**ABSTRACT**

**Objective** To identify the key cerebral functional region affected by acupuncture point needling by examining cerebral networks using functional connectivity MRI (fcMRI) and analysing changes in the key regions of these brain networks at different time points after needle removal.

**Methods** Twelve healthy volunteers received 30 min of electroacupuncture (EA) at the Baihui (GV20) and Yintang acupuncture points and then underwent two fMRI scans, one each at 5 and 15 min after needle removal. Related brain networks were analysed centred at different ‘seeds’, centres which functionally connect the other cerebral regions in an organised network, such as the anterior frontal lobe, anterior cingulate gyrus, parahippocampal gyrus, amygdala, hypothalamus, head of the caudate nucleus and anterior lobe of the cerebellum. Networks were analysed based on the resting cerebral functional connection, and the differences in the activities of the brain networks between the two time points were compared.

**Results** At 5 min after needle removal, 12 brain functional regions were involved in organising the network centred at the caudate nucleus ‘seed.’ This number was greater than the number of related brain networks centred at the other ‘seeds’. At 15 min after needle removal, 15 and 14 brain functional regions were involved in organised networks centred at the parahippocampal and hypothalamus ‘seeds’, respectively; these numbers were greater than the numbers of other related brain networks centred at the other ‘seeds’.

**Conclusions** A brain network composed of a large number of cerebral functional regions was found after EA at GV20 and Yintang in healthy volunteers. The key brain ‘seed’ supporting the largest brain network changed between 5 and 15 min after needle removal.

Chen, J., Deng, G., Huang, Y., Qu, S., Yang, C., Zhang, G., & Zheng, Y. 2013. Key regions of the cerebral network are altered after electroacupuncture at the Baihui (GV20) and Yintang acupuncture points in healthy volunteers: an analysis based on resting fcMRI. *Acupuncture in Medicine,* 31(4), 383-388. http://dx.doi.org/10.1136/ acupmed-2012-010301