

P-07 10:00 – 10:10

Long Term Acupuncture Effects Studied by Using Functional MRI

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Objective

The objective of this study was to investigate regional changes of acupuncture effects and to resolve the duration of acupuncture effects by using functional magnetic resonance imaging (MRI). We hypothesized that the function MRI (fMRI) may be useful tool to understand a mechanism of regional variations of acupuncture effects.

Methods and Materials

The acupuncture point was used at the right LR2. The study was performed on 15 healthy adults (all male, 19~25 years old) with an informed consent. For blood oxygenation level dependent (BOLD) fMRI studies conducted on a 3 Tesla MRI system (Philips Achieva, Best, The Netherlands), each acquisition time was 4 min with 80 scans. There were eight acquisitions and was a gap of 1 min between acquisitions. We acquired BOLD signals with 7 different conditions: 1) Baseline measurements (BA: baseline) without inserting the needle, 2) Acupuncture activation with bidirectional rotation, 3) Acupuncture activation without rotating (AO1 and AO2: acupuncture only), and 4) After removing the needle (RA1 and RA2: removed acupuncture). 3D T1 and 2D T1 structural images were also acquired. To investigate the regional effects of the acupuncture, we pre-defined 12 regions-of-interest (ROI) based on the effects of the acupoint. We used analysis of variance (ANOVA) tests to investigate the regional (12 ROI) and conditional (7 conditions) effects. We also tested signal intensities of all time series over the ROIs.

Results

We found significant effects on ROI ($F=2.653$, $P=0.0023$), but not significant effect between the 7 conditions ($F=1.463$, $p=0.199$). We used multiple comparisons of the best-fast method to find which regional intensities are different. Pons intensity was different to anterior cingulate (AC), Hypothalamus, Limbic lobe, posterior cingulate (PC), Sub-thalamic nucleus (STN), supplemental motor cortex (SMC), and thalamus. However, there were no significant differences between other regions. Therefore, we separated two groups as Pons and other ROIs.

Discussions

The LR2 acupoint is traditionally used to treat irregular menstruation, enuresis, pain in the costal region, hypertension, epilepsy, insomnia, redness, and swelling of eye. There was no significant difference of signal intensity after the acupuncture activation except the Pons region. We also found that the acupuncture effects prolonged until about 40 minutes after acupuncture activation.

Acknowledgement

This study was supported by a grant of the Korean Health 21 R&D Project, Ministry of Health & Welfare, Republic of Korea (A062284).