

뇌신경재활

발표일시 및 장소 : 10 월 18 일(금) 13:35-13:45 Room B(5F)

OP2-1-3

Laterality of Cerebellar Afferent and Efferent Pathways in a Healthy Right-handed Population

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Objective

The cerebellum communicates with the cerebral cortex through the cortico-ponto-cerebellar tract (CPCT, cerebellar afferent) and the dentato-rubro-thalamo-cortical tract (DRTCT, cerebellar efferent). This study explored the laterality of CPCT and DRTCT in a right-handed population.

Methods

Forty healthy right-handed subjects who underwent diffusion tensor imaging (DTI) were retrospectively enrolled. Bilateral CPCT, DRTCT, and the corticospinal tract (CST) were reconstructed using probabilistic diffusion tensor tractography (DTT). Tract volume (TV) and fractional anisotropy (FA) were compared between dominant and non-dominant tracts. To determine age-related differences, the TV and FA were compared between three age groups (20–40, 41–60, and 61–80years).

Results

TV and FA of non-dominant CPCT were higher than those of dominant CPCT, and the dominant CST was higher than the non-dominant CST. The TV and FA of DRTCT showed no side-to-side difference. The 61–80years age group had the highest TV of the dominant and non-dominant DRTCT among the three groups and the highest FA of the non-dominant CPCT and DRTCT.

Conclusions

The results revealed normal asymmetric patterns and age-related changes of CPCT and DRTCT using probabilistic DTT. Normal characteristics of cerebro-cerebellar structural connectivity will be valuable to evaluate structure-function relationships and reorganization after lateralized brain injury.

Acknowledgment :None

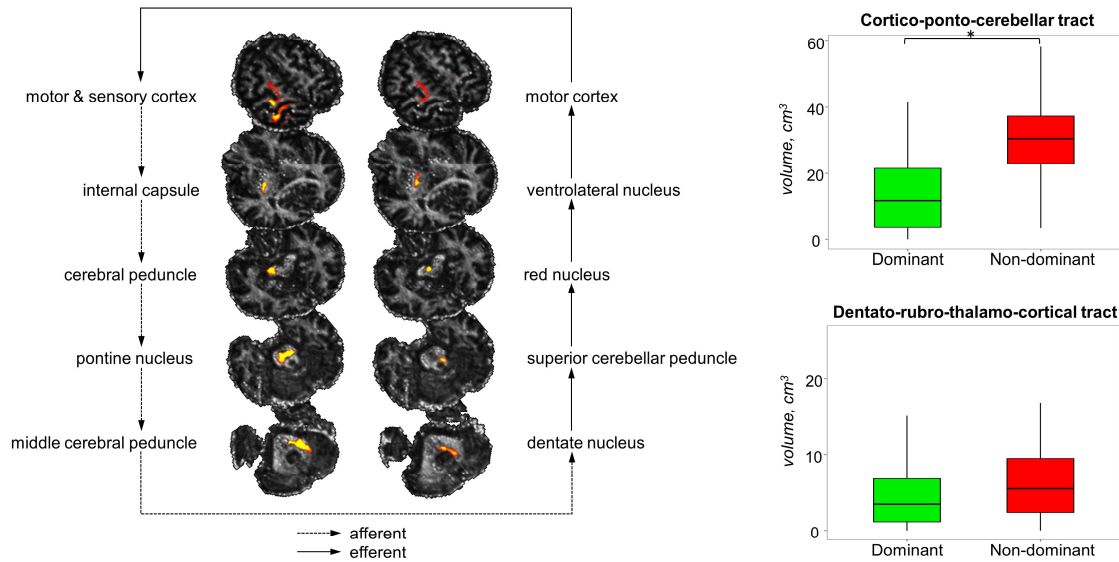


Fig. 1 The cerebellum communicates with the cerebral cortex through the cortico-ponto-cerebellar tract (CPCT, cerebellar afferent) and the dentato-rubro-thalamo-cortical tract (DRTCT, cerebellar efferent). We reconstructed bilateral CPCT and DRTCT using probabilistic diffusion tensor tractography. The CPCT was biased to the non-dominant cerebellar hemisphere, but the DRTCT did not show any significant laterality.