

SUPPLEMENTAL MATERIAL

Magnitude of systolic blood pressure reduction following endovascular treatment and clinical outcomes in acute large artery occlusion stroke

1. Supplementary table S1. Demographics and baseline characteristics in overall cohort.
2. Supplementary table S2. Association of SBP reduction with sICH in overall patients.
3. Supplementary table S3. Demographics and baseline characteristics in patients with unsuccessful reperfusion.
4. Supplementary table S4. Sensitive analysis using the BP in the emergency room as the baseline BP in patients with successful reperfusion.
5. Supplementary figure S1. Sensitive analysis for with or without antihypertensive treatment in a center.

Table S1. Demographics and baseline characteristics in overall cohort.

	All	mRS 0-2	mRS 3-6	P	sICH [#]	Non-sICH	P
	n=1080	n=534	n=546		n=86	n=986	
Age, median (IQR), y	70 (60, 76)	67 (57, 74)	72 (64, 78)	<0.001	69 (62, 77)	70 (60, 76)	0.832
Male, n (%)	630 (58.3)	342 (64%)	288 (52.7)	<0.001	51 (59.3)	575 (58.3)	0.859
Hypertension	707 (65.5)	329 (61.6)	378 (69.8)	0.008	650 (65.9)	52 (60.5)	0.307
Diabetes mellitus	190 (17.6)	72 (13.5)	118 (21.6)	<0.001	18 (20.9)	172 (17.4)	0.417
Clinical characteristics							
Baseline NIHSS scores, median (IQR)	15 (12, 18)	13 (11, 17)	17 (13, 20)	<0.001	18 (14, 20)	15 (12, 18)	<0.001
Baseline ASPECT scores, median (IQR)	9 (7, 10)	9 (8, 10)	8 (7, 9)	<0.001	8 (7, 9)	9 (8, 10)	0.001
IVT, n (%)	196 (18.1)	100 (18.7)	96 (17.6)	0.626	17 (19.8)	179 (18.2)	0.710
Blood pressure parameters, median (IQR)							
Baseline SBP, mmHg	150 (134, 166)	149 (131, 164)	151 (136, 168)	0.002	142(127,159)	150 (134, 167)	0.008
Baseline DBP, mmHg	83 (74, 92)	83 (74, 91)	84 (75, 94)	0.335	87(76,93)	83 (74, 92)	0.792
Mean SBP (24h), mmHg	123 (116, 130)	122 (115, 128)	124 (117, 131)	<0.001	125(116,133)	123 (116, 130)	0.196
Mean DBP (24h), mmHg	70 (64, 76)	70 (65, 75)	70 (64, 76)	0.957	70(64,78)	70 (64, 76)	0.419
SBPr, %	17.3 (8.2, 25.9)	17.1 (8.2, 25.3)	17.4 (8.5,26.1)	0.562	11.7(2.9,20.6)	17.5 (8.7, 30)	0.001
DBPr, %	15.9 (5.8, 25)	15.7 (5.9, 23.8)	16.3 (5.4,26.2)	0.314	14(4.9,24.2)	16.1 (5.8,25.1)	0.459
Continuous intravenous antihypertensive agents, n (%)	589 (54.5)	268 (50.2)	321 (58.8)	0.005	50 (58.1)	535 (54.3)	0.488
TOAST classification, n (%)				<0.001			0.270
LAA	315 (29.2)	179 (33.5)	136 (24.9)		19 (22.1)	296 (30)	
Cardioembolic	637 (59)	277 (51.9)	360 (65.9)		57 (66.3)	572 (58)	
Others	128 (11.9)	78 (14.6)	50 (9.2)		10 (11.6)	118 (12)	

Occlusion site, n (%)				<0.001			0.410
ICA	445 (41.2)	173 (32.4)	272 (49.8)		41 (47.7)	398 (40.4)	
MCA M1	530 (49.1)	299 (56%)	231 (42.3)		38 (44.2)	490 (49.7)	
MeVO	105 (9.7)	62 (11.6)	43 (7.9)		7 (8.1)	98 (9.9)	
OTP, mean (IQR), min	290 (220, 360)	298 (223, 360)	285 (220, 363)	0.634	300(230,359)	290 (220, 363)	0.713
OTR, mean (IQR), min	356 (287, 450)	350 (279, 436)	360 (295, 470)	0.021	371(314,470)	353 (285, 450)	0.073
Collateral score*, n (%)				<0.001			<0.001
Poor	527 (48.9)	173 (32.5)	354 (65)		59 (68.6)	461 (46.9)	
Good	550 (51.1)	359 (67.5)	191 (35)		27 (31.4)	522 (53.1)	
mTICI 2b-3	908 (84.1)	494 (92.5)	414 (75.8)	<0.001	56 (65.1)	847 (85.9)	<0.001

ASPECT, Alberta Stroke Program Early CT; DBP, diastolic blood pressure; DBPr, diastolic blood pressure reduction; IVT, intravenous thrombolysis; ICA, internal carotid artery; LAA, large-artery atherosclerosis; mTICI, modified Thrombolysis in Cerebral Infarction; MCA, middle cerebral artery; MeVO, medium vessel occlusions; NIHSS, National Institutes of Health Stroke Scale; OTP, symptoms onset to groin puncture time; OTR, symptoms onset to reperfusion; SBP, systolic blood pressure; SBPr, systolic blood pressure reduction; sICH, symptomatic intracranial hemorrhage; TOAST, the Trial of ORG 10172 in Acute Stroke Treatment.

