E-Poster

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Language Network Difference Between Anomic and Global Aphasia

Topic: Health Conditions (Nervous System, Musculoskeletal System, Cardiopulmonary System)

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BACKGROUND

The language network in the brain is extensively distributed across various tracts, including the arcuate fasciculus (AF), superior longitudinal fasciculus (SLF), frontal aslant tract (FAT), and middle longitudinal fasciculus (MLF). This study aims to investigate whether the structural integrity of these language-related tracts can be linked to the prognosis of patients with aphasia.

METHODS

In this retrospective study, we compared two groups of patients: those diagnosed with anomic aphasia and those with global aphasia at the time of discharge (approximately four weeks post-onset). All patients underwent diffusion tensor imaging (DTI) during admission. Seven patients were included in anomic aphasia group (age: 57.7 ± 14. , M:F=3:4) and six patients were global aphasia group (age: 61.5 ± 12.1, M:F=2:4) classified by K-WAB. The classification of aphasia was carried out using the Korean version of the Western Aphasia Battery (K-WAB). The average K-WAB score for the anomic group was 70.8 ± 22.7, while the global group scored 2.8 ± 4.5. All patients had experienced left hemisphere strokes, and we focused on fiber tracts from the left hemisphere only. For tractography, we utilized FSL and FreeSurfer software to acquire parameters including tract volume, average length, fractional anisotropy (FA), mean diffusivity (MD), axial diffusivity (AD), and radial diffusivity (RD) for the AF, SLF1, 2, 3, MLF, and FAT. Comparative analysis of these parameters between the groups was conducted using t-tests, and correlation analysis was performed between the K-WAB scores and diffusion metrics.

RESULTS

The tract volume and average length of tract was not different between groups. FA value of FAT ($p = 0.046$), MLF ($p = 0.049$) and SLF3 ($p = 0.048$) was different between groups, which was larger in anomic group. Correlation between K-WAB and diffusion metrics showed 0.56 only in FAT FA.

CONCLUSION

The findings of this study suggest that multiple language-related tracts should be assessed to interpret the structural integrity in cases of aphasia. The significant differences in FA values between the anomic and global aphasia groups may indicate that certain tracts play a crucial role in the language recovery process.

Statement of Disclosures

Not applicable

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