

## Measurement of the Cerebrovascular Reactivity by Blood Oxygen Level-Dependent MR Imaging, First Experience at Prasat Neurological Institute

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**Purpose:** Cerebrovascular reactivity (CVR) is an autoregulatory system that regulates adequate blood flow to the brain. There will be decrease in vascular resistance by vasodilatation in response to vascular stenosis. In case of moyamoya or moyamoya-like vasculopathy, the compensatory vasodilation might reach its maximum, and further increases in vascular stenosis could lead to cerebral oligemia and ischemia. Measurement of the CVR provides valuable information for treatment planning.

**Case report:** We report the measurement of the cerebrovascular reactivity by blood oxygen level-dependent (BOLD) MR imaging with carbon dioxide stimulus, performed in a 39-year-old male patient who had vasculopathy with moyamoya-like appearance before and after revascularization surgery. The patient came with agnosia and acalcuria. After left superficial temporal artery and middle cerebral artery bypass surgery, the patient showed clinical improvement. The BOLD signal on the pre and postoperative CVR map correlated well with the clinical context, severity of intracranial infarction, vascular stenosis and collateralization. And this supports validity of our presumed CVR map.

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