

## SUPPLEMENT

### Supplementary Materials 1

#### Image Acquisition

All MR images were acquired using a 3T imaging scanner (Trio, Verio, or Skyra; Siemens) with a 32-channel head coil.

For dynamic contrast-enhanced (DCE) MRI, three dimensional (3D) gradient-echo T1-weighted images (T1WI) were acquired following the intravenous injection of gadobutrol (Gadovist; Bayer Schering Pharma) at a dose of 0.1 mmol/kg of bodyweight and a rate of 4 mL/s using a power injector (Spectris; MedRad). After gadobutrol injection, a 30-mL saline bolus was administered at the same injection rate. Forty images were obtained at intervals equal to the repetition time (TR) for each section. The total acquisition time was 5 minutes 8 seconds. Dynamic susceptibility contrast (DSC) MRI was performed using a single-shot gradient-echo echo-planar imaging sequence after the intravenous administration of the gadobutrol at the same dose and using the same method as above. Sixty images were obtained at intervals equal to the TR for each section. The total acquisition time was 1 minutes 36 seconds. CE T1WI was performed after sequentially performing the DCE MRI and DSC MRI.