Tuning the brain: Neuromodulation as a possible panacea for treating tinnitus?

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Non-pulsatile tinnitus is an auditory phantom percept characterized as a tone, or a noise-like sound such as a hissing or buzzing sound or polyphonic, in the absence of any objective physical sound source. Although advances have been made in symptomatic pharmacological and non-pharmacological treatments, these treatments are unable to eliminate the tinnitus sensation in most patients. One of the major breakthroughs in neuroscience was the recognition of neuroplasticity, i.e. the fact that the brain is capable of changing its activity, connectivity, structure and function as an adaptation to a changing environment. Neuromodulation has subsequently been developed to induce neuroplastic changes by the application of local electrical, magnetic, or other stimuli in an attempt to treat maladaptive brain-related pathologies. I will discuss novel approaches using non-invasive and invasive neuromodulation that have emerged as an interesting and promising modality in the investigation of novel approaches for tinnitus relief.

Biography

Sven Vanneste is an Associate Professor in auditory and integrative neuroscience with research focus on understanding the common pathophysiological mechanisms clustering groups of pathologies, such as thalamocortical dysrhythmias (pain, tinnitus, depression) or obsessive compulsive spectrum disorder (addiction, OCD, eating disorders) by translating knowledge obtained from one disease to other diseases with similar underlying mechanisms, and to develop novel invasive and non-invasive neuromodulation treatments based on it.

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