*3 patients missing.
*8 patients missing.

Table S2. Association of SBP reduction with sICH in overall patients (n=1080).

	SBPr	Incidence, n (%)	OR	95% CI	P
sICH (n=86)	±10%(n=270)	33 (12.2)		Reference	
	<-10%(n=46)	6 (13)	0.957	0.370-2.479	0.928
	10%-20%(n=322)	25 (7.8)	0.634	0.364-1.105	0.108
	20%-30%(n=289)	16 (5.5)	0.460	0.245-0.864	0.016
	>30%(n=145)	6 (4.1)	0.304	0.123-0.749	0.010

Adjusted for: baseline NIHSS, ASPECT and collateral circulation.

Table S3. Demographics and baseline characteristics in patients with unsuccessful reperfusion.

	mRS 0-2	mRS 3-6	P	sICH*	Non-sICH	P
	n=40	n=132		n=30	n=139	
Age, median (IQR), y	67 (57, 74)	71 (62, 79)	0.010	71 (65, 78)	70 (61, 78)	0.941
Male, n (%)	26 (65)	61 (46.2)	0.037	15 (50)	72 (51.8)	0.858
Hypertension	26 (65)	90 (68.2)	0.707	18 (60)	96 (69.1)	0.337
Diabetes mellitus	6 (15)	25 (18.9)	0.570	6 (20)	25 (18)	0.796
Clinical characteristics						
Baseline NIHSS scores, median (IQR)	13 (10, 16)	17 (15, 20)	<0.001	19 (15, 21)	16 (14, 19)	0.016
Baseline ASPECT scores, median (IQR)	9 (8, 10)	8 (7, 10)	0.150	8 (6, 9)	9 (8, 10)	0.024
IVT, n (%)	9 (22.5)	29 (22)	0.944	3 (10)	35 (25.2)	0.071
Blood pressure parameters, median (IQR)						
Baseline SBP, mmHg	145 (134, 162)	147 (128, 162)	0.763	140 (125, 152)	148 (132, 164)	0.050
Baseline DBP, mmHg	80 (75, 90)	83 (74, 93)	0.340	88 (77, 96)	82 (74, 90)	0.131
Mean SBP (24h), mmHg	129 (121, 137)	127 (119, 138)	0.948	125 (115, 132)	128 (121, 137)	0.070
Mean DBP (24h), mmHg	73 (67, 78)	74 (66, 80)	0.948	71 (64, 78)	74 (67, 80)	0.239
SBPr, %	10.6 (1.5, 19.2)	11.7 (2.4, 20.9)	0.899	7.2 (2.7, 19.9)	12.1 (1.4, 19.4)	0.392
DBPr, %	9.3 (1.3, 18.6)	11.9 (-0.4, 21.2)	0.475	15.9 (7.8, 23.4)	10.1 (-1.4, 20.3)	0.026
Continuous intravenous antihypertensive agents, n (%)	22 (55)	61 (46.2)	0.330	13 (43.3)	69 (49.6)	0.531
TOAST classification, n (%)			0.164			0.617
LAA	15 (37.5)	30 (22.7)		6 (20)	39 (28.1)	
Cardioembolic	21 (52.5)	82 (62.1)		20 (66.7)	80 (57.6)	
Others	4 (10)	20 (15.2)		4 (13.3)	20 (14.4)	

Occlusion site, n (%)			<0.001			0.517
ICA	11 (27.5)	83 (62.9)		17 (56.7)	74 (53.2)	
MCA M1	18 (45)	38 (28.8)		11 (36.7)	45 (32.4)	
MeVO	11 (27.5)	11 (8.3)		2 (6.7)	20 (14.4)	
OTP, mean (IQR), min	279 (215, 319)	253 (210, 320)	0.355	299 (233, 352)		0.035
OTR, mean (IQR), min	380 (304, 426)	371 (329, 470)	0.503	435 (349, 516)	250 (210, 305)	0.014
Collateral score, n (%)			<0.001		369 (310, 446)	0.079
Poor	15 (37.5)	99 (75)		24 (80)	88 (63.3)	
Good	25 (62.5)	33 (25)		6 (20)	51 (36.7)	

