Predictors of good response to endovascular treatment of posterior circulation stroke.

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Introduction

Posterior circulation stroke represents approximately 20% of all ischemic strokes and is associated with bad outcome in 68%-80% of patients. Endovascular treatment is considered a reasonable approach in patients with acute posterior circulation strokes¹, but it remains unclear which category of patients benefits the most after endovascular treatment.

Material and Methods

We evaluated consecutive patients with acute stroke in the posterior circulation who underwent endovascular treatment from January 2015 to December 2017. Good outcome was defined as a modified Rankin Scale (mRS) score 0-3 at three months, in accordance with the definition used in the BASICS registry². Intracranial atheromatosis was recorded as previously reported³. The association between clinical and angiographical signs and good outcome was assessed with uni and multivariable analysis.

Results

We included 49 consecutive patients (mean age, 70±12 years; median NIHSS, 16 IR8-30). In univariate analysis, age (p= 0.01), active smoking (p=0.04), hypertension (p=0.03), absence of intracranial atheromatosis (p=0.03), successful recanalization (p=0.04) and number of passes needed to achieve recanalization (p=0.01) were significantly associated with good outcomes. In multivariate analysis, the absence of intracranial atheromatosis (odd ratio = 6.450, 95%CI: 1.088-38.240, p= 0.040) and age <70 (odd ratio = 6.2, 95%CI: 1.516- 25.465, p=0.01) were independently associated with good outcome at three months.

Angiographically defined absence of intracranial atheromatosis

Figure 1 : Antero-posterior digital subtraction angiography of a 70 years female patient. A: Diagnostic angiography showing a filling defect at the top of basilar, with no other appreciable vascular irregularity. B: Final angiography with no evidence of focal stenosis after recanalization. mRS at three months: 1.

Angiographically defined presence of intracranial atheromatosis

Figure 2: Antero-posterior digital subtraction angiography of an 83 years female patient. A: Diagnostic angiography showing a focal luminal narrowing highly indicative of intracranial atheromatosis. B: Final angiography with diffuse luminal irregularities after recanalization. mRS at three months: 6.

Conclusion

In this study, patients with angiographically-defined absence of intracranial atherosclerosis were good responders to endovascular treatment, whereas patients with sign of intracranial atheromatosis were not. Clinical trials to determine whether new treatment protocols may be more efficient in patients with intracranial atheromatosis are urgently needed.

Bibliography

¹Powers WJ, et al. 2018 Guidelines for the Early Management of Patients With Acute Ischemic Stroke. **Stroke** 2018.

²Schonewille WJ, et al. Treatment and outcomes of acute basilar artery occlusion in the Basilar Artery International Cooperation Study (BASICS): a prospective registry study. **Lancet Neurol** 2009

³Lee JS, et al. Endovascular Therapy of Cerebral Arterial Occlusions: Intracranial Atherosclerosis versus Embolism. **J Stroke Cerebrovasc Dis** 2015