

RELATIONSHIP BETWEEN CEREBRAL PERFUSION AND PARKINSON'S DISEASE SUBTYPES

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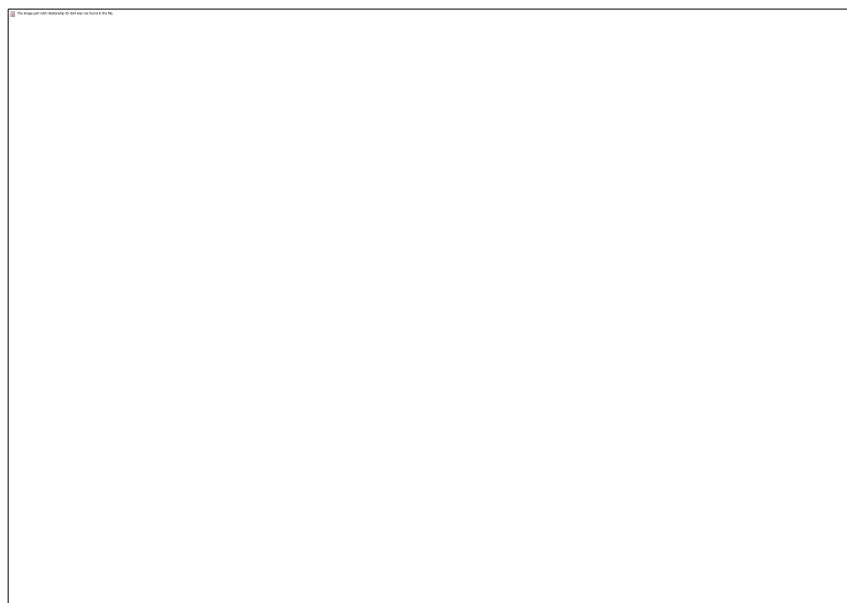
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Introduction: The variability of clinical symptoms in Parkinson's disease (PD) suggests the existence of PD subtypes. However, little is known about the biological underpinnings of the potential subtypes.

Aims: We explored whether variations in regional cerebral blood flow (rCBF) provide a signature for PD subtypes, specifically for those presenting either akinetic-rigidity (AR) or tremor (TR) dominance.

Methods: rCBF was mapped in twenty-six non-demented PD patients using arterial spin labeling (ASL) MRI and compared to 15 control subjects. PD severity was measured using the unified PD rating scale (UPDRS), which was further transformed into an index ranging from positive to negative values for AR dominance or TR dominance, respectively.

Results: PD patients showed elevated rCBF levels in supplementary motor cortex (SMA) relative to controls. Moreover, the rCBF increase of SMA in PD correlated ($p=0.005$) with greater AR dominance (see Figure), while rCBF associated with TR dominance remained at normal levels. Aside from the SMA, increased PD severity overall - but not AR or TR dominance - correlated with decreased rCBF of the medial ventral frontal (VF) cortex.



[rCBF Versus PD Symptom Dominance]

Conclusion: The results provide evidence for a biological basis of PD subtypes and suggest hyperactivity of the SMA is characteristic for an AR related subtype.