

Supplement

Time since stroke onset, quantitative collateral score and functional outcome after endovascular treatment for acute ischemic stroke – results from the MR CLEAN Registry.

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eTable 1: comparison of several baseline characteristics of included patients versus patients excluded for reasons related to imaging.

	Included patients n = 1813	Excluded based on imaging n = 878
Age, median (IQR)	72 [61, 80]	72 [62, 81]
Men, n (%)	925 (51.0)	450 (51.3)
NIHSS, median (IQR)	16 [12, 20]	16 [11, 20]
SBP, mmHg; mean (SD)	149 (25)	151 (25)
Hypertension, n (%)	930 (52.2)	468 (54.6)
Collaterals, n (%)		
Grade 0	121 (6.8)	53 (7.2)
Grade 1	674 (37.9)	265 (36.0)
Grade 2	657 (37.0)	297 (40.4)
Grade 3	326 (18.3)	121 (16.4)
Time from onset to ER, min; median (IQR)	55 [38, 97]	53 [37, 95]
Time from onset to recanalization, min; median (IQR)	249 [198, 310]	254 [204, 312]

NIHSS indicates National Institutes of Health Stroke Scale; SBP, systolic blood pressure; ER, emergency department.

eTable 2: Results of sensitivity analyses for the association between time to computed tomography angiography and collateral score.

	Univariable analysis		Multivariable analysis	
	β /odds ratio (95% confidence interval)	<i>P</i> value	Adjusted β /adjusted odds ratio (95% confidence interval)	<i>P</i> value
Sensitivity analysis for the visual collateral score as an outcome variable (n=1813)				
Time to CTA (per 30 minutes)	1.02 [0.98-1.06]	0.26	1.02 [0.98-1.06]	0.26
Sensitivity analysis for patients with a witnessed stroke onset (n=1308)				
Time to CTA (per 30 minutes)	-0.002 [-0.016-0.012]	0.79	-0.002 [-0.015-0.011]	0.77
Sensitivity analysis for patients with an optimal CTA (n=1046)*				
Time to CTA (per 30 minutes)	-0.002 [-0.011-0.006]	0.54	-0.0004 [-0.008-0.007]	0.92

Linear regression was used to assess the association between time to CTA and qCS. To approximate normal distribution of the residuals, qCS was log10 transformed, after adding 1 point to all scores.

Multivariable analyses were adjusted for age, sex, glucose, occlusion location, previous stroke, smoking, admission diastolic blood pressure and carotid artery disease. Effect estimates are (adjusted) β 's or (adjusted) common odds ratio's for each 30-minute increase in time to CTA.

*After excluding patients with a sub-optimal CTA acquisition phase (early arterial or late venous) or a CTA slice thickness > 2 mm.

CTA indicates computed tomography angiography; qCS, quantitative collateral score.

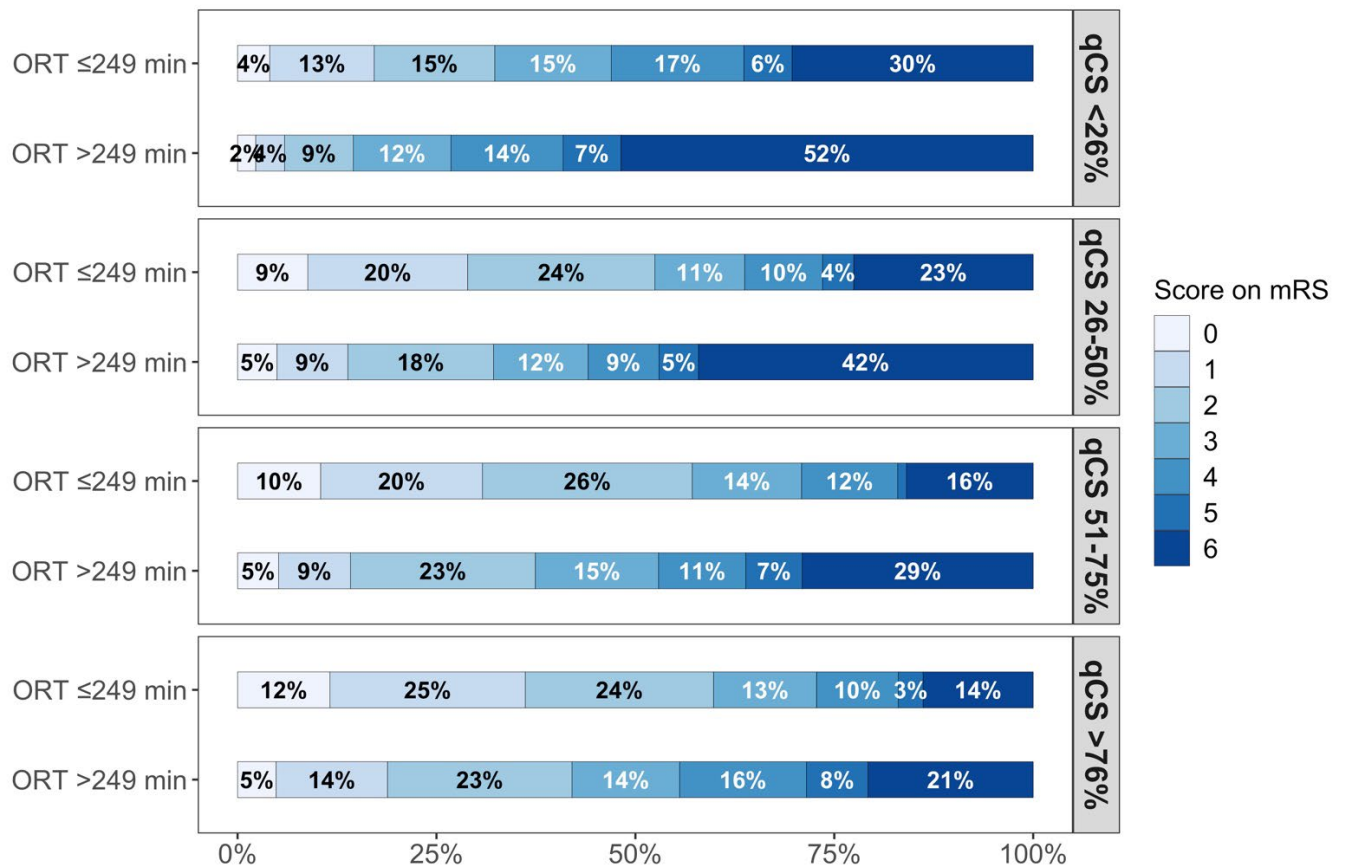
eTable 3: Results of sensitivity analyses for the association between time to reperfusion and the collateral score with the modified Rankin Scale score.

