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The effects of acupuncture on the default mode network in chronic sciatica patients

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Sciatica is a common pain disorder typically presented as gluteal pain which may radiate to one leg with motor or sensory complaints. Acupuncture has been proposed to treat various neurological diseases including chronic pain disorder. However, the central effect of acupuncture-induced analgesia and its functional connectivity in multiple brain regions remain unclear. Brain functional Magnetic Resonance Imaging (fMRI) studies have shown that chronic pain syndrome alters network of the default mode (DMN) in the various pattern. The medial Prefrontal Cortex (mPFC) and dorsolateral Prefrontal Cortex (dIPFC) are important nodes engaging the top-down descending pain modulatory system. Therefore, we tested the hypothesis that in patients with sciatica, whether the mPFC and dIPFC are exhibits abnormal FC on DMN, and the relative effect of acupuncture modulation. In the present work, the reciprocal modulation of acupuncture is demonstrated in a population of chronic sciatica patients (n=10, 38-80 years old, mean=62.1) after 8 times acupuncture treatment in four weeks. The results showed greater Functional Connectivity (FC) over the Posterior Cingulate Cortex (PCC) right superior frontal gyrus, PCC-left medial temporal gyrus and PCC-right inferior temporal gyrus during pre-acupuncture phase and higher FC of PCC cerebellum and PCC bilateral dorsal lateral prefrontal cortex in post-acupuncture exhibit greater FC of the PCC-bilateral insula, right dLPFC and parahippocampus. These finding demonstrated the effect of acupuncture on pain might through deactivating the FC of PCC dlPFC and insula for restored the aberrant connectivity in a sciatic brain.

Biography

Ching-Hsiung Liu is a Senior Neurologist practiced in Luodong Bo-ai Hospital, Taiwan. He has completed his PhD from Guangzhou University of Chinese Medicine in 2014 and currently pursuing his Doctorate at Institute of Traditional Medicine, National Yang-Ming University. He is interested in integrative medicine especially acupuncture in neurology. He is a Member of Chinese Medical Association of Acupuncture and also a qualified Acupuncturist.

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