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Abstract:

Electrical stimulation of the acupoints has been shown to improve motor performance in neurorehabilitation. fMRI can monitor recovery of cortical activity in stroke. Eighty patients with stroke causing hemiparesis had serial fMRIs within the first few days after stroke to 3 months. Electro-acupuncture stimulation was given via a set of acupoints (LI10□LI11□LI14 and LI15). The percent eighty-nine patients displayed that the LI increased significantly during fMRI. At same time, the paretic hand regained function gradually. The monitor recovery of cortical activity with fMRI under electro-acupuncture stimulation can offer theory guide in evaluating recovery from hemiplegia.

Introduction:

Electrical stimulation of the acupoints has been shown to improve motor performance in neurorehabilitation. The motor cortex activation can be investigated noninvasively using BOLD-fMRI and secrets of brain function have begun to be revealed and mysteries such as acupoint stimulation and activation of corresponding brain cortices have begun to provide “brain” and “organ” relationships. The purpose is to investigate the usefulness of fMRI with acupoints under electro-acupuncture stimulation to monitor recovery of cortical activity in stroke.

Methods:

Eighty patients with stroke causing hemiparesis had serial fMRIs under electro-acupuncture stimulation with acupoints within the first few days after stroke to 3 months. Electro-acupuncture stimulation was given via a set of acupoints (LI10□LI11□LI14 and LI15), which were chosen to treat hemiplegia in clinic. The activated areas in brain functional BOLD maps were analyzed and compared after stimulation by students group t-test analysis. By observing the shape and position of fMRI, a “laterality index” (LI) was calculated to compare relative activity in the ipsilateral versus contralateral Sensorimotor cortex□SMC□for each time point after stroke.

Results: The data sets from 80 of 94 subjects were used in the study. The analysis showed that during a set of electro-acupuncture stimulation the contralateral primary sensorimotor cortex (SMC) was activated in all subjects. The supplementary motor area (SMA) was also activated at the contralateral side or both, as well as the premotor area (PMA). The active area almost was covered to the area of the stimulating acupoints. In recovery from hemiplegia, the percent eighty-nine (71/80) patients with stroke displayed that the LI increased significantly during functional MRI. At same time, the paretic hand regained function gradually.

Conclusion:

The monitor recovery of cortical activity with fMRI under electro-acupuncture stimulation can offer theory guide in evaluating recovery from hemiplegia.

Reference:

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