	Univariable analysis		Multivariable analysis	
	Common odds ratio (95% confidence interval)	P value	Adjusted common odds ratio (95% confidence interval)	P value
Sensitivity analysis for the visual collateral score as a predictor variable (n=1813)				
vCS				
0	Reference	-	Reference	-
1	2.76 [1.88-4.04]	<0.01	2.44 [1.62-3.69]	<0.01
2	4.54 [3.10-6.66]	<0.01	3.19 [2.10-4.85]	<0.01
3	5.87 [3.90-8.84]	<0.01	3.51 [2.26-5.45]	<0.01
Time to recanalization (per 30 minutes)	0.85 [0.78-0.82]	<0.01	0.85 [0.82-0.88]	<0.01
Sensitivity analysis for patients with successful recanalization (n=1065)				
qCS (per 10% increase)	1.16 [1.13-1.20]	<0.01	1.09 [1.05-1.13]	<0.01
Time to recanalization (per 30 minutes)	0.86 [0.82-0.90]	<0.01	0.88 [0.84-0.92]	<0.01
Sensitivity analysis for patients with an optimal CTA (n=957)*				
qCS (per 10% increase)	1.18 [1.14-1.22]	<0.01	1.09 [1.04-1.13]	<0.01
Time to recanalization (per 30 minutes)	0.83 [0.79-0.87]	<0.01	0.83 [0.79-0.87]	<0.01

Ordinal logistic regression was used to assess the association between collateral grade and successful recanalization with a shift towards favorable outcome (using the ordinal modified Rankin Scale score as an outcome variable). Multivariable analyses were adjusted for age, glucose, occlusion location, diabetes mellitus, smoking, statin use, admission systolic blood pressure, pre-morbid modified Rankin Scale score, carotid artery disease, intravenous thrombolysis, ASPECTS and baseline NIHSS. Effect estimates are adjusted common odds ratio's for vCS 1 compared to 0, 2 compared to 0 and 3 compared to 0 (grade 0 being the reference category); for each 30-minute increase in time to recanalization; and for each 10% increase in qCS. In all sensitivity analyses, no statistically significant interaction between qCS or vCS with time to recanalization was found.

*Patients with a sub-optimal CTA acquisition phase (early arterial or late venous) or a CTA slice thickness > 2 mm.

vCS indicates visual collateral score; qCS, quantitative collateral score; CTA, computed tomography angiography; ASPECTS, Alberta Stroke Program Early CT Score; NIHSS, National Institutes of Health Stroke Scale.



eFigure 1: Distribution of modified Rankin Scale scores at 90 days, according to onset-to-reperfusion time (dichotomized at the median for the entire population; 249 minutes) and qCS. The shift in mRS categories going from shorter (≤ 249 minutes) to longer (> 249 minutes) onset-to-reperfusion time is similar in all qCS categories. ORT was dichotomized at the median for the entire population (249 minutes) for the purpose of this figure only. ORT indicates onset-to-reperfusion time; qCS, quantitative collateral score; mRS, modified Rankin Scale Score.