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An unusual, intermediate sized lesion type, motor organization in schizencephaly

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Introduction
Schizencephalies are abnormal clefts of the cerebral hemispheres that **result** from abnormal late neuronal migration and cortical organization. As schizencephaly occurs during the early phases of gestation, this type of brain lesion is likely to be associated with an effective organization of the sensorimotor cortex.

Case
Two patients were presented to our department with the symptom of left hemiparesis. The patient 1 was 25 years-old male and the patient 2 was 23 years-old female. Brain MRI showed closed lip schizencephalic cleft in the right hemisphere and nonschizencephalic focal cortical dysplasia in the left hemisphere. The extent and involvement of schizencephalic cleft in the left hemisphere is wider in patient 2, and the cortical dysplasia in the right hemisphere is more severe in patient 1. Diffusion tensor imaging suggests that in patient 2, polymicrogyria in the left frontal lobe may have a possibility to affect the corticospinal projection. Motor evoked potentials of the first dorsal interosseous muscles of both hands were recorded simultaneously. In patient 1, there have been contralateral MEPS from the more severely affected hemisphere with schizencephalic cleft, in the paretic hand. In patient 2, no MEP was evoked from the affected hemisphere even when the stimulation intensity was increased to 100% of maximal output.

Conclusion
We report two different types of unusual motor organization of patients with schizencephalic cleft in the right hemeisphere and polymicrogyria in the opposite one. Despite the similar brain pathology affecting the sensorimotor cortex, two patients showed the different types of motor organization. In both patients, ipsilateral croticospinal projections to their paretic hands were observed by TMS of the less affected hemisphere with polymicrogyria. However, a crossed corticospinal tract to the paretic hand from the more severely affected hemisphere with schizencephalic cleft in a patient was observed and this type of motor organization in schizencephalic patient has not been reported before. It suggests that motor organization after early brain injury may be affected by the interhemispheric competition of the corticospinal system and bilateral brain lesions manifestate unilateral hemiparesis