



Figure S1 Flowchart of participants enrollment. A total of 242 participants met the inclusion criteria. There were 3 participants with <50% stenosis on DSA, 25 with total occlusion, 11 with in-stent restenosis, 4 with Moyamoya disease, 3 with intracranial artery dissection, and 5 with poor CTA quality were excluded. Ultimately, 191 participants with 202 lesions were enrolled. DSA, digital subtraction angiography; EVT, endovascular treatment; CTA, computed tomography angiography.

Table S1 Details of CTA scan parameters and contrast agent methods of 6 centers

Parameters	Center 1	Center 2	Center 3	Center 4	Center 5	Center 6
CTA scan parameters						
CT scanner	GE revolution CT	SOMATOM Force	Brilliance (Philips)	SOMATOM Force	Philips iCT	GE revolution CT
Tube voltage (kV)	80	100	120	90	120	80–140
Tube current (mA-s)	Auto	Auto	245	Auto	300	200
Volume CT dose index (mGy)	14.75	10.00	16.00	10.00	7.50	16.00
Slice thickness (mm)	0.625	0.75	0.9	0.75	1	0.625
Collimation (mm)	80	57.6	40	80	80	80
Rotation time (s)	0.5	0.25	0.5	0.25	0.28	0.5
Field of view (cm)	25	25	25	25.5	25	25
Image matrix size	512×512	512×512	512×512	512×512	512×512	512×512
Contrast agent methods						
Injection site	Antecubital vein	Antecubital vein	Antecubital vein	Antecubital vein	Antecubital vein	Antecubital vein
Types	Omnipaque	Iohexol	Ioversol	Iopromide	Ioversol	Omnipaque
Concentration (mgI/mL)	350	350	350	370	320	350
Volume (mL)	65	60	65	50	0.8 ml/kg	50
Injection rate (mL/s)	5	4.5	4	5	4.5	4–5
Image acquisition method after injection	Test-bolus technique	Bolus-tracking technique	Test-bolus technique	Bolus-tracking technique	Test-bolus technique	Bolus-tracking technique

Center 1: Beijing Tiantan Hospital, Capital Medical University; Center 2: Baotou Central Hospital; Center 3: Hejian People’s Hospital; Center 4: Tongliao City Hospital; Center 5: the Third Hospital of Xingtai City; Center 6: the First Affiliated Hospital of College of Medicine, Zhejiang University. CTA, computed tomography angiography; CT, computed tomography.

Table S2 Reliability of semi-automated quantitation of ICAS on CTA by 9 different combinations when excluding lesions with 99% stenosis.

Measurement protocols	ICC	95% CI	P value
$(1 - D_{\text{min-stenosis}}/D_{\text{max-normal}}) \times 100\%$	0.919	0.891–0.940	<0.001
$(1 - D_{\text{min-stenosis}}/D_{\text{min-normal}}) \times 100\%$	0.904	0.871–0.929	<0.001
$(1 - D_{\text{min-stenosis}}/D_{\text{mean-normal}}) \times 100\%$	0.922	0.944–0.966	<0.001
$(1 - D_{\text{mean-stenosis}}/D_{\text{max-normal}}) \times 100\%$	0.888	0.849–0.916	<0.001
$(1 - D_{\text{mean-stenosis}}/D_{\text{min-normal}}) \times 100\%$	0.856	0.807–0.893	<0.001
$(1 - D_{\text{mean-stenosis}}/D_{\text{mean-normal}}) \times 100\%$	0.891	0.854–0.919	<0.001
$(1 - D_{\text{max-stenosis}}/D_{\text{max-normal}}) \times 100\%$	0.896	0.861–0.923	<0.001
$(1 - D_{\text{max-stenosis}}/D_{\text{min-normal}}) \times 100\%$	0.867	0.821–0.901	<0.001
$(1 - D_{\text{max-stenosis}}/D_{\text{mean-normal}}) \times 100\%$	0.898	0.863–0.924	<0.001

ICAS, intracranial atherosclerotic stenosis; CTA, computed tomography angiography; CI, confidence interval; ICC, intraclass correlation coefficient; D, diameter.

Table S3 Agreements of semi-automated quantitation of ICAS on CTA with DSA based on different 6 centers

Center number	ICC	95% CI	P value
Center 1	0.952	0.934–0.965	<0.001
Center 2	0.970	0.895–0.991	<0.001
Center 3	0.937	0.747–0.984	<0.001
Center 4	0.983	0.838–0.998	0.001
Center 5	0.967	0.487–0.998	0.010
Center 6	0.925	0.830–0.967	<0.001

Center 1: Beijing Tiantan Hospital, Capital Medical University; Center 2: Baotou Central Hospital; Center 3: Hejian People's Hospital; Center 4: Tongliao City Hospital; Center 5: the Third Hospital of Xingtai City; Center 6: the First Affiliated Hospital of College of Medicine, Zhejiang University. ICAS, intracranial atherosclerotic stenosis; CTA, computed tomography angiography; DSA, digital subtraction angiography; ICC, intraclass correlation coefficient; CI, confidence interval.

Table S4 Agreements of semi-automated quantitation of ICAS on CTA with DSA based on various lesion location, calcification or not, and different stenosis severity when excluding lesions with 99% stenosis

Characteristics	ICC	95% CI	P value
Lesion location			
Intracranial internal carotid artery	0.881	0.714–0.951	<0.001
Middle cerebral artery	0.921	0.875–0.950	<0.001
Basilar artery	0.949	0.907–0.972	<0.001
Intracranial vertebral artery	0.906	0.816–0.951	<0.001
Calcified plaque			
Non-calcified plaque	0.928	0.901–0.947	<0.001
Calcified plaque	0.834	0.524–0.942	0.001
Stenosis severity			
≥70% stenosis	0.786	0.702–0.847	<0.001
50–69% stenosis	0.841	0.700–0.916	<0.001

ICAS, intracranial atherosclerotic stenosis; CTA, computed tomography angiography; DSA, digital subtraction angiography; ICC, intraclass correlation coefficient; CI, confidence interval.

Table S5 Accuracy of CTA compared with DSA in detecting severe ICAS

Severe stenosis on CTA	Severe stenosis on DSA		Total
	Yes	No	
Yes	154	3	157
No	8	37	45
Total	162	40	202

Data are numbers of lesions. CTA, computed tomography angiography; DSA, digital subtraction angiography; ICAS, intracranial atherosclerotic stenosis.