

## **Homolateral Synkinesis, an accompanied symptom with motor recovery? : A Case Study**

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### **Introduction**

Homolateral synkinesis (HS) is defined as nonpurposive associated movements on affected side of hemiparetic subjects, triggered during voluntary movement. We report a case showing HS after stroke.

### **Case report**

The subject was a 59-year-old, right-handed woman, who had cerebral infarction on territory of right middle cerebral artery which occurred on 2018. Diffusion-weighted image at the day of stroke onset showed high signal intensity in frontoparietal deep white matter, parietal lobe, temporal lobe and right basal ganglia (Fig 1.). The patient had no other past history except for hypertension diagnosed on 2016. The subject had alert mentality, good communication with mini-mental state score (MMSE) 29, left side weakness of both upper and lower extremities and increased biceps jerk. Perception of sensory input such as light touch, proprioception, and pain from affected limb was intact. Brunnstrom stage was used as a parameter for poststroke motor recovery which was 5 on arm, 3 on hand, and 6 on leg. HS appeared on the 39th day from the onset. When she forced to clench her hand of the affected side, her foot was closed simultaneously (Fig 2.). The symptom lasted until the 56th day after the onset and disappeared gradually. DTI was conducted to investigate the relationship between homolateral synkinesis and corticospinal tract. We found the defect of corticospinal tract on parietal cortex. The corticospinal tract of deep white matter drawn based on Diffusion Tensor Tractography(DTT) started from the corona radiata passing through portion of internal capsule posterior limb corresponding to leg homunculus (Fig 3.).

### **Discussion**

In this case report, we showed HS in a subject's affected hand and feet. Furthermore, we discovered that HS decreased as the days passed. Disappearance of HS was accompanied with recovery of affected upper extremity, which showed improvement from 5/3/6 to 6/5/6 presented as Brunnstrom stage.

### **Conclusion**

HS could imply transient connection between domains located in cortex or deep white matter during the process of poststroke motor recovery.

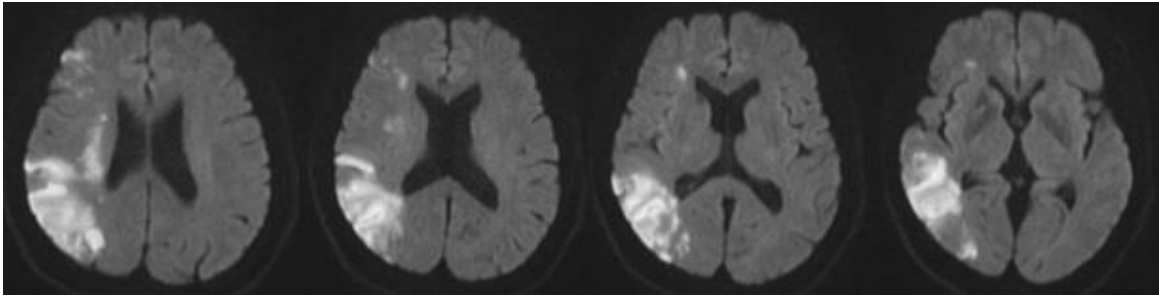


fig1. Diffusion-weighted image at the day of stroke onset



fig2. Homolateral synkinesis; when the patient forced to clench her hand of the affected side, her foot was closed simultaneously.

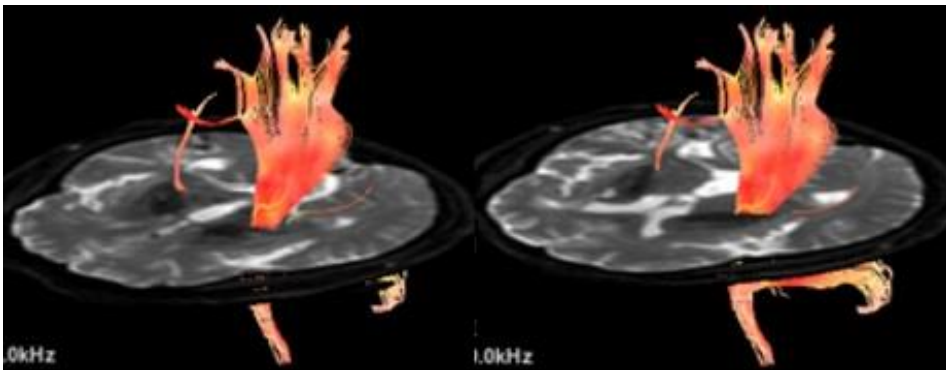


fig3. The corticospinal tract of deep white matter drawn based on Diffusion Tensor Tractography(DTT)