Diffusion-weighted ASPECTS as a functional outcome predictor in patients with acute ischemic stroke treated with endovascular therapy up to 24 hours

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BACKGROUND

In acute ischemic stroke patients Diffusion-weighted ASPECTS is correlated with infarct volume and also is an independent factor of functional outcome.

OBJECTIVES

Our aim is to assess the impact of pre-treatment Diffusion-weighted ASPECTS on outcomes after endovascular treatment (EVT) within 24 hs.

MATERIALS AND METHODS

Patients aged 18-80 years ago with acute ischemic stroke with large vessel occlusion from anterior circulation eligible for EVT within 24 hours were included in this descriptive, monocentric, ambispective study. Vascular neurologists and neuroradiologist measured ASPECTS on DWI according to the method by Barber et al. Diffusion-weighted ASPECTS were grouped in ≥ 6 (Group A) or < 6 (Group B). The primary outcome measured was a modified Rankin scale (mRs) ≤ 2 at 90 days. Secondary outcomes included a successful reperfusion, defined as a modified Thrombolysis in Cerebral Infarction (mTICI) scale 2b/3, mortality rate at 90 days and symptomatic intracranial hemorrhage (SIH). Descriptive and frequency statistical analyses were obtained using SPSS 21 software. Categorical variables are presented as absolute values and percentages, and the continuous variables are presented as median $\pm$ SD if normally distributed or median (interquartile intervals) if not normally distributed. Statistical significance for intergroup differences was assessed by Pearson χ^2 or Fisher exact test for categorical variables and by Student t or Mann-Whitney U test for continuous variables.

RESULTS

We included 83 patients, 56 in Group A and 27 in Group B. Demographics data, risk factors, SIH and successful reperfusion did not show significant differences. The rate of mRs ≤ 2 at 90 days was 69,6% in Group A as compared with 29.6 % in Group B ($P=0.0006$ OR=5.4 IC=1.9-14.8), the rate of mortality was 3,6% Group A while in Group B was 19% ($P=0,022$ OR=0.16 IC=0.02-0.90).

CONCLUSION

Diffusion-weighted ASPECTS ≥ 6 seems to be a good parameter predicting favorable outcome among patients treated by EVT within 24 hs.

Baseline Characteristics and Metrics	Group A (ASPECTS ≥ 6)	Group B (ASPECTS < 6)	P
Age-yr- Mean-SD	64 (+/- 11)	60 (+/- 13)	0.20
Male sex-no. (%)	30 (54%)	13 (48%)	0.64
Atrial Fibrillation -no. (%)	7 (13%)	7 (26%)	0.12
Diabetes mellitus -no. (%)	8 (14%)	4 (15%)	0.94
Hypertension -no. (%)	36 (64%)	18 (67%)	0.83
NIHSS admission -Median-IQR	10 (6-14)	17 (15-19)	0.0001
Core Volumen DWI -Median-IQR	12 (4-29)	72 (54-127)	0.0001
Time from stroke onset to admission Min-Median (IQR)	205 (85-350)	255 (90-485)	0.62
Time from stroke onset to groin puncture Min-Median (IQR)	305 (200-445)	342 (189-554)	0.54
Time from stroke onset to revascularization Min-Median (IQR)	351 (244-469)	394 (216-573)	0.68
Time from door to revascularization Min-Median (IQR)	114 (81-154)	117 (82-152)	0.78

Primary outcomes. mRS at 90 days.

Secondary outcomes. mTICI

Safety outcome. Symptomatic intracranial hemorrhage.