Neurologic recovery from corticospinal tract injury due to subfalcine herniation

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After development of diffusion tensor tractography (DTT), which is derived from diffusion tensor imaging (DTI), three-dimensional reconstruction and estimation for three motor tracts, such as the corticospinal tract, the rubrospinal tract, and the corticoreticular pathway became possible.

The corticospinal tract is known to be a major neural tract for motor function in the human brain. Several studies have reported on injury of the corticospinal tract by transtentorial herniation. In addition, some studies have demonstrated recovery of a corticospinal tract injured by transtentorial herniation. However, very little is known about injury and recovery of the corticospinal tract related to subfalcine herniation. Researchers at College of Medicine, Yeungnam University, Republic of Korea, led by Prof. Sung Ho Jang report on a 53-year-old, male patient with subdural hematoma in the right fronto-parietal-temporal lobe and subfalcine herniation patient who showed recovery of the corticospinal tract, which was injured by the effect of a subfalcine herniation, using DTT.

The patient underwent decompressive craniectomy and removal of a hematoma at admission. At 6 weeks after onset, he was transferred to the rehabilitation department for rehabilitation. His weakness was recovered to a nearly normal state at 7 months after onset. DTT results showed that both corticospinal tracts were narrowed from the cerebral cortex to the subcorical white matter at 6 weeks after onset; however, thickenings of narrowed portions of both corticospinal tracts on 7-month

DTT appear to indicate recovery of the injured corticospinal tracts. The recovery of the injured corticospinal tracts induced by subfalcine herniation may be a result of neurological remodeling under rehabilitation intervention. This article is released on the *Neural Regeneration Research* (Vol. 9, No. 12, 2014).

More information: Seo JP, Jang SH. Recovery of the corticospinal tracts injured by subfalcine herniation: a diffusion tensor tractography study. *Neural Regen Res.* 2014;9(12):1231-1233.

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