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) 16:01-16:05 Room G(3F)

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Association of Lesion Location with Long-term Recovery in Post-stroke Aphasia and Language Deficits

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Purpose

Recovery from post-stroke aphasia is important for performing the activities of daily life, returning to work, and quality of life. We investigated the association between specific brain lesions and the long-term outcome of four dimensions of aphasia: fluency, comprehension, naming, and repetition 12 months after onset in patients with stroke.

Materials and Methods

Our retrospective cross-sectional observational study investigated the relationship between the Korean version of the Western Aphasia Battery scores in 31 stroke patients 1 year after the onset of stroke and stroke lesion location. Brain lesions were assessed using voxel-based lesion symptom mapping (VLSM) in conjunction with magnetic resonance imaging.

Results

Damage to the Rolandic cortex, Heschl's gyrus, the posterior corona radiata, supramarginal cortex, superior longitudinal fasciculus, superior temporal gyrus, and insula was associated with a low total AQ score (Figure 1, 2). Lesions in the inferior triangularis and inferior operculum of the frontal cortex, supramarginal cortex, and insula were associated with a poor fluency outcome. Damage to the parietal cortex, angular cortex, temporal middle cortex, sagittal stratum, and temporal superior cortex was associated with poor recovery of comprehension skills. Lesions in the angular cortex, supramarginal cortex, posterior corona radiata, superior longitudinal fasciculus, internal capsule, temporal superior cortex, and temporal middle cortex were associated with poor recovery of naming in patients with stroke. Damage to the superior temporal cortex, posterior corona radiata, and superior longitudinal fasciculus was associated with poor recovery of repetition component (Figure 3).

Conclusions

We identified specific brain lesions associated with long-term outcomes in four dimensions of aphasia, in patients with post-stroke aphasia. Our findings may be useful for advancing understanding for the pathophysiology of aphasia in stroke patients.

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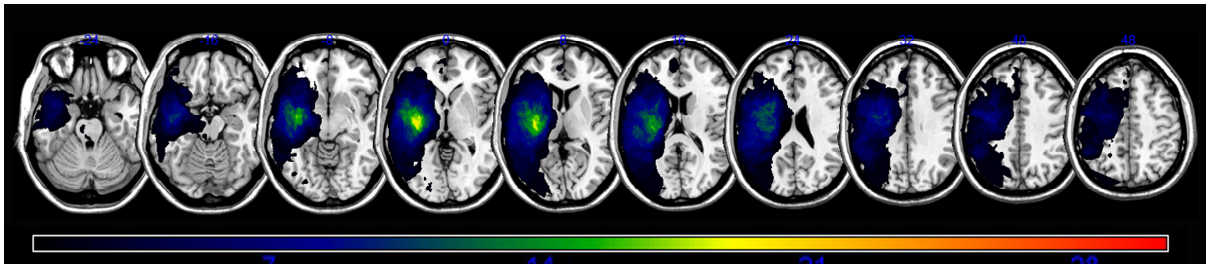

Figure 1. A lesion overlap map of all subjects (n=31). The color spectrum indicates the frequency of overlap.

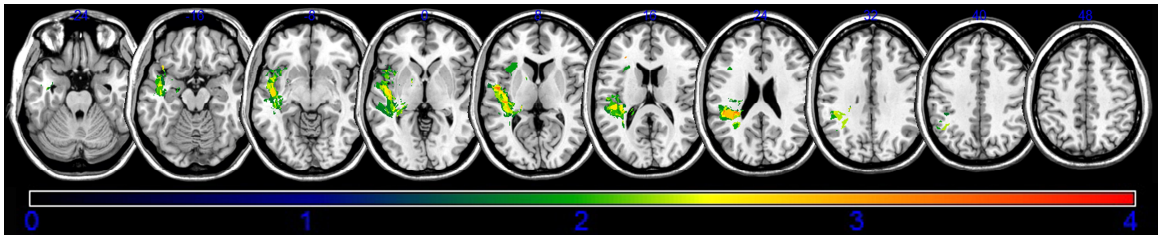

Figure 2. Voxel-based lesion-symptom mapping of the total aphasia quotient after application of the nonparametric Brunner–Munzel test. The color scale indicates Brunner–Munzel rank order z statistics. Only voxels significant at $p<0.05$ are shown. The statistical map shows voxels with a minimum Z score of 1.89797 and maximum range of 4, which was the maximum brightness.

