

## **LOW, NOT HIGH, PERMEABILITY PREDICTS HEMORRHAGIC TRANSFORMATION AFTER REPERFUSION THERAPY**

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**BACKGROUND AND PURPOSE:** To determine whether the permeability related parameter Ktrans (volume transfer constant) derived from PCT, will predict hemorrhagic transformation (HT) and distinguish hemorrhagic infarction(HI) and parenchymal hemorrhage (PH) in AIS patients who receive intra-arterial thrombolysis with tissue plasminogen activating factor (tPA).

**METHODS:** Consecutive patients with acute ischaemic stroke who received intra-arterial thrombolysis and had HT in follow up were enrolled. Ktrans maps were used to assess the permeability values in HT regions and Non-HT regions. A receiver-operator characteristic (ROC) curve was calculated showing sensitivity and specificity of Ktrans value for predicting HT risk. Composite images were produced to demonstrate the spatial correlations between permeability changes and HT.

**RESULTS:** Forty-one patients were included, comprising 16 women and 25 men, with a mean age of  $64.37 \pm 12.45$  years. Twenty-six patients had HI and 15 had PH. Mean Ktrans values in HT regions ( $0.26 \pm 0.21/\text{min}$ ) were significantly lower than in non-HT regions ( $0.78 \pm 0.64/\text{min}$ ;  $p < 0.001$ ). ROC analysis identified an optimal cutoff value for Ktrans of 0.334/min to predict HT risk. The majority of HI (63.3%; 19/30) and PH (44%; 11/25) occurred in the lentiform nucleus.

**CONCLUSION:** The risk of HT for acute proximal arterial occlusion after intra-arterial reperfusion could be predicted using Ktrans maps derived from standard first-pass perfusion CT. Ischemic regions with lower values of Ktrans are more likely to develop HT.