

DIFFERENT REGIONAL PATTERN OF HYPOPERFUSION BETWEEN AD AND FTD BY ARTERIAL SPIN LABELING MR

N. Schuff^{1,2}, A.T. Du¹, B. Miller³, N. Johnson¹, J. Kramer⁴, H. Rosen³, G.H. Jahng^{1,2}, S. Hayasaka¹, M. Weiner^{1,2,3}

¹ MR Unit, VA Medical Center, San Francisco, USA; ² Department Of Radiology, University Of California, San Francisco, USA; ³ Department Of Neurology, University Of California, San Francisco, USA; ⁴ Department Of Psychiatry, University Of California, San Francisco, USA; ⁵ Department Of Medicine, University Of California, San Francisco, USA

Frontotemporal dementia (FTD) and Alzheimer's disease (AD) are often difficult to differentiate because clinical symptoms may overlap. PET and SPECT studies revealed different patterns of cerebral hypometabolism and hypoperfusion in FTD and AD that may aid a differential diagnosis, but require injection of radioactive tracers. Arterial spin labeling (ASL) perfusion MRI provides entirely noninvasive measurements of cerebral perfusion. The goal of this study was to determine if ASL-MRI depicts similar patterns of hypoperfusion in FTD and AD than PET and SPECT. Patients with FTD (n=21), AD (n=24), and cognitively normal subjects (CN, n=25) were studied using ASL-MRI at 1.5Tesla. Group effects on cerebral perfusion were tested voxelwise using Statistical Parametric Mapping. The figure depicts group mean effects superimposed on a template brain. Compared to CN, FTD patients showed hypoperfusion in the superior and middle frontal gyrus bilaterally and in the left anterior cingulate gyrus ($p < 0.001$). Compared to AD, FTD patients showed hypoperfusion in the right superior frontal gyrus ($p < 0.001$). AD patients when compared to FTD had hypoperfusion in the left and right inferior parietal lobes and left precuneus ($p < 0.001$). In conclusion, ASL-MRI depicts different regional patterns of hypoperfusion between FTD and AD, similar to PET and SPECT, suggesting that this technique may have potential to aid the differential diagnosis between FTD and AD.

