

Table S1 Univariate logistic regression analysis in all patients

Characteristic	OR	95% CI	P value
Age	1.17	0.63–2.18	0.626
Male	0.99	0.97–1.01	0.498
HBP	2.43	1.37–4.31	0.002
DM	0.98	0.55–1.77	0.955
HLD	0.96	0.48–1.91	0.910
CHD	1.94	1.00–3.75	0.049
AF	1.33	0.69–2.54	0.396
MI	1.21	0.42–3.46	0.724
Prestroke	1.06	0.52–2.16	0.876
Smoking	1.17	0.65–2.10	0.609
Drinking	0.67	0.37–1.19	0.170
Prestroke mRS	1.26	0.82–1.92	0.290
Baseline NIHSS	1.09	1.03–1.15	0.003
Onset-to-door time (min)	1.00	1.00–1.00	0.155
Door-to-imaging time (min)	1.00	1.00–1.01	0.339
ASPECTS	0.81	0.72–0.92	0.001
Infarct volume	1.02	1.01–1.02	<0.001
Penumbra volume	1.00	1.00–1.01	0.566
Occlusion location			
ICA	1.55	0.59–4.11	0.378
MCA-M1	1.09	0.41–2.89	0.871
MCA-M2	Reference		
IVT	1.26	0.69–2.29	0.449
Puncture-to-recanalization time	1.01	1.01–1.02	<0.001
mTICI			
0–2a	2.71	1.23–5.97	0.014
2b–3	Reference		
HT	2.42	1.38–4.25	0.002
Tan score <2	2.28	1.30–4.00	0.004
HIR >0.4	3.16	1.76–5.68	<0.001
COVES <3	3.42	1.87–6.25	<0.001
CCC–	29.92	6.55–136.58	0.002
CCC _{mixed}	10.00	2.35–42.62	
CCC+	Reference		

HBP, high blood pressure; DM, diabetes mellitus; HLD, hyperlipidemia; CHD, coronary heart disease; AF, atrial fibrillation; MI, myocardial infarction; mRS, Modified Rankin Scale; NIHSS, National Institutes of Health Stroke Scale; ASPECTS, Alberta Stroke Program Early CT Score; ICA, internal carotid artery; MCA, middle cerebral artery; IVT, intravenous thrombolysis; mTICI, Modified Thrombolysis in Cerebral Infarction; HT, hemorrhagic transformation; HIR, hypoperfusion intensity ratio; COVES, Cortical Vein Opacification Score; CCC, cerebral collateral cascade.

Table S2 Multivariate logistic regression sensitivity analyses under alternative thresholds

Characteristic	HIR >0.3		HIR >0.5		Quantitative HIR		COVES <4		Quantitative COVES	
	aOR (95% CI)	P	aOR (95% CI)	P	aOR (95% CI)	P	aOR (95% CI)	P	aOR (95% CI)	P
HBP	2.25 (1.19–4.24)	0.012	2.25 (1.19–4.24)	0.012	2.25 (1.19–4.24)	0.012	2.51 (1.30–4.83)	0.006	2.41 (1.26–4.62)	0.008
CHD	1.79 (0.82–3.93)	0.145	1.79 (0.82–3.93)	0.145	1.79 (0.82–3.93)	0.145	1.81 (0.81–4.05)	0.150	1.71 (0.78–3.76)	0.182
Baseline NIHSS	1.04 (0.97–1.11)	0.249	1.04 (0.97–1.11)	0.249	1.04 (0.97–1.11)	0.249	1.04 (0.97–1.11)	0.275	1.04 (0.97–1.11)	0.277
ASPECTS	0.89 (0.77–1.03)	0.110	0.89 (0.77–1.03)	0.110	0.89 (0.77–1.03)	0.110	0.93 (0.79–1.08)	0.333	0.92 (0.79–1.08)	0.302
Infarct volume	1.02 (1.01–1.02)	<0.001	1.02 (1.01–1.02)	<0.001	1.02 (1.01–1.02)	<0.001	1.02 (1.01–1.02)	<0.001	1.02 (1.01–1.02)	<0.001
Puncture-to-recanalization time	1.01 (1.00–1.02)	0.003	1.01 (1.00–1.02)	0.003	1.01 (1.00–1.02)	0.003	1.01 (1.00–1.02)	0.008	1.01 (1.00–1.02)	0.004
mTICI 0–2a	2.83 (1.15–6.95)	0.023	2.83 (1.15–6.95)	0.023	2.83 (1.15–6.95)	0.023	3.03 (1.20–7.63)	0.019	3.10 (1.25–7.69)	0.015
HT	2.07 (1.11–3.89)	0.023	2.07 (1.11–3.89)	0.023	2.07 (1.11–3.89)	0.023	1.85 (0.97–3.53)	0.062	1.89 (0.99–3.89)	0.053
HIR >0.3	1.32 (0.59–2.97)	0.499	–	–	–	–	–	–	–	–
HIR >0.5	–	–	1.37 (0.64–2.94)	0.422	–	–	–	–	–	–
HIR	–	–	–	–	2.17 (0.33–14.39)	0.422	–	–	–	–
COVES <4	–	–	–	–	–	–	5.34 (1.95–14.65)	0.001	–	–
COVES	–	–	–	–	–	–	–	–	0.72 (0.58–0.89)	0.002