ASPECT, Alberta Stroke Program Early CT; DBP, diastolic blood pressure; DBPr, diastolic blood pressure reduction; IVT, intravenous thrombolysis; ICA, internal carotid artery; LAA, large-artery atherosclerosis; mTICI, modified Thrombolysis in Cerebral Infarction; MCA, middle cerebral artery; MeVO, medium vessel occlusions; NIHSS, National Institutes of Health Stroke Scale; OTP, symptoms onset to groin puncture time; OTR, symptoms onset to reperfusion; SBP, systolic blood pressure; SBPr, systolic blood pressure reduction; sICH, symptomatic intracranial hemorrhage; TOAST, the Trial of ORG 10172 in Acute Stroke Treatment.

*3 patients missing.

Table S4. Sensitive analysis using the BP in the emergency room as the baseline BP in successful reperfusion (n=731)

	mRS 0-2(n=405)	mRS 3-6(n=326)	P	OR (95% CI)	P*
SBPr, %	17.9(10.6, 26.5)	20.6(12, 29.1)	0.019		
>10%	6(1.5)	14(4.3)		4.287(1.303, 14.097)	0.017
±10%	90(22.2)	47(14.4)		Reference	
10%-20%	130(32.1)	92(28.2)		1.631(0.971, 2.738)	0.064
20%-30%	113(27.9)	103(31.6)		1.693(1.007, 2.484)	0.047
>30%	66(16.3)	70(21.5)		1.691(0.945, 3.024)	0.077
	sICH ^{\$} (n=35)	Non-sICH(n=691)	P	OR (95% CI)	P [#]
SBPr, %	13.9(8.3, 25.3)	19.6(11.8, 28.1)	0.057		
>10%	1(2.9)	19(2.7)		0.528(0.62, 4.533)	0.561
±10%	12(34.2)	124(17.9)		Referenc	
10%-20%	10(28.6)	212(30.7)		0.491(0.203, 1.183)	0.113
20%-30%	6(17.1)	208(30.1)		0.247(0.088,0.699)	0.008
>30%	6(17.1)	128(18.5)		0.383(0.136, 1.079)	0.069

*Adjusted for: age, sex, baseline NIHSS and ASPECT, history of hypertension and diabetes mellitus, antihypertensive treatment, TOAST classification, collateral circulation and occlusion site.

[#]Adjusted for: baseline ASPECT, antihypertensive treatment, collateral circulation and intravenous thrombolysis.

^{\$}5 patients missing

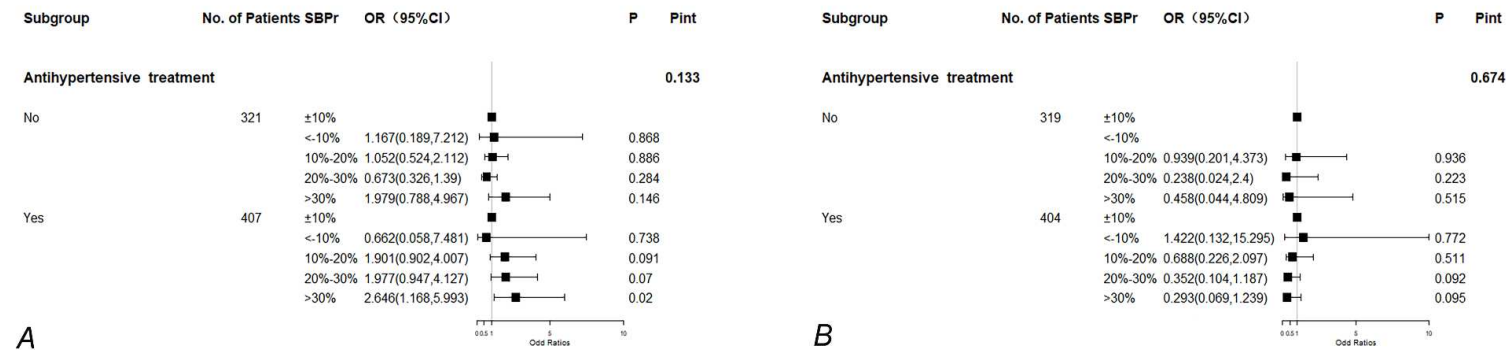


Figure S1. Sensitive analysis for with or without antihypertensive treatment in a center. (A) Relationship between SBP reduction and poor outcome; fully adjusted indicates odds ratios (ORs) adjusted for age, sex, history of hypertension, diabetes mellitus, antihypertensive treatment, TOAST, baseline NIHSS and ASPECT, occlusion site and collateral circulation analyzed using a multivariable logistic regression model. (B) Symptomatic intracerebral hemorrhage; adjusted for baseline NIHSS, ASPECT and collateral circulation.