

Figure S1 Measuring the tumor size and the minimal distance between the CST and the tumor. Tumor size was measured by an experienced radiologist who calculated the size slice by slice using ImageJ on structural MR images such as T2-FLAIR as shown in the upper row. The total tumor size was the sum of the volumes of all tumor slices. The minimal distance between the CST and the tumor was evaluated on structural MR images (such as T2-FLAIR) with CST marked in white, as shown in the bottom row. CST, corticospinal tract; MR, magnetic resonance; FLAIR, fluid-attenuated inversion recovery.

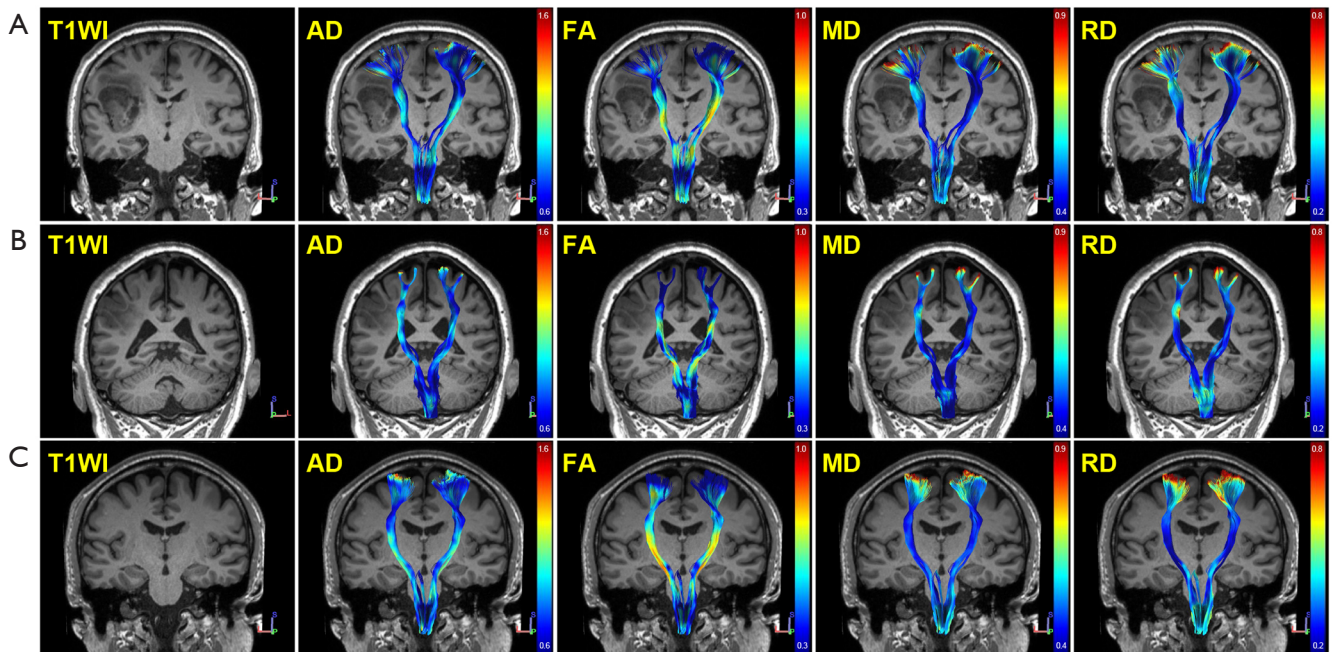


Figure S2 Changes of the CST in glioma patients with motor epilepsy and without epilepsy demonstrated by the DTI features of the CST marked on pre-contrast 3D T1W images of 3 representative participants. The patient (A) was a 57-year-old male with oligodendroglioma (WHO grade II), but without epilepsy. On the affected CST side, a diffuse and obvious increase was found in AD, MD, and RD, whereas change was not obvious in FA. The patient (B) was a 70-year-old male with diffuse astrocytoma (WHO grade II) and motor epilepsy. On the affected CST side, a focal increase was found in MD and RD, but no obvious changes were found in AD and FA. The participant (C) was a 54-year-old healthy male. All the CST features had good bilateral symmetry. CST, corticospinal tract; DTI, diffusion tensor imaging; T1W, T1-weighted; WHO, World Health Organization; AD, axial diffusivity; MD, mean diffusivity; RD, radial diffusivity; FA, fractional anisotropy.

Table S1 Inter-observer variability of measurements for 10 randomly selected glioma patients

Region	CST feature	Intraclass correlation coefficient (95% CI)	P value
Left CST	Tract number	0.929 (0.743–0.982)	<0.001
	Mean tract length (cm)	0.993 (0.971–0.998)	<0.001
	Tract volume (cm ³)	0.756 (0.283–0.933)	0.004
	DTI-AD (×10 ³ mm ² /s)	0.994 (0.976–0.999)	<0.001
	DTI-FA	0.997 (0.986–0.999)	<0.001
	DTI-MD (×10 ³ mm ² /s)	0.998 (0.993–1.000)	<0.001
	DTI-RD (×10 ³ mm ² /s)	0.995 (0.979–0.999)	<0.001
	MAP-MSD (×10 ⁻⁵ mm ² /s)	0.991 (0.964–0.998)	<0.001
	MAP-QIV (×10 ⁻¹⁰ mm ⁵ /s)	0.996 (0.984–0.999)	<0.001
	MAP-RTAP (×10 ³ mm ⁻² /s)	0.999 (0.996–1.000)	<0.001
	MAP-RTOP (×10 ³ mm ⁻² /s)	0.999 (0.995–1.000)	<0.001
	MAP-RTPP (×10 ³ mm ⁻² /s)	0.995 (0.980–0.999)	<0.001
Right CST	Tract number	0.904 (0.663–0.975)	<0.001
	Mean tract length (cm)	0.997 (0.988–0.999)	<0.001
	Tract volume (cm ³)	0.860 (0.535–0.963)	<0.001
	DTI-AD (×10 ³ mm ² /s)	0.991 (0.966–0.998)	<0.001
	DTI-FA	0.998 (0.990–0.999)	<0.001
	DTI-MD (×10 ³ mm ² /s)	0.997 (0.988–0.999)	<0.001
	DTI-RD (×10 ³ mm ² /s)	0.995 (0.981–0.999)	<0.001
	MAP-MSD (×10 ⁻⁵ mm ² /s)	0.994 (0.976–0.999)	<0.001
	MAP-QIV (×10 ⁻¹⁰ mm ⁵ /s)	0.989 (0.957–0.997)	<0.001
	MAP-RTAP (×10 ³ mm ⁻² /s)	0.999 (0.996–1.000)	<0.001
	MAP-RTOP (×10 ³ mm ⁻² /s)	0.996 (0.985–0.999)	<0.001
	MAP-RTPP (×10 ³ mm ⁻² /s)	0.993 (0.973–0.998)	<0.001

CI, confidence interval; CST, corticospinal tract; DTI, diffusion tensor imaging; AD, axial diffusivity; FA, fractional anisotropy; MD, mean diffusivity; RD, radial diffusivity; MAP, mean apparent propagator; MSD, mean squared displacement; QIV, q-space inverse variance; RTAP, return-to-axis probabilities; RTOP, return-to-origin probability; RTPP, return-to-plane probabilities.