

Neurology and Therapeutics

March 27-29, 2017 Madrid, Spain

Heterotopic and homotopic effects of acupuncture on pain modulation share different story

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Mast cell-microglia crosstalk in dorsal horn, dorsal root ganglion (DRG) and peripheral and central ATP participation pain modulation. Mast cell tryptase cleavage of proteinase receptor 2 (PAR2) is activated in microglial cells during neuropathic pain, which induces microglia P2X4 receptor up-regulation and BDNF releasing. Increasing recent evidence has revealed that spinal dorsal horn microglia has an intimate relationship with Electro Acupuncture (EA) analgesia. One of the objectives is to explore whether EA has a neuroprotective effect on microglial activation and microglia-mast cell crosstalk, induced by neuropathic pain in the dorsal horn and DRG in chronic constriction injury (CCI) rats. In addition, there were also reports on local increase of adenosine in human subjects and mice during EA analgesia, and adenosine subtype A1 receptor antagonist, reduced this effect. The other objective is to check caffeine intake, a nonselective antagonist of adenosine may reduce the EA analgesia effect. CCI neuropathic pain model were made on adult male Sprague-Dawley. Paw withdrawal threshold (PWT) was detected pre-EA and post EA. The expression of microglia receptors in spinal dorsal horn and in the DRG were measured by immunofluorescence. C fiber reflex, nociceptive stimulus evoked myoelectricity performance. PWTs in CCI rats were significantly reduced in ipsilateral paws compared to contralateral paws and were increased significantly after EA. Microglia-mast cell crosstalk related receptor expressions were up-regulated after peripheral nerve injury. The expressions of above receptors are decreased after EA intervention. Caffeine intake hinders decrease of C fiber reflex EMG induced by EA.

Biography

Xinyan Gao has completed her PhD from China Academy of Chinese Medical Sciences (CACMS), and Postdoctoral studies from Baptist University of Hongkong in 2009. She is the Director of Department of Physiology, Institute of Acupuncture. She has published more than 30 papers in reputed journals and has been serving as an Editorial Board Member for several peer reviewed journals.

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