Methods: Electroacupuncture (EA) was applied at acupoints ST36 and GB39 of 61 healthy adults. Different coping conditions were experimentally designed to form an active coping strategy group (AC group), who thought they could control EA stimulation intensity, and a passive coping strategy group (PC group), who did not think they had such control. Importantly, neither group was actually able to control EA stimulus intensity. Quantitative sensory testing was performed before and after EA, and consisted of vibration (VDT), mechanical (MDT), warm (WDT), and cold (CDT) detection thresholds, and pressure (PPT), mechanical (MPT), heat (HPT) and cold (CPT) pain thresholds. Autonomic measures (e.g. skin conductance response, SCR) were also acquired to quantify physiological response to EA under different coping conditions. Subjects also reported the intensity of any acupuncture-induced sensations.

Results: Coping strategy was induced with successful blinding in 58% of AC subjects. Compared to PC, AC showed greater SCR to EA. Under AC, EA reduced PPT and CPT. In the AC group, improved pain and sensory thresholds were correlated with acupuncture sensation (VDTchange vs. MI: r = 0.58, CDTchange vs. tingling: r = 0.53, CPTchange vs. tingling; r = 0.55, CPTchange vs. dull; r = 0.55). However, in the PC group, improved sensory thresholds were negatively correlated with acupuncture sensation (CDTchange vs. intensity sensitization: r = −0.52, WDTchange vs. fullness: r = −0.57).

Conclusions: Our novel approach was able to successfully induce AC and PC strategies to EA stimulation. The interaction between psychological coping strategy and acupuncture sensation intensity can differentially modulate pain and sensory detection threshold response to EA. In a clinical context, our findings suggest that instructions given to the patient can significantly affect therapeutic outcomes and the relationship between acupuncture intensity and clinical response. Specifically, acupuncture analgesia can be enhanced by matching physical stimulation intensity with psychological coping strategy to acupuncture contexts.

Keywords: coping strategy, acupuncture, acupuncture sensation, pain, sensory threshold

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Effects of Chronic Electroacupuncture on Depression- and Anxiety-like Behaviors in Rats with Chronic Neuropathic Pain

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Abstract
Growing evidence indicates that chronic neuropathic pain is frequently accompanied by an array of psychiatric diseases, such as depression and anxiety. Electroacupuncture (EA), as one therapy of traditional Chinese medicine, has displayed potent antidepressant-like effects in numerous clinical studies. The present study was designed to examine the possible effects of EA on the depressive and anxiety disorders induced by neuropathic pain. A classic rat model of neuropathic pain was produced by chronic constriction injury (CCI) of the sciatic nerve. EA was performed on acupoints “Bai-Hui” (GV20) and unilateral “Yang-Ling-Quan” (GB34). The antidepressive and anxiolytic effects of EA treatment were analyzed using the forced swimming test (FST) and the elevated plus maze (EPM) test, respectively. CCI resulted in remarkable depression- and anxiety-like behaviors, whereas the chronic EA treatment significantly improved the behavioral deficits of CCI rats. Moreover, the phosphorylation level of the NMDA receptor type 1 (NR1) subunit was decreased in the hippocampus of CCI rats. Intriguingly, continuous EA treatment effectively blocked this decrease in the levels of pNR1. These results suggested that EA has antidepressive and anxiolytic effects on rats with neuropathic pain and that this might be associated with restoring the phosphorylation of NR1 in the hippocampus.

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Effects of Salviae Miltiorrhizae Radix Hot Aqueous Extract on Nitric Oxide and Prostaglandin E2 Production and on 1,1-diphenyl-2-picryl hydrazyl Radical Scavenging in Macrophages

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