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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## Potential of Serum BDNF as Biomarker for Functional Recovery in Subacute Stroke Rehabilitation

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**Introduction**

Brain-derived neurotrophic factor (BDNF) is involved in neuroplasticity in both the intact and the damaged brain. Although serum BDNF is used as a biomarker in major depressive disorder and bipolar disorder, there was a lack of reports with serum BDNF about neuroplasticity in stroke patients. In this study, we aimed to investigate the potential of BDNF as biomarker in neuroplasticity by serial analyzing the serum BDNF from subacute stroke patients.

**Methods**

Eighty-six subacute stroke patients (mean age 62.4 yrs) who had taken the standardized inpatient rehabilitation program for 2 weeks were recruited in this study. We measured the serum BDNF, proBDNF and MMP-9 at T0 (before the rehabilitation program), T1 (1 week after the rehabilitation program) and T2 (2 weeks after the rehabilitation program) in each participant. In addition, all participants were assessed with NIH Stroke Scale (NIHSS) for stroke severity, Fugl-Meyer assessment (FMA) for motor function and for Korean Mini-Mental State Examination (K-MMSE) for cognitive function at three time points. The presence of the BDNF Val66Met polymorphism was also assessed as a potentially influential factor. BDNF genotype was entered as an ordinal predictor according to the number of Met alleles. Multiple regression analysis was performed to determine the factors affecting the stroke severity at T2.

**Results**

NIHSS showed a significantly decrease after the standardized inpatient rehabilitation program for 2 weeks ($p<0.05$). The two independent predictors that significantly influenced NIHSS at T2 were NIHSS, K-MMSE, FMA and the number of MET alleles at T0 ($p<0.001$, $R2=0.869$). However, at T1, MMP-9 as well as NIHSS, K-MMSE, FMA and the

number of MET alleles were significant independent predictors for NIHSS at T2 ($p<0.001$, $R2=0.917$).

**Conclusion**

It is well known that the baseline stroke severity, functional impairments and BDNF genotype were significant relating factors for the decrease of stroke severity after the stroke rehabilitation. In addition, MMP-9 after the intensive stroke rehabilitation was also a significant relating factor for the decrease of stroke severity. Therefore, the results in this study may suggest that serum MMP-9 could be used as biomarker for neuroplasticity in stroke patients. However, further study should be needed to clarify these results considering functional outcome in stroke patients.

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