

The aim of a study was to evaluate the factors for the symptomatic **Watershed infarct** (WI) and neurological worsening in patients treated by ECA-RA-M2 bypass for complex ICA aneurysm with therapeutic ICA occlusion.

Matsukawa et al., measured the sizes of vessels (RA, C2, M2, and STA) and intraoperative MCA blood pressure (initial, after ICA occlusion, and after releasing the RA graft bypass) in 37 patients. Symptomatic WI was defined as presence of the following: postoperative new neurological deficits, WI on postoperative diffusion-weighted imaging, and ipsilateral cerebral blood flow reduction on SPECT. Neurological worsening was defined as the increase in 1 or more modified Rankin Scale scores. First, the authors performed receiver operating characteristic curve analysis for continuous variables and the binary end point of the symptomatic WI. The clinical, radiological, and physiological characteristics of patients with and without the symptomatic WI were compared using the log-rank test. Then, the authors compared the variables between patients with and without neurological worsening at discharge and at the 12-month follow-up examination or last hospital visit.

Symptomatic WI was observed in 2 (5.4%) patients. The mean MCA pressure after releasing the RA graft ( $< 55$  mm Hg;  $p = 0.017$ ), mean (MCA pressure after releasing the RA graft)/(initial MCA pressure) ( $< 0.70$  mm Hg;  $p = 0.032$ ), and mean cross-sectional area ratio ([RA/C2 diameter] $^2 < 0.40$  mm [ $p < 0.0001$ ] and [STA/C2 diameter] $^2 < 0.044$  mm [ $p < 0.0001$ ]) were related to the symptomatic WI. All preoperatively independent patients remained independent (modified Rankin Scale score  $< 3$ ). After adjusting for age and sex, left operative side ( $p = 0.0090$  and  $0.038$ ) and perforating artery ischemia ( $p = 0.0050$  and  $0.022$ ) were related to neurological worsening at discharge (11 [29%] patients) and at the 12-month follow-up or last hospital visit (8 [22%] patients).

Results of the present study showed that the vessel diameter and intraoperative MCA pressure had impacts on the symptomatic WI and that operative side and perforating artery ischemia were related to neurological worsening in patients with complex ICA aneurysms treated by ECA-RA-M2 bypass <sup>1)</sup>.

<sup>1)</sup>

Matsukawa H, Tanikawa R, Kamiyama H, Tsuboi T, Noda K, Ota N, Miyata S, Oda J, Takeda R, Tokuda S, Kamada K. Risk factors for neurological worsening and symptomatic watershed infarction in internal carotid artery aneurysm treated by extracranial-intracranial bypass using radial artery graft. J Neurosurg. 2015 Nov 13:1-8. [Epub ahead of print] PubMed PMID: 26566202.

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