Relationship of systolic blood pressure during 24 hours after thrombolysis to clinical outcome in patients with acute ischemic stroke

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Background

- High systolic blood pressure (SBP) in acute ischemic stroke (AIS) patients after intravenous (IV) standard-dose (0.9 mg/kg) alteplase therapy is strongly associated with poor outcome.^{1,2}
- The optimal management of BP in AIS patients receiving IV low-dose (0.6 mg/kg) alteplase therapy remains unclear.

Purpose

- To examine the association between several blood pressure (BP) parameters, including variability and clinical outcomes in patients with AIS who received thrombolysis.

Methods

Study design

A single-center, observational study using a prospective registry.

Patient enrollment

Among the National Cerebral and Cardiovascular Center Stroke Registry (ClinicalTrials.gov: NCT02251665) cohort, consecutive AIS patients treated with IV thrombolysis between October 2005 and December 2016 were retrospectively analyzed. 720 patients were enrolled.

Inclusion Criteria

- Consecutive AIS patients receiving IV low-dose (0.6 mg/kg) alteplase therapy
- Available 3M outcome

Exclusion Criteria

- Mortality within 24 hours after administration of alteplase

Measurement : mean SBP IV alteplase

Results

Table 1. Associations Between Systolic Blood Pressure Profiles and Outcomes

SBP	sICH (N=65, 9.6%)		mRS0-2 (N=331, 48%)		Death (N=34, 4.9%)	
	OR	95CI	OR	95CI	OR	95CI
Initial	0.95	0.79-1.15	0.87	0.81-0.93	1.05	0.92-1.20
0h	1.19	0.95-1.49	0.85	0.78-0.93	1.12	0.95-1.33
4h	0.97	0.77-1.03	0.96	0.82-1.01	1.13	0.93-1.37
8h	1.05	0.75-1.21	0.77	0.70-0.85	1.12	0.93-1.34
12h	1.1	0.79-1.39	0.75	0.68-0.82	1.24	1.02-1.52
16h	0.74	0.60-0.91	0.79	0.72-0.87	1.03	0.85-1.22
20h	0.98	0.77-1.27	0.77	0.70-0.85	1.03	0.85-1.25
24h	0.79	0.63-1.00	0.79	0.71-0.86	0.94	0.78-1.15
Max	1.00	0.81-1.07	0.88	0.81-0.96	1.13	0.94-1.33
Min	0.82	0.63-1.09	0.79	0.70-0.88	0.97	0.79-1.20
Mean	0.99	0.96-1.02	0.65	0.56-0.74	1.18	0.90-1.54
ΔBP	1.00	0.97-1.01	0.98	0.93-1.02	1.00	0.99-1.00
SD	1.05	0.66-1.27	0.94	0.79-1.08	1.13	0.80-1.33
CV	1.01	0.95-1.05	1.00	0.97-1.02	1.02	0.96-1.06
SV	0.99	0.99-1.03	1.00	0.99-1.01	1.00	0.99-1.04

CV, coefficient of variation; SD, standard deviation; and SV, successive variation.Odds ratio per 10 mm Hg with 95% confidence interval for each SBP profile adjusted for sex, age, baseline National Institutes of Health Stroke Scale score, onset-to-treatment interval, hypertension, diabetes mellitus, dyslipidemia, atrial fibrillation, intravenous antihypertensives just before recombinant tissue plasminogen activator, and initial DWI-ASEPCTS.

Figure.1

Comparisons of time course of systolic blood pressure according to sICH, mRS value, and mortality at 3 months.

sICH

Favorable outcome

Death

Discussion

- Our results-emphasize the strong association of post-thrombolysis SBP during the first 24 with functional independence at 3 months follow-up.
- A randomized trial is warranted to determine whether low SBP values directly cause a favorable outcome or whether patients who are expected to have a favorable outcome tend to have low SBP values.³

Conclusions

- SBP during initial 24 hours after thrombolysis was associated with clinical outcome, but SBP variability was not associated with poor outcome or sICH.

References

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