

## **The impact of small vessel disease tomography markers on the clinical outcome of thrombectomy for ischemic stroke**

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### **Introduction and Aim:**

Although mechanical thrombectomy (MT) has expanded its indications over the last years, establishing a robust benefit even for the elderly, some trials have shown neutral effects regarding this subgroup. One possible explanation for these findings is the vulnerability of the patients treated under these trials, which means these populations were frailer and, accordingly, portended a significant burden of cerebral small vessel disease (cSVD), which may work as a surrogate marker for brain frailty. Based on this hypothesis, we studied the influence of the cSVD markers on the baseline CT scan in the functional outcome

**Methodology:** A trained vascular neurologist blinded to clinical details evaluated the CT scans of 351 patients. We focused on markers of cSVD (leukoaraiosis, old lacunes, atrophy), and calculated the Brain Frailty Score (BFS) and modified Small Vessel Disease score (mSVD). Then we carried out a multivariable logistic regression to identify the variables related to disability at 90 days. Finally, the effect of MT was evaluated between subgroups defined by its cSVD imaging markers.

**Results:** The group with disability at 90 days was older, had higher NIHSS at admission, more prevalence of diabetes mellitus (DM), higher levels of systolic blood pressure and glucose levels at admission, poorer collaterals, lower rate of MT, and higher rates of severe cSVD markers at baseline CT scan. Only NIHSS (OR=1.201, CI=1.140-1.277,  $p<0.001$ ); BFS (OR=13.99; CI=2.383-143.5,  $p=0.002$ ), mSVD (OR=5.386, CI=2.342-12.95,  $p<0.001$ ); and DM (OR=2.625, CI=1.064-6.847,  $p=0.036$ ) were associated with a

poor outcome. In the subgroup analyses, the allocation group (standard treatment) influenced the functional outcome just for patients with severe leukoaraiosis and old lacunes.

**Conclusion:** Markers of cSVD on baseline CT scans are related to poorer outcomes of patients with LVO and might be one of the main causes of the lack of benefit of MT in elderly patients.