

Supplement 1. Supplementary Neuroimaging Protocol

MRI acquisitions will be conducted using a 3T Siemens Prisma. The 3T Siemens Prisma whole body scanner includes simultaneous multi-slice (SMS) techniques for functional MRI (fMRI) and diffusion imaging (dMRI) as outlined in the Human Connectome Project. The Siemens Prisma includes an 80 mT/m @ 200 T/m/s gradient system, parallel transmit capabilities, and a series of MR coils including a 64-channel head/neck coil used for the investigation. Information that is more specific can be found in Table S1.

Table S1. Neuroimaging specifics.

Sequence Name	FOV and resolution in mm	Parameters (ms)	Run time in minutes	Purpose	Notes
MP-RAGE	Sagittal: 256x256x20 8 (1x1x1 mm)	TR=2000, TE=2.91, TI=1010, Flip angle=8°	3:33	T1-weighted structural analyses, lacunar infarction quantification	
T2	Sagittal: 256x256x20 8 (1x1x1 mm)	TR=2500, TE=370, Flip angle=120°	4:15	T2-weighted structural analyses (combined with and independent from T1)	
3D T2 FLAIR	Sagittal: 256x256x17 6 (1x1x1 mm)	TR=4800, TE=441, TI=1650, Flip angle=120°	6:58	Quantification of white matter disease	
SWI	Axial: 256x256x12 8 (1x1x1 mm)	TR=35, TE=15, Flip angle=12°	5:35	Analysis of hemorrhage/blood products, calcium, and iron	
Resting state fMRI	Axial: 80x80x43 (3x3x3 mm)	TR=3500, TE=30, Flip angle=80°	10:00	Functional connectivity analyses	
pASL	Axial: 64x64x9 (4x4x8)	TR=2500, TE=12, Flip angle=90°	3:52	Metabolism and perfusion analyses	
DWI	Axial: 128x128x19 7 (2x2x2 mm)	TR=3200, TE=70, Flip angle=90°	10:52 (plus 0:33 for each additional AP and PA b0 images)	Structural connectivity analyses	AP and PA phase reversed b0 images also acquired to assist in distortion correction. SMS = 3, Multi-shell acquisition: b = 0, 1000, 2000, 3000

Abbreviations: DWI: Diffusion Weighted Imaging; fMRI: functional Magnetic Resonance Imaging; FLAIR: Fluid Attenuated Inversion Recovery; FOV: field-of-view; mm: millimeters; ms: milliseconds; MP-RAGE: magnetization prepared rapid gradient-echo; pASL: pulsed Arterial Spin Labeling; TE: Echo Time; TI: Inversion Time; TR: Repetition Time; SMS: simultaneous multi-slice; SWI: susceptibility weighted imaging.