ENDOVASCULAR THERAPY WITH OR WITHOUT INTRAVENOUS LOW DOSE ALTEPLASE IN ACUTE STROKE PATIENTS WITH ANTERIOR LARGE VESSEL OCCLUSION

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Background and Purpose

- Mechanical thrombectomy is now recommended as essential treatment for patients with acute ischemic stroke due to anterior large vessel occlusion.
- However, whether pre-treatment with intravenous thrombolysis (IVT) provides any additional benefits to the patients undergoing mechanical thrombectomy remains unclear.
- IVT with low dose (0.6mg/kg) alteplase can reduce symptomatic intracranial hemorrhage (sICH) compared with standard dose. In Japan, low dose alteplase is approved for patients with acute ischemic stroke within 4.5h from onset.
- We aimed to clarify the impact of prior IVT using low dose alteplase on outcomes in large vessel acute stroke patients undergoing endovascular therapy.

Methods

In a Japanese nationwide registry study, RESCUE-Japan Registry 2 (Yoshimura S, et al. J Am Heart Assoc. 2018), 2420 patients with acute stroke due to large vessel occlusion were registered between October 2014 and January 2017. Among them, 595 patients with occlusion of the internal carotid artery or the middle cerebral artery M1 portion and who underwent endovascular therapy within 6 hours after onset were analyzed.

Functional outcome assessed by modified Rankin Scale (mRS) score at 90 days and incidence of sICH (with increasing NIHSS score ≥ 4) within 72 hours were compared between patients with and without prior IVT.

Results

Figure 1. mRS at 90days by prior IVT

Common OR 1.67 (95%CI 1.25-2.24, P =0.001)

Adjusted* common OR 1.38 (95% CI 0.99-1.91, P=0.06)

*Adjusted factors: age, sex, SBP, DBP, Af, previous stroke, baseline NIHSS, ASPECTS, Glucose, Creatinine, ICA occlusion, prior anticoagulants, onset to puncture time, TICI 2b-3

Table 1. Patient Characteristics

	With IVT n=368	Without IVT n=227	P
Demographics			
Mean age, years (SD)	73.8±11.5	73.4±12.6	0.70
Men, n (%)	234 (64)	134 (60)	0.34
Past medical history			
Hypertension, n (%)	203 (55)	125 (55)	1.00
Diabetes mellitus, n (%)	65 (18)	41 (18)	0.91
Dyslipidemia, n (%)	82 (22)	41 (18)	0.25
Atrial fibrillation, n (%)	174 (47)	125 (55)	0.08
Current Smoking, n (%)	56 (15)	33 (15)	0.91
Previous stroke, n (%)	13 (4)	22 (10)	<0.01
Baseline characteristics			
NIHSS score	17 (14-22)	18 (14-23)	0.08
Systolic blood pressure, mmHg	155±26	152±27	0.25
Diastolic blood pressure, mmHg	85±18	84±18	0.36
Hemoglobin, g/dL	13.4±1.9	12.8±2.1	<0.01
Creatinine, mg/dL	0.94±0.70	1.14±1.66	0.04
Glucose, mg/dL	140±46	140±52	0.96
Prior antiplatelet therapy, n (%)	69 (19)	54 (24)	0.12
Prior anticoagulant therapy, n (%)	60 (16)	80 (36)	<0.01
Imaging Characteristics			
Baseline ASPECTS*	8 (6-9)	7 (5-9)	<0.01
ICA occlusion, n (%)	175 (48)	109 (48)	0.93
Treatment process times			
Onset to Door, min	75 (45-135)	97.5 (45-184)	0.02
Onset to IV rt-PA, min	120 (90-160)	-	-
Onset to groin puncture, min	170 (120-215)	180 (130-270)	<0.01
Onset to reperfusion, min	228 (170-290)	258 (185-335)	<0.01
Reperfusion after EVT			
TICI 2b-3, n (%)	326 (89)	196 (87)	0.52

Table 2. Impact of prior IVT on outcomes

	With IVT n=368	Without IVT n=227	OR (95% CI)	Adjusted OR* (95% CI)
mRS score 0-3 at 90 days	236 (64.1%)	110 (48.5%)	1.90 (1.36-2.66) P<0.01	1.63 (1.05-2.53) P=0.03
mRS score 0-2 at 90 days	180 (48.9%)	91 (40.1%)	1.43 (1.02-2.00) P=0.04	1.21 (0.78-1.88) P=0.39
Any ICH within 72 hours (n=554)	94/348 (27.0%)	5/206 (2.2%)	0.99 (0.67-1.46) P=0.97	1.45 (0.92-2.27) P=0.11
sICH within 72 hours (n=554)	10/348 (2.9%)	6/206 (2.9%)	0.99 (0.35-2.75) P=0.98	1.07 (0.35-3.36) P=0.91

*Adjusted factors: age, sex, SBP, DBP, Af, previous stroke, baseline NIHSS, ASPECTS, Glucose, Creatinine, ICA occlusion, prior anticoagulants, onset to puncture time, TICI 2b-3

Conclusion

Prior IVT with low dose alteplase before endovascular therapy can modestly improve functional outcome without increasing risk of sICH in acute stroke patients.