

3RD WORLD HEART CONGRESS

April 19-20, 2018 Amsterdam, Netherlands

Significance of FLAIR-MRI following successful brain revascularization: Does it reflect clinical success?

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Introduction: According to our previously reported studies, white matter hyperintensities (WMHs) might decrease following extracranial (EC)-intracranial (IC) bypass. Herein, the efficacy of successful EC-IC bypass in WMHs-course was investigated.

Methods: After obtaining the institutional review board approval, perioperative FLAIR-MRIs of 12 patients with WMHs, who underwent bypass surgeries for cerebral ischemia, were enrolled in this study. First, evaluation of regional cerebral blood flow on perioperative 123I-iodoamphetamine single photon emission computed tomography studies was done. Second, FLAIR-MRI protocol was defined, scaling evaluation table was designed, regions of interest were determined on a slice-by-slice basis, subjective errors were avoided, and meticulous volumetric grading and visual assessment of WMHs were done by three experienced raters, independently. Then, WMHs-course was determined to be improved (WMHs decreased), fluctuating, worsened (WMHs increased) or stationary. Finally, statistical analysis was done.

Results: Decreased WMHs were seen in 41.7% of patients. Most of them (80%) exhibited bilateral improvement despite unilateral bypass surgeries. Also, fluctuating (33.3%), stationary (16.7%) and increased (8.3%) WMHs were documented. Good clinical outcome was not always accompanied with decreased WMHs.

Conclusion: An obvious positive effect of EC-IC bypass on WMHs was documented. This study might stimulate future researches to evaluate the reversibility of ischemic WMHs on FLAIR-MRI as a marker for sufficient brain revascularization.

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