Ischemic Stroke Sparing the Motor Cortex

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A 62-year-old right-handed man with untreated atrial fibrillation and hypertension self-presented at our hospital complaining of headaches, vomiting and unsteadiness of gait lasting for two days. The patient had left-sided spatial neglect and an unsteady gait, although he exhibited no motor weakness. Magnetic resonance imaging (MRI) of the brain revealed an acute infarction in the right middle cerebral artery (MCA) territory; however, the motor cortex was spared (Picture 1A, B; arrowhead). A diagnosis of cardiogenic cerebral embolism was made. The results of Tc-99m ECD single photon emission tomography corresponded with the brain MRI findings by showing hypoperfusion in the right MCA territory with preservation of the cerebral blood flow within the right motor cortex (Picture 1C, D; arrowhead). Cerebral angiography did not reveal any preexisting collateral supply to the precentral gyrus (PCG), suggesting the possibility that local recanalization of the occluded vessel had resulted in selective restoration of flow to the PCG. Diffusion tensor tractography showed intact corticospinal tracts arising from the primary motor cortex of both hemispheres (Picture 2).

Portera-Cailliau et al. (1) reported three patients with large MCA territory infarctions in the non-dominant hemisphere (Picture 1A, B; arrowhead). A diagnosis of cardiogenic cerebral embolism was made. The results of Tc-99m ECD single photon emission tomography corresponded with the brain MRI findings by showing hypoperfusion in the right MCA territory with preservation of the cerebral blood flow within the right motor cortex (Picture 1C, D; arrowhead). Cerebral angiography did not reveal any preexisting collateral supply to the precentral gyrus (PCG), suggesting the possibility that local recanalization of the occluded vessel had resulted in selective restoration of flow to the PCG. Diffusion tensor tractography showed intact corticospinal tracts arising from the primary motor cortex of both hemispheres (Picture 2).

Portera-Cailliau et al. (1) reported three patients with large MCA territory infarctions in the non-dominant hemicranial hemisphere.
sphere sparing the motor cortex. All three patients presented with subtle motor weakness on initial presentation and achieved excellent clinical outcomes, similar to our patient. However, neither diffusion tensor tractography nor cerebral angiography was performed in that study.

In conclusion, despite the MRI findings, our patient achieved a favorable functional outcome with only mild neurological sequelae, presumably because the corticospinal tracts arising from the motor cortex were incidentally spared, as clearly demonstrated on tractography (Picture 2).

The authors state that they have no Conflict of Interest (COI).

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Reference