

Supplementary Material

Title

Outcomes of Endovascular Therapy in Young Patients with Acute Basilar Artery Occlusion:
A Substudy of BASILAR Registry Study

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This appendix has been provided by the authors to give readers additional information about their work

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eTable 1. Baseline characteristics stratified by favorable outcome and mortality in young patients with stroke

	90 days						1 year					
	Favorable outcome			Mortality			Favorable outcome			mortality		
	Favorable	Unfavorable	<i>P</i> value	Mortality	Survival	<i>P</i> value	Favorable	Unfavorable	<i>P</i> value	Mortality	Survival	<i>P</i> value
Age, median (IQR)	51 (44-54)	50 (44-53)	0.45	51 (42-53)	50 (44-54)	0.67	50 (43-54)	50 (44-53)	0.98	50 (43-53)	50 (44-54)	0.83
Male, n (%)	50 (80.65)	71 (78.88)	0.79	51(89.47)	70(73.68)	0.02	53(79.10)	62 (80.52)	0.83	53(81.54)	62(78.48)	0.65
PC-CS, median (IQR)	5 (4-6)	5 (3-6)	0.004	4 (2.5-5)	5 (4-6)	0.002	5 (4-6)	5 (3-6)	0.005	4 (3-5)	5 (4-6)	0.002
Baseline NIHSS, median (IQR)	18 (12-28)	29 (22-34)	<0.001	32 (27-34)	21 (13-30)	<0.001	20 (12-29)	30 (23-34)	<0.001	30 (24-34)	21 (13-29)	<0.001
pc-ASPECTS, median (IQR)	9 (8-10)	8 (6-9)	<0.001	8 (6-9)	8 (7-10)	<0.001	9 (8-10)	8 (7-9)	<0.001	8 (7-9)	9 (8-10)	<0.001
Cardiovascular risk factor, n (%)												
Hypertension	37 (59.67)	53 (58.88)	0.92	36(63.16)	54(56.84)	0.44	38(56.72)	50 (64.94)	0.31	40(61.54)	48(60.76)	0.92
Diabetes	11 (17.74)	18 (20.00)	0.73	12(21.05)	17(17.89)	0.63	10(14.93)	17 (22.08)	0.27	13(20.00)	14(17.72)	0.73
Atrial fibrillation	9 (14.52)	5 (5.56)	0.06	2 (3.51)	12(12.63)	0.06	9 (13.43)	4 (5.19)	0.09	4 (6.15)	9 (11.39)	0.28
Smoking	29(46.77)	41 (45.56)	0.88	29(50.89)	41(43.16)	0.36	32(47.76)	34 (44.16)	0.67	30(46.15)	36(45.57)	0.94
Stroke etiology, n (%)			0.25			0.23			0.14			0.64

LAA	39(62.90)	63 (70.00)		43(75.44)	59(62.11)		40(59.70)	57 (74.03)		46(70.77)	51(64.56)	
CE	13(20.97)	10 (11.11)		6 (10.53)	17(17.89)		14(20.90)	8 (10.39)		8(12.31)	14(17.72)	
Other	10(16.13)	17 (18.8)		8 (14.04)	19(20.00)		13(19.40)	12 (15.58)		11(16.92)	14(17.72)	
Occlusion sites, n (%)			0.36			0.70			0.89			0.74
Distal BA	22(35.48)	21 (23.33)		14(24.56)	29(30.53)		21(31.34)	20 (25.97)		17(26.15)	24(30.38)	
Middle BA	16(25.81)	30 (33.33)		18(31.58)	28(29.47)		20(29.85)	23 (29.87)		18(27.69)	25(31.64)	
Proximal BA	9 (14.52)	18 (20.00)		9 (15.79)	18(18.95)		11(16.42)	15 (19.48)		12(18.46)	14(17.72)	
VA-V4	15(24.19)	21 (23.33)		16(28.07)	20(21.05)		15(22.38)	19 (24.68)		18(27.69)	16(20.25)	
General anesthesia, n (%)	36 (58.04)	41 (45.56)	0.13	26(45.61)	51(53.68)	0.34	34(50.75)	36(46.75)	0.63	33(50.77)	41(51.90)	0.89
IVT treatment, n (%)	15(24.19)	14 (15.56)	0.18	9 (15.80)	20 (21.10)	0.42	14(20.89)	12 (15.58)	0.41	10(15.39)	16(20.25)	0.45
OTP, median (IQR)	312 (240- 479)	368 (229- 537)	0.51	375 (237- 563)	314 (220- 487)	0.26	336 (252- 622)	335 (207- 530)	0.53	356 (233- 538)	321 (240- 534)	0.64
PTR, median (IQR)	379 (322- 598)	512 (361- 668)	<0.001	536 (375- 718)	406 (311- 645)	<0.001	406 (326- 691)	513 (359- 647)	<0.001	522 (365- 672)	406 (320- 655)	<0.001
Pass, median (IQR)	1 (1-2)	2 (1-2)	<0.001	2 (1-3)	1 (1-2)	0.01	1 (1-2)	2 (1-2)	0.004	2 (1-3)	1 (1-2)	0.04

