Supplementary

Appendix 1

Table S1 The MRI scan protocols and main parameters

Sequence	FOV (mm)	TR (msec)	TE (msec)	Bandwidth (kHz)	Slice thickness (mm)	Slice spacing (mm)
Axial T_2 PROPELLER	240	5,642	93	83.3	5.5	1.5
Axial T_1 FLAIR	240	1,750	24	41.67	5.5	1.5
Axial T_2 FLAIR	240	8,506	162	41.67	5.5	1.5
Coronal T_2 FLAIR	240	8,527	162	41.67	5.5	1.5
Axial DWI ASSET	240	3,000	67.6	250	6	1.5
3D pCASL	240	4,844	10.5	62.5	4	1.5
Axial CE-T_1WI	240	1,750	24	41.67	5.5	1.5
Coronal CE-T_1WI	240	1,750	24	62.5	5.5	1.5
Sagittal CE-T_1WI	240	1,750	24	62.5	5.5	1.5
DSC-MRI	240	1,200	19	250	6	1.5

MRI data were performed on a 3.0-T MRI (GE Healthcare, Milwaukee, USA). All patients were approved by the Institutional Review Board of our hospital and agreed to waive informed consent. DWI was acquired with b values of 0 and b=1,000 s/mm^2. Three-dimensional pseudocontinuous ASL was performed using a background-suppressed 3D spiral FSE technique, and post-labeling delay was 2,025 msec. MRI, magnetic resonance imaging; PROPELLER, periodically rotated overlapping parallel lines with enhanced reconstruction; FLAIR, fluid-attenuated inversion recovery; DWI, diffusion-weighted imaging; ASSET, array spatial sensitivity encoding technique; pCASL, pseudocontinuous arterial spin labeling; CE, contrast-enhanced; WI, weighted imaging; DSC-MRI, dynamic susceptibility contrast-enhanced magnetic resonance imaging; FOV, field-of-view; TE, echo time; TR, repetition time; FSE, fast spin echo.

Appendix 2

Search strategy in international databases and Chinese local academic databases

We searched international databases (PubMed, Embase, Web of Science and Cochrane Library) and Chinese local academic databases (CNKI, Wanfang Med Online, Sinomed and CMJD) using a search strategy consisting of MeSH terms and text words. Search terms include: (perfusion weighted imaging OR PWI OR perfusion MRI OR perfusion magnetic resonance imaging OR arterial spin labeling OR ASL OR dynamic susceptibility contrast enhanced OR DSC OR dynamic contrast enhanced OR DCE) AND (glioma OR glioblastoma OR GBM OR astrocytoma OR oligodendroglioma OR oligoastrocytoma) AND (tumour progression OR tumor progression OR true progression OR recurrence OR pseudoprogression OR radiation-induced injury OR post-radiotherapy OR radiation necrosis).

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Appendix 3

Table S2 Meta-regression analysis results of DSC-MRI, DCE-MRI and ASL studies

Type	Cases	Se (95% CI)	P_1	Sp (95% CI)	P_2
DSC-MRI					
Study type	28	0.77 (0.69–0.84)	0.22	0.87 (0.73–0.95)	0.97
Tumor type	28	0.88 (0.84–0.92)	0.04	0.83 (0.67–0.92)	0.51
Diagnostic criteria	28	0.85 (0.78–0.90)	0.44	0.93 (0.83–0.98)	0.26
Field strength	28	0.84 (0.76–0.89)	0.68	0.81 (0.64–0.91)	0.34
MRI parameter	28	0.85 (0.75–0.91)	0.54	0.86 (0.65–0.96)	0.92
DCE-MRI					
Study type	14	0.60 (0.32–0.82)	0.05	0.75 (0.55–0.88)	0.30
Tumor type	14	0.89 (0.78–0.95)	0.35	0.85 (0.76–0.91)	0.62
Diagnostic criteria	14	0.83 (0.69–0.91)	0.91	0.84 (0.74–0.90)	0.85
Field strength	14	0.87 (0.76–0.93)	0.52	0.84 (0.76–0.90)	0.78
MRI parameter	14	0.84 (0.63–0.94)	0.94	0.77 (0.72–0.93)	0.67
ASL					
Study type	12	0.79 (0.66–0.88)	0.9	0.74 (0.54–0.88)	0.22
Tumor type	12	0.82 (0.69–0.90)	0.79	0.68 (0.51–0.82)	0.03
Diagnostic criteria	12	0.83 (0.72–0.90)	0.64	0.95 (0.84–0.99)	0.15
Field strength	12	0.83 (0.63–0.93)	0.77	0.91 (0.68–0.98)	0.57
MRI parameter	12	0.87 (0.57–0.97)	0.56	0.93 (0.43–1.00)	0.58

DSC-MRI, dynamic susceptibility contrast magnetic resonance imaging; DCE-MRI, dynamic contrast enhanced magnetic resonance imaging; ASL, arterial spin labeling; MRI, magnetic resonance imaging; Se, sensitivity; CI, confidence interval; Sp, specificity.

