

Table S1 Multiparametric MRI sequences and acquisition parameters

Sequence	TR (msec)	TE (msec)	FOV (mm)	Matrix	Slice thickness (mm)	Slice gap (mm)	Fat suppression	Flip angle	b value (sec/mm ²)	Acquisition time
Axial T1WI	5.38	2.46/3.69	380×380	384×384	1.5	0	YES	8°	–	1 min 59 s
Axial T2WI	7,600	75	340×340	358×448	4	0.8	YES	116°	–	3 min 27 s
Axial DWI	7,620	64/104	360×293	156×192	4	0.8	YES	180°	0/800	1 min 54 s
Axial DSI	6,600	97	350×350	174×174	4	0.8	YES	90°	0–2,000	11 min 33 s
Axial DCE-MRI	3.25	1.22	380×327	187×256	2.5	0.8	YES	11°	–	7 min 10 s
Axial T1WI + C	5.38	2.46/3.69	380×380	384×384	1.5	0.8	YES	8°	–	1 min 59 s
Coronal T1WI + C	5.35	2.46/3.69	350×328	270×320	2	0.8	YES	8°	–	1 min 54 s

b value of DSI = 0–2,000, including 0, 200, 450, 650, 900, 1,100, 1,350, 1,800, and 2,000 sec/mm². DCE, dynamic contrast-enhanced; DSI, diffusion spectrum imaging; DWI, diffusion-weighted imaging; FOV, field of view; MRI, magnetic resonance imaging; T1WI + C, delayed enhanced T1WI; T1WI, T1-weighted imaging; T2WI, T2-weighted imaging; TE, echo time; TR, repetition time.

Table S2 Definition and calculation formula of MAP-MRI metrics

MAP-MRI metrics	Definition	Calculation formula
MAP_MSD	MSD measures the average amount of diffusion in a voxel	$MSD = \int_{R^3} P(R) R^2 d^3 R$
MAP_NG	NG characterizes the three-dimensional diffusion process	$NG = \sin\theta PG$
MAP_NG _{Ax}	NG _{Ax} is the derivation of NG for diffusion in the axial direction	$NG_{\perp} = \sin\theta PG_{\perp}$
MAP_NG _{Rad}	NG _{Rad} is the derivation of NG for diffusion in the radial direction	$NG_{\parallel} = \sin\theta PG_{\parallel}$
MAP_QIV	QIV measures the inverse variance of the q-signal geometric means	$QIV^{-1} = \int_{R^3} E(q) q^2 d^3 q$
MAP_RTOP	RTOP describes the probability of no net displacement of molecules between two diffusion sensitization gradients	$RTOP = \int_{R^3} E(q) dq$
MAP_RTAP	RTAP is the variant of RTOP for diffusion in two-dimension	$RTAP = \int_{R^2} E(q_{\perp}) dq_{\perp}$
MAP_RTPP	RTPP is the variant of RTOP for diffusion in one-dimension	$RTPP = \int_R E(q_{\parallel}) dq_{\parallel}$

MAP, mean apparent propagator; MRI, magnetic resonance imaging; MSD, mean squared diffusion; NG, non-Gaussianity; NG_{Ax}, axial non-Gaussianity; NG_{Rad}, radial non-Gaussianity; QIV, q-space inverse variance; RTAP, return-to-axis probability; RTOP, return-to-origin probability; RTPP, return-to-plane probability.