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Involvement of the fronto-temporal network in the pathogenesis of auditory hallucinations: Insights from Neuroimaging and Neuromodulation

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Auditory hallucinations (AH) are common and disabling symptoms of schizophrenia. Despite prescriptions including adequate pharmacological treatments, about 25% of patients still experience refractory AH symptoms. This epidemiological fact supports the urge need of understanding AH and developing new treatment strategies. Indeed, the patho-physiology of AH is complex and still partially unelucidated. In clinical terms AH correspond to "true" auditory perception in the absence of an auditive stimulus. In a neuropsychological perspective, they are commonly related to a lack of cognitive control over the hearing function. This lack of control leads to perception of self generated events misattributed to someone else. We present here key findings on brain networks supporting hearing and speech perception involved in the pathogenesis of AH symptoms, drawing perspectives for new treatments. Indeed, our team's research includes studies at the clinical, neuropsychological and neurophysiological level highlighting the role of fronto-temporal networks in AH generation. First we will briefly review data of the literature assessing the involvement of temporal and frontal lobes in AH and their pathological interactions with other brain structures in schizophrenic patients with AH. Then we will show how trans-cranial current brain stimulations (tCS) of fronto temporal network can induce a clinical reduction of AH. Finally we will focus on the mechanisms of action of AH improvement with tCS, investigating biological markers of response.

Biography

Frederic Haesebaert has completed his MD in 2010, and his PhD in 2013 at the age of 33 years from Lyon University. He is now the head of a department of neuromodulation in psychiatry dedicated to treatment resistant pathologies, in Lyon, and also a researcher investigating the mechanisms of action of Non Invasive Brain Stimulations (NIBS) in psychiatric populations. He has published more than 10 papers in reputed journals and is the author of book chapters and conferences in this field of psychiatry and neuromodulation.

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