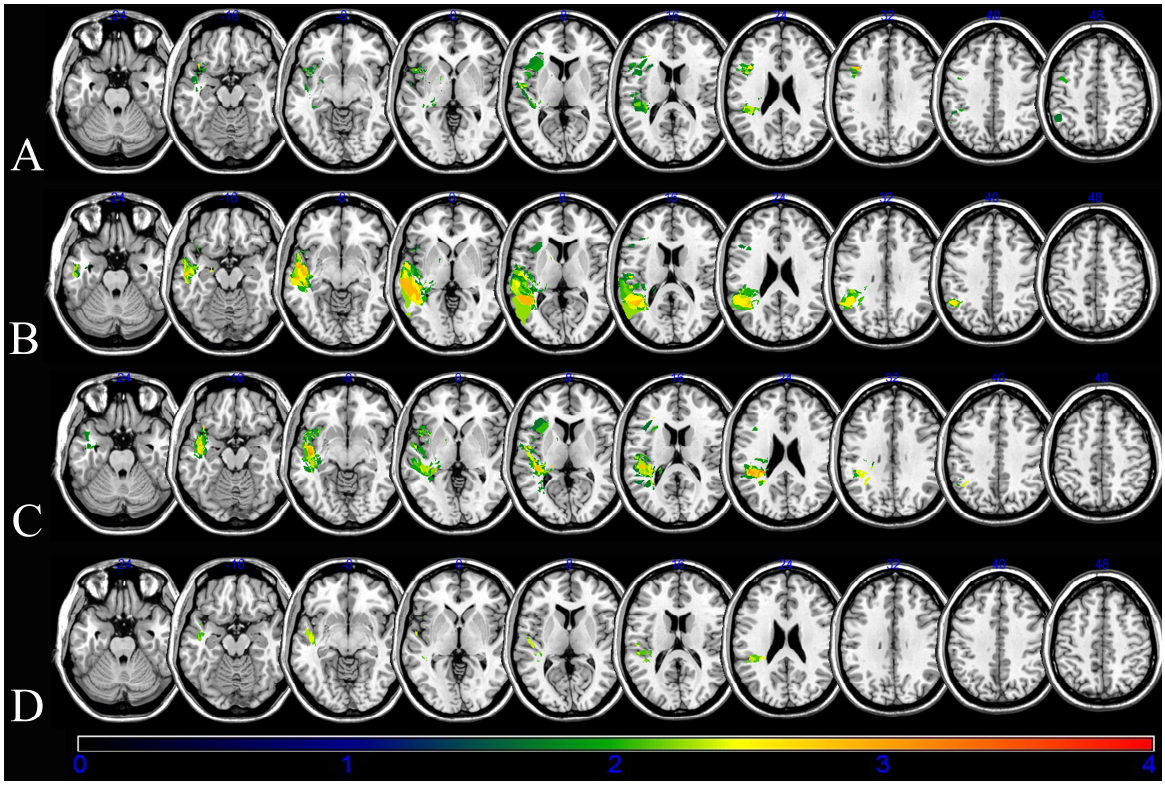

Figure 3. Voxel-based lesion-symptom mapping (VLSM) of the language deficits after the nonparametric Brunner–Munzel statistical analysis. The color scale indicates Brunner–Munzel rank order z statistics. Only voxels significant at $p<0.05$ are shown. The maximum range of the z score was set at 4, which was the maximum brightness. A: VLSM for fluency with a minimum z score of 2.32076. B: VLSM for comprehension with a minimum Z score of 2.50055. C: VLSM for naming with a minimum Z score of 2.38888. D: VLSM for repetition with a minimum Z score of 3.19465.