



POSTER

Subacute Blood-Brain Barrier Permeability after an Acute Ischemic Stroke is associated with Good Clinical Outcome

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Abstract

Background: The dynamics of blood-brain barrier (BBB) after an acute ischemic stroke (AIS) are complex and multiphasic. An early increase in permeability is associated with oedema, haemorrhagic transformation and poor clinical outcomes. Animal models indicate that a later, subacute stage of increased BBB permeability might have a positive effect representing neurovascular remodelling and neoangiogenesis. However, its clinical impact is still uncertain.

Objectives: To evaluate the association between BBB permeability at day 7 after an AIS and the patients' clinical outcomes.

Methods: We included consecutive patients with nonlacunar AIS in the territory of a middle cerebral artery with ages ranging from 18 to 80 years. We used modified Rankin Scale (mRS) score at 3 months as a measure of clinical outcome. Neuroimaging was performed at day 0 and 7 by Magnetic Resonance Imaging, including assessment of BBB perme-

ability in the infarct lesion by dynamic contrast enhancement with quantification of the volume transfer coefficient (K_{trans}). We performed an ordinal regression model between mRS and BBB permeability adjusting for the baseline variables associated with good outcome and including infarct volume as a covariate.

Results: We included 45 patients; mean age was 70.0 ± 10.0 years. BBB permeability in the subacute stage showed a nonsignificant reduction in comparison with day 0: K_{trans}: 0.0158 (SD: 0.0092) vs. 0.0163 (SD: 0.081), $p=0.756$. Permeability of BBB at day 7 was independently associated with improved clinical outcome (odds ratio 0.897; 95% confidence interval 0.816–0.986; $p = 0.025$). Inclusion of stroke volume in the regression model did not change statistical significance.

Conclusion: We found subacute BBB permeability to be associated with good clinical outcome.

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