Poster PE-9

Detecting Activations in the Acupuncture Stimulation like Event-Related fMRI using ICA Method

Jeong-Seok Kim[1] • Bo-Young Choe[1] • Sei-Kwon Kang[2] • Sung-Taek Chung[3] • Hyoung-Koo Lee[1] • Tae-Suk Suh[1]

[1]Department of Biomedical Engineering, College of Medicine, Kangnam St. Marys Hospital, The Catholic University of Korea

[2]Department of Radiology, College of Medicine, Yonsei University

[3]Medinus Co.,Ltd. Korea

PURPOSE : To separate activations from other physiological and artifactual component that contribute to functional MRI(fMRI) recordings and detect one consistently task-related component activated during the acupuncture stimulation, we try to take the ICA(Independent Component Analysis) method.

MATERIALS AND METHODS : Twelve right-handed normal, healthy volunteer adults participated in acupuncture stimulation. A 3 T MRI system (Medinus Co. LTD, Korea) was employed to evaluate brain activity by using blood oxygen level-dependent (BOLD) contrast. Gradient Echo EPI sequence with TR/TE=2500/35 msec was used for 20 contiguous axial slices of 6㎜ thickness, covering the whole brain volume (240㎜ Field-of-view, 64×64 in plane resolution). Voxels corresponding to active brain regions were determined by examining their mean signal values. Voxel with mean signal values above the cutoff value was assumed to represent active brain signals. The raw data with signals were applied to ICA algorithm of Bell and Sejnowski.

RESULTS / DISSCUSION : ICA method can be a useful method for analyzing fMRI that can separate task-related activations from artifactual and other physiological fluctuations in the fMRI signal when the time course of brain state transitions is difficult to predict or measure by other means.