

뇌신경재활

게시일시 및 장소 : 10 월 18 일(금) 13:15-18:00 Room G(3F)

질의응답 일시 및 장소 : 10 월 18 일(금) 15:45-16:30 Room G(3F)

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Neural Substrate in Subcortical Hemispatial Neglect: Voxel-based Lesion-Symptom Mapping Study

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Background

The neural correlates for visuospatial hemispatial neglect in patient with subcortical stroke are varying according the methodologies of previous studies and subjects analyzed. The aim of this study was to investigate neural substrates associated with subcortical neglect by comparing the stroke lesion in patients with neglect with that in control patients, using voxel-based lesion-symptom mapping (VLSM).

Methods

Twenty three patients with right subcortical stroke, who were admitted to Department of Rehabilitation Medicine in one hospital were retrospectively enrolled. Subjects were allocated to the hemispatial neglect group (n=9), if they showed positive results for neglect in two or more tests, out of three tests (line bisection test, Albert's test, house drawing test). Subjects who showed negative results in all three tests were allocated to the control group (n=14). Stroke lesions in diffusion, T2-weighted or T1-weighted MRI were manually drawn, using MRICron software(<http://www.mccauslandcenter.sc.edu/mricro/mricron/>). At every voxel, a statistical test (t-test) was performed to compare the behavioral scores of patients with and without a lesion in that voxel. A permutation testing is applied to correct errors from multiple comparisons.

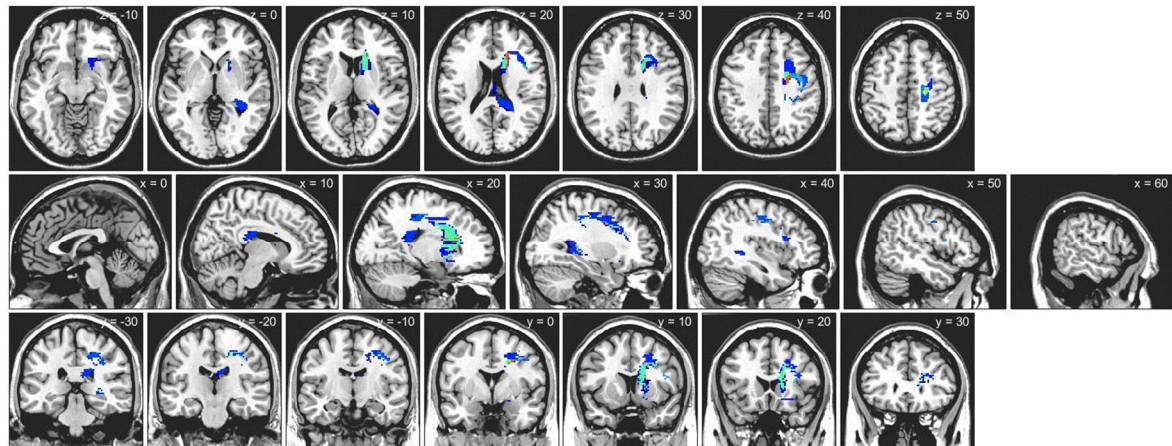
Results

The VLSM analysis demonstrated that the brain regions significantly associated with subcortical hemispatial neglect (minimum significant t-value of 2.41, $p < 0.01$) were the right fronto-parietal subcortical white matter including corpus callosum, corona radiata (Figure 1.). These subcortical brain regions are along the course of superior longitudinal fasciculus (SLF).

Conclusions

In this study, the dorsal visual pathway including SLF appears to be a neural substrate associated with subcortical neglect in patients with stroke.

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T map with voxelwise threshold of $p < 0.01$, thresholded based on cluster size and the permutation method 2.54 4.36

Figure1. VLSM results using permutation testing ($p < 0.01$) with covariates included in the analysis (gender, age)