

Supplemental Information

Detailed Methods for Magnetic Resonance DWI

Images were obtained by using a GE 3.0-Tesla 8-channel HDx Excite MRI system running LX 12x software or higher (GE Healthcare, Inc, Milwaukee, WI) with an 8-channel RF head coil (In-vivo, Inc, Gainesville, FL). For prescribing the diffusion weighted images, a 3-plane localizer scan was done to acquire mixed T2-,T1-weighted images in 5-slice locations for each orthogonal direction, with repetition time [TR] = 4.68 milliseconds, echo time = 1.22 milliseconds, slice thickness = 7 mm. Then, a multislice 2-dimensional calibration scan, based on the spiral sequence, covering the entire brain was acquired for parallel imaging (Array Spatial Sensitivity Encoding Technique [ASSET], GE Healthcare Inc). Next, DWI was acquired by using GE's commercial DWI sequence based on its commercial echo planar imaging sequence (epi2.

psd). Parallel imaging with acceleration factor 2 was used to reduce the geometric distortion of the DWI images and to also allow more slice locations. DWI images were acquired with $b = 0$ s/mm² for the T2 baseline image, and $b = 900$ s/mm² for the DWI. These images were used to calculate the ADC maps. The following scan and postprocessing parameters for the DWI sequence were used: Software release = 12.0_M5_0606.b or higher (applies to both pulse sequence and DTI processing software), Gradient Mode = Zoom (peak slew rate 150 mT/m/ms), pulse sequence name (GE proprietary sequence) = epi2.psd, TR = 11 000 ms, TE = 60 ms (minimum), flip angle = 90°, number of averages = 2, field of view = 240 mm × 240 mm, slice thickness = 4.2 mm, slice gap = 0.8 mm, receiver bandwidth = 1953.12 Hz/

Px, acquisition matrix = 132 (Freq) × 66 (Phase), phase encode direction = anterior-posterior, parallel imaging acceleration (ASSET) factor = 2, in-plane spatial resolution = 1.82 mm × 1.82 mm, b -value1 = 0 s/mm², b -value2 = 900 s/mm², number of slice locations = 31 to 34 (to cover brain), number of images = 62 to 68, scan time = 45 seconds, image size = 256 × 256. To generate a 256 × 256 image, the raw data matrix size was increased to 256 × 256 by zero filling. Over the duration of the study, the MRI system had standard field-service hardware and software upgrades, but no optional upgrades, such that at the end of the study, the system was running software release A15.0_M4A_0947.a. User-prescribed scan parameters were held constant throughout the study.