NIHSS indicates National Institutes of Health Stroke Scale; pc-ASPECTS, posterior circulation Acute Stroke Prognosis Early Computed Tomography Score; PC-CS, Posterior Circulation Collateral Score; LAA, large artery atherosclerosis; CE, cardioembolism; BA, basilar artery; VA-V4, vertebral artery-V4 segment; IVT, intravenous thrombolysis; OTP, onset to puncture time; PTR, puncture to recanalization time.

eTable 2. The clinical outcome without imputation during follow-up 1-year

Variables	Age18-55, y	Age>55, y	<i>P</i> value	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
mRS, median (IQR)	4 (1-6)	6 (2-6)	<0.001	1.96 (1.38-2.80)	2.02 (1.37-2.99)
mRS 0-3	67(44.08)	152(30.77)	0.002	1.82 (1.25-2.66)	1.92 (1.20-3.06)
mRS 0-2	(41.45)	127(25.71)	<0.001	2.10 (1.43-3.09)	2.29 (1.44-3.66)
Mortality	65(42.76)	271(54.86)	0.008	0.60 (0.42-0.88)	0.60 (0.39-0.94)

mRS indicates modified Rankin Scale; OR, odds ratio; CI, confidence interval.

eTable 3. Stroke etiology in young patients (age 18-55) (n=152)

	n=152 N (%)
Large artery atherosclerosis	102 (67.11)
cardioembolism	23 (15.13)
Stroke of other determined etiology	12 (7.89)
Vessel dissection	8 (5.26)
vasculitis	2 (1.32)
Remaining causes	2 (1.32)
Stoke of undetermined etiology	15 (9.87)
2 or more possible causes	3 (1.97)
Embolic stroke of undetermined source	2 (1.32)
Incomplete diagnostic evaluation	10 (6.58)

eTable4. Predictors of clinical outcomes at 1-year in young (18-55 years) patients

Predictors of favorable outcome at 1-year				
	Unadjusted OR (95% CI)	<i>P</i> value	Adjusted OR (95% CI)	<i>P</i> value
Hypertension	0.75 (0.39-1.44)	0.39	0.75 (0.20- 2.89)	0.68
Hyperlipidemia	0.63 (0.33-1.20)	0.16	0.35 (0.08- 1.57)	0.17
Diabetes	0.62 (0.27-1.42)	0.26	0.27 (0.03-2.44)	0.24
Atrial fibrillation	3.07 (0.92-10.25)	0.07	1.84 (0.19-17.87)	0.60
mRS at 90 days	0.21 (0.12-0.35)	<0.001	0.19 (0.11-0.33)	<0.001
Predictors of mortality within 1-year				
	Unadjusted OR (95% CI)	<i>P</i> value	Adjusted OR (95% CI)	<i>P</i> value
Hypertension	1.11 (0.58-2.13)	0.76	0.36 (0.07- 1.80)	0.21
Hyperlipidemia	1.59 (0.83-3.05)	0.16	3.01 (0.64- 14.15)	0.16
Diabetes	1.07 (0.48-2.42)	0.87	0.42 (0.08-2.11)	0.29
Atrial fibrillation	0.49 (0.15-1.64)	0.25	5.48 (0.36-84.55)	0.22
mRS at 90 days	11.65 (4.62- 29.41)	<0.001	17.93 (5.68- 56.43)	<0.001