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Appendix 4

Table S3 Subgroup analysis results of DSC-MRI, DCE-MRI and ASL studies

Subgroup	Cases	Se (95% CI)	Sp (95% CI)	AUC
Tumor type in DSC-MRI studies				
WHO IV	14	0.85 (0.80–0.88)	0.88 (0.79–0.94)	0.90
WHO III–IV	9	0.79 (0.72–0.84)	0.87 (0.74–0.94)	0.87
WHO II–IV	5	0.82 (0.78–0.86)	0.87 (0.80–0.92)	0.87
Study design in DCE-MRI studies				
Retrospective	12	0.86 (0.79–0.90)	0.84 (0.79–0.88)	0.89
Perspective	2	0.60 (0.45–0.72)	0.75 (0.60–0.87)	–
Tumor type in ASL studies				
WHO IV	4	0.85 (0.76–0.92)	0.67 (0.54–0.78)	0.95
WHO III–IV	5	0.72 (0.61–0.80)	0.88 (0.76–0.94)	0.84
WHO II–IV	3	0.81 (0.71–0.89)	0.92 (0.83–0.97)	0.98

DSC-MRI, dynamic susceptibility contrast magnetic resonance imaging; DCE-MRI, dynamic contrast enhanced magnetic resonance imaging; ASL, arterial spin labeling; WHO, World Health Organization; Se, sensitivity; CI, confidence interval; Sp: specificity.

Appendix 5

Table S4 Publication bias of included studies from Chinese and English databases

Subgroups	Coefficient	Standard error	t	P	95% CI
DSC-MRI					
Chinese databases	–16.37	33.26	–0.49	0.64	–101.86 to 69.12
English databases	–8.60	7.83	–1.10	0.29	–24.98 to 7.79
DCE-MRI					
Chinese databases	12.93	20.08	0.64	0.64	–242.25 to 268.12
English databases	–15.06	11.21	–1.34	0.21	–40.43 to 10.30
ASL					
Chinese databases	–44.41	14.87	–2.99	0.06	–91.74 to 2.91
English databases	14.42	17.69	0.82	0.45	–31.04 to 59.88

DSC-MRI, dynamic susceptibility contrast magnetic resonance imaging; DCE-MRI, dynamic contrast enhanced magnetic resonance imaging; ASL, arterial spin labeling; CI, confidence interval.

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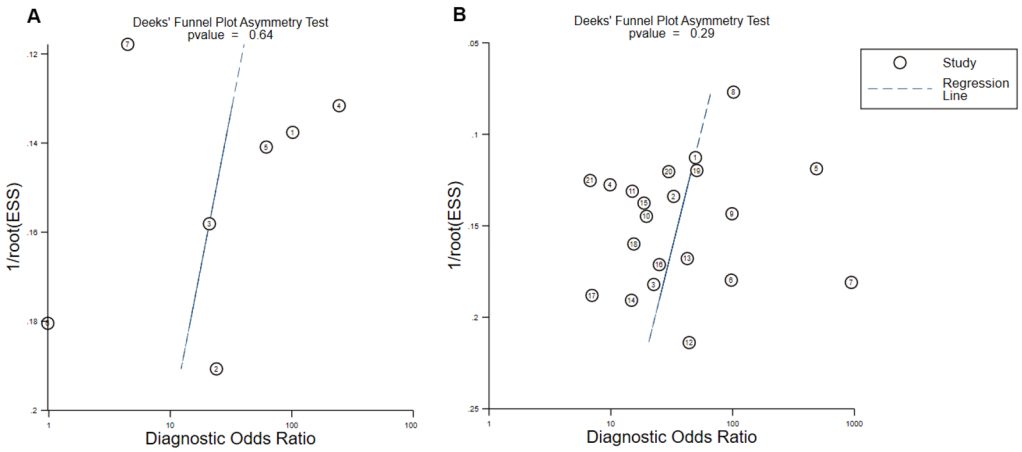

Figure S1 Funnel plots of the DSC-MRI studies from Chinese and English databases. (A) Studies from Chinese databases. (B) Studies from English databases. ESS, effective sample size; DSC-MRI, dynamic susceptibility contrast magnetic resonance imaging.

