

Bolus-Tracking Perfusion and Vessel Size Imaging in the Brain

Measurements of cerebral blood volume and flow via tracking the first passage of a bolus of exogenous contrast agent (DSC MRI) is a recognized tool in the diagnostics of stroke and intracranial tumors. However, the method still suffers from large interindividual variability, dependence on operator and on data processing algorithms. Empirically, the temporal characteristics of the bolus passage demonstrate a better prognostic value in acute stroke than the blood flow, which in theory is the central physiological quantity. I believe that the minor role of blood flow is a manifestation of the poor quantitation of tissue parameters. The goal of this project is to develop a robust quantitative, operator-independent DSC MRI for the clinical needs. Our current focus is on a reliable measurement of the arterial input function. The results will better delineate the biophysical content of the measurement and will be quantitatively validated using Positron Emission Tomography (PET).

Related publications

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