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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Severe motor weakness due to limb-kinetic apraxia in HI-BI

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Objectives

Limb-kinetic apraxia (LKA) is defined as a movement execution disorder, resulting from injury of the corticofugal tracts (CFTs) from the secondary motor area. We investigated the relationship between severe motor weakness and LKA due to injury of the CFTs in the patients with hypoxic-ischemic brain injury (HI-BI) by using diffusion tensor tractography (DTT).

Methods

Seven patients with HI-BI who showed severe quadriparesis and 12 age- and sex-matched normal healthy control subjects were enrolled. Motor evoked potential (MEP) was measured for the abductor pollicis brevis muscle (APB), while fractional anisotropy (FA), mean diffusivity (MD), and tract volume (TV) values for the corticospinal tracts (CSTs) and the CFTs from the secondary motor area were measured on DTT.

Results

The largest amplitude MEPs for the bilateral APBs of the patients averaged 3514.3 μV (right) and 2885.7μV (left). The FA values of the CST, the CFT from the dorsal premotor cortex (dPMC) and the CFT from the supplementary motor area (SMA) of the patient group were significantly lower than those of the control group ($p < 0.05$). The MD values for the CFTs from the dPMC and the SMA of the patient group were significantly higher than those of the control group ($p < 0.05$), whereas the TV values for the CST and the CFT from the SMA of the patient group were significantly lower than those of the control group ($p < 0.05$).

Conclusions

We conclude that the severe motor weakness in these HI-BI patients could be attributed to LKA due to CFT and CST injuries. Our results have important implications for rehabilitation of patients with HI-BI because LKA can be resolved through intensive rehabilitation.

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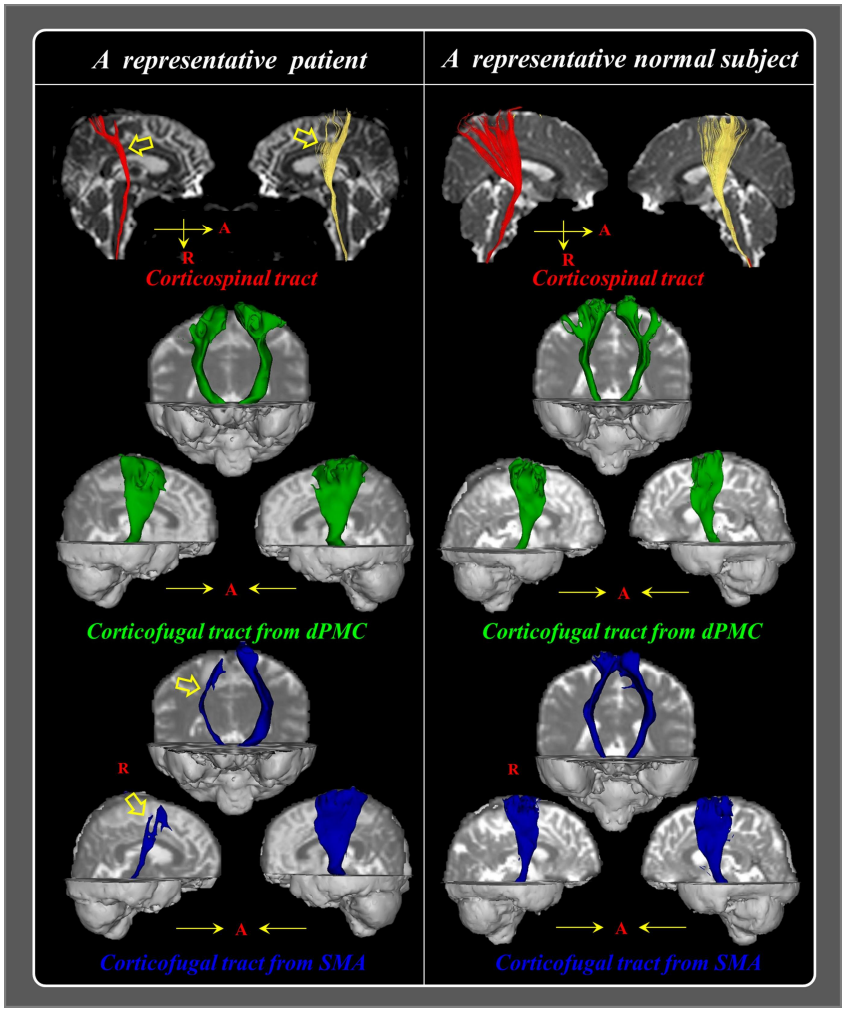

Figure1. Results of diffusion tensor tractography. For both hemispheres, the corticospinal tract (CST, red and yellow color) and the corticofugal tracts (CFTs) from the dorsal premotor cortex (dPMC, green color) and supplementary motor area (SMA, blue color) are reconstructed in a representative patient (39-year old female) and a control subject (40-year old female). Tract narrowing is indicated by yellow arrows