

**3T high resolution vessel wall imaging of the middle cerebral arteries in acute striatocapsular infarction**

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**PURPOSE:** Recently, 3T high-resolution vessel wall imaging has been introduced to compensate limitation of 3-dimensional time-of-flight magnetic resonance angiography (3D TOF MRA) which only shows the vascular lumen of intracranial artery diseases. We aimed to evaluate the vessel wall appearances of the middle cerebral arteries (MCA) using HR-MRI in addition to 3D TOF MRA.

**MATERIALS AND METHODS:** Thirty-eight consecutive patients (M:F = 22:16, mean age =  $61.3 \pm 14.6$  years) with acute striatocapsular infarctions within MCA distribution displayed on the DWI, were retrospectively enrolled. All vessel wall appearances and lumen of ipsilateral MCAs were evaluated within  $4.7 \pm 2.8$  days from symptom onset using 3T vessel wall imaging and 3D-TOF MRA. The vessel wall imaging was performed perpendicular to the M1 segment with proton-density, T1-weighted and contrast-enhanced T1-weighted imaging and presence of wall thickening, enhancement and eccentric narrowing were recorded for all symptomatic M1 segment. We divided the patients into 3 groups based on stenotic degree of ipsilateral M1 segment 3D TOF MRA: 1) normal ( $n = 27$ ), 2) stenosis ( $> 50\%$ ) ( $n = 7$ ), 3) occlusion ( $n = 4$ ). According to the vascular distributions, infarction volumes were classified as either 1) perforator arterial infarction (PAI)  $< 2$  cm ( $n = 16$ ), 2) PAI  $> 2$  cm ( $n = 11$ ) or 3) larger infarction beyond PAI ( $n = 11$ ). Additionally National Institutes of Health Stroke Scale (NIHSS) scores and risk factors including cardioembolic risks were assessed.

**RESULTS:** Of the 38 patients included, 19 showed wall enhancement, 10 showed wall thickening, and 5 showed eccentric narrowing. Of 27 patients with normal M1 on MRA, any vessel wall abnormalities was not found in 19 (70.4%). Abnormal vessel wall findings were significantly more common in patients with steno-occlusive M1 segment on MRA, larger infarction beyond PAI and higher NIHSS score ( $p < .05$ ). Compared to patients without MRA abnormalities, the numbers of abnormal vessel wall findings were significantly more prevalent in patients with steno-occlusive M1 ( $p < .05$ ).

**CONCLUSION:** Based on our preliminary results, high-resolution vessel wall imaging may play complimentary roles in symptomatic steno-occlusive MCA diseases depicted on 3D TOF MRA.