HBP, high blood pressure; CHD, coronary heart disease; NIHSS, National Institutes of Health Stroke Scale; ASPECTS, Alberta Stroke Program Early CT Score; mTICI, Modified Thrombolysis in Cerebral Infarction; HT, hemorrhagic transformation; HIR, hypoperfusion intensity ratio; COVES, Cortical Vein Opacification Score.

Table S3 Univariate logistic regression analysis in patients without hemorrhagic transformation

Characteristic	OR	95% CI	P value
Age	0.98	0.95–1.01	0.119
Male	1.19	0.49–2.86	0.704
HBP	1.26	0.58–2.76	0.561
DM	1.30	0.58–2.89	0.527
HLD	1.55	0.67–3.61	0.306
CHD	1.39	0.54–3.56	0.491
AF	0.75	0.27–2.10	0.578
MI	1.47	0.38–5.60	0.577
Prestroke	1.43	0.60–3.39	0.419
Smoking	1.30	0.58–2.95	0.526
Drinking	0.89	0.40–1.96	0.765
Prestroke mRS	1.30	0.77–2.18	0.325
Baseline NIHSS	1.08	1.00–1.17	0.051
Onset-to-door time	1.00	1.00–1.00	0.106
Door-to-imaging time	0.99	0.98–1.01	0.235
ASPECTS	0.81	0.69–0.96	0.013
Infarct volume	1.02	1.01–1.03	<0.001
Penumbra volume	1.00	0.99–1.00	0.561
Occlusion location			0.453
ICA	2.25	0.47–10.78	0.310
MCA-M1	1.50	0.31–7.24	0.614
MCA-M2	Reference		
IVT	0.99	0.41–2.39	0.977
Puncture-to-recanalization time	1.01	1.00–1.02	0.005
mTICI			
0–2a	Reference		0.031
2b–3	0.30	0.10–0.90	
Tan score <2	3.00	1.34–6.70	0.007
HIR >0.4	2.88	1.26–6.55	0.012
COVES <3	3.44	1.48–8.01	0.004
CCC–	33.00	3.93–277.38	0.001
CCC _{mixed}	8.44	1.09–65.19	0.041
CCC+	Reference		

HBP, high blood pressure; DM, diabetes mellitus; HLD, hyperlipidemia; CHD, coronary heart disease; AF, Atrial Fibrillation; MI, myocardial infarction; mRS, Modified Rankin Scale; NIHSS, National Institutes of Health Stroke Scale; ASPECTS, Alberta Stroke Program Early CT Score; ICA, internal carotid artery; MCA, middle cerebral artery; IVT, intravenous thrombolysis; mTICI, Modified Thrombolysis in Cerebral Infarction; HIR, hypoperfusion intensity ratio; COVES, Cortical Vein Opacification Score; CCC, cerebral collateral cascade.

Table S4 Multivariate logistic regression analysis in patients without hemorrhagic transformation

Characteristic	Clinical model		VO model		CCC model	
	aOR (95% CI)	P value	aOR (95% CI)	P value	aOR (95% CI)	P value
ASPECTS	0.89 (0.73–1.09)	0.255	0.92 (0.75–1.13)	0.410	0.90 (0.72–1.12)	0.337
Infarct volume	1.02 (1.01–1.03)	<0.001	1.02 (1.01–1.03)	0.001	1.01 (1.00–1.02)	0.032
Puncture-to-recanalization time	1.01 (1.00–1.02)	0.026	1.01 (1.01–1.02)	0.053	1.01 (1.00–1.02)	0.059
mTICI 0–2a	2.98 (0.87–10.23)	0.082	2.94 (0.86–10.03)	0.085	3.45 (0.94–12.67)	0.062
COVES <3	–	–	2.53 (1.02–56.26)	0.045	–	–
CCC–	–	–	–	–	14.34 (1.46–141.00)	0.022
CCC _{mixed}	–	–	–	–	7.27 (0.89–359.60)	0.064
CCC+	–	–	–	–	Reference	
AUC	0.767 (0.668–0.865)	<0.001	0.786 (0.700–0.872)	<0.001	0.806 (0.722–0.889)	<0.001

ASPECTS, Alberta Stroke Program Early CT Score; mTICI, Modified Thrombolysis in Cerebral Infarction; COVES, Cortical Vein Opacification Score; CCC, cerebral collateral cascade.