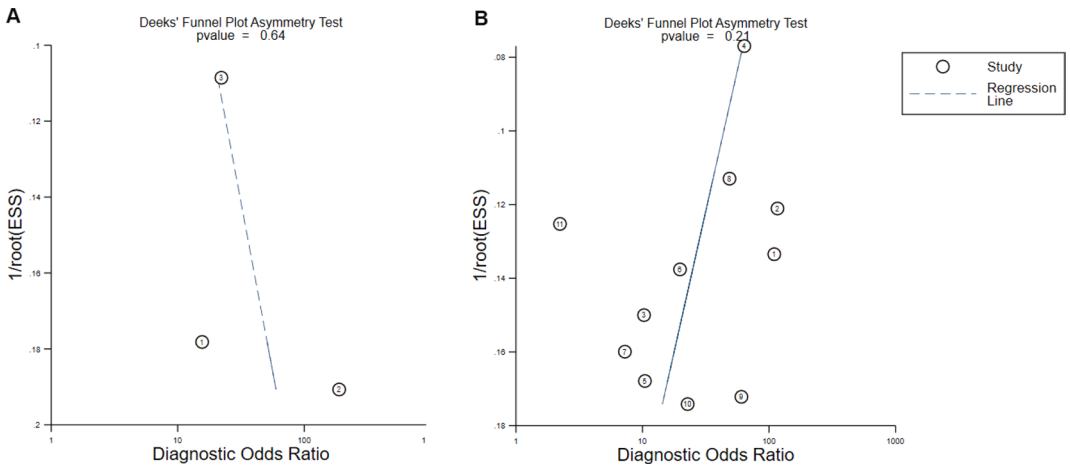

Figure S2 Funnel plots of the DCE-MRI studies from Chinese and English databases. (A) Studies from Chinese databases. (B) Studies from English databases. ESS, effective sample size; DCE-MRI, dynamic contrast enhanced magnetic resonance imaging.

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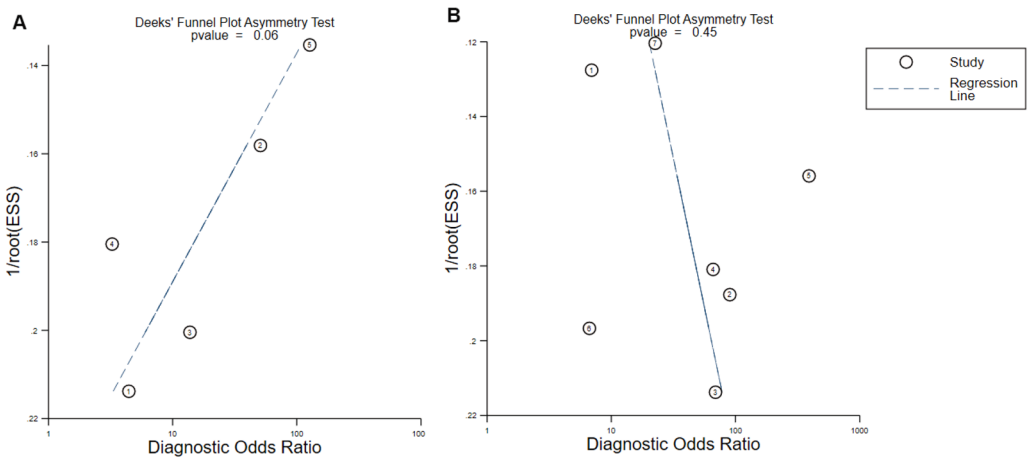

Figure S3 Funnel plots of the ASL studies from Chinese and English databases. (A) Studies from Chinese databases. (B) Studies from English databases. ASL, arterial spin labeling. The results showed that there was no publication bias in DSC-MRI, DCE-MRI and ASL studies from Chinese and English databases (P>0.05). ESS, effective sample size; ASL, arterial spin labeling; DSC-MRI, dynamic susceptibility contrast magnetic resonance imaging; DCE-MRI, dynamic contrast enhanced magnetic resonance imaging.

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