Risk Factors for Infarct Growth in Patients with Acute Ischemic Stroke

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Introduction

An increase in infarct lesion growth after treatment is associated with less favorable outcome in patients with acute ischemic stroke (AIS)¹.

Aim: To identify predictors of infarct growth after 24 hours of stroke onset.

Materials and methods

Two-hundred-twenty-six AIS patients with anterior proximal occlusions, with 24 hour and 1-week follow up NCCT scans were retrospectively selected from the MRCLEAN trial² database. Variables associated with absolute or relative infarct growth in univariate linear regression analysis ($p < 0.10$) were selected for multivariate linear regression analysis.

Results

Table: Descriptive statistics of infarct volume and results of the multivariate linear regression analysis with absolute and relative infarct growth as dependent variables

Median Infarct Volume		
24 hours	42 (IQR: 21-95) mL	
1 week	78 (IQR: 33-146) mL	
Parameter	Correlation Coefficient	p - value
Absolute Infarct Growth		
Systolic Blood Pressure	0.28	0.02
Time to randomization	0.08	0.05
Infarct Volume (24 hrs)	0.10	0.02
Relative Infarct Growth		
Myocardial Infarction	-0.15	0.05
Infarct Volume (24 hrs)	-0.002	<0.01

Figure: Example of ischemic lesion volume segmentation (represented in red) ¹.
A and C: 24-hr NCCT. B and D: 1 - week NCCT

Conclusion

Higher systolic blood pressure, longer time to randomization and larger initial infarct volume at 24 hours are independently associated with larger absolute infarct growth. Absence of myocardial infarction and smaller initial infarct volume are independently associated with relative infarct growth after 24 hours of stroke onset.

References

¹Bucker, Amber, et al. *Stroke* 48.5 (2017): 1233-1240.
²Berkhemer, Olvert A., et al. *New England Journal of Medicine* 372.1 (2015): 11-20.

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