2019 3:30 pm @Center for
Translational Neurophysiology in Ferrara

Invited by: Prof.