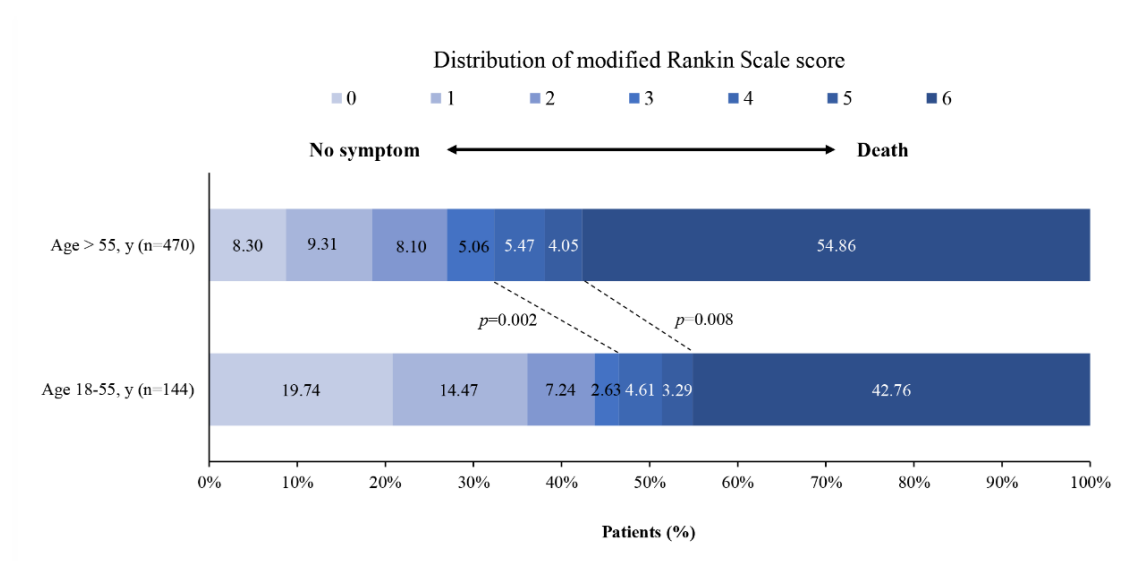
mRS indicates modified Rankin Scale; OR, odds ratio.

eTable 5. Baseline characteristics in young females and males undergoing endovascular therapy

	Female (n=31)	Male (n=121)	<i>P</i> value
Baseline NIHSS, median (IQR)	23 (16-30)	27 (16-33)	0.17
pc-ASPECTS, median (IQR)	8 (7-10)	8 (7-10)	0.68
PC-CS, median (IQR)	6 (4-6)	5 (3-6)	0.17
≥5	20 (64.52)	72 (59.50)	0.61
Cardiovascular risk factors, n (%)			
Hypertension	12 (38.71)	78 (64.46)	0.009
Diabetes	3 (9.68)	26 (21.49)	0.14
Dyslipidemia	8 (25.81)	56 (46.28)	0.04
Atrial fibrillation	7 (22.58)	7 (5.79)	0.01
Smoking	0	70 (57.85)	<0.001
Stroke etiology, n (%)			0.001
LAA	11 (35.48)	91 (75.21)	
CE	8 (25.81)	15 (12.40)	
Other	5 (16.13)	7 (5.79)	
Unknown	7 (22.58)	8 (6.61)	
Occlusion sites, n (%)			0.009
Distal BA	16 (51.61)	27 (22.31)	
Middle BA	7 (22.58)	39 (32.23)	
Proximal BA	5 (16.13)	22 (18.18)	
VA-V4	3 (9.67)	33 (27.27)	
Process measure, median (IQR)			
OTP	315 (262-425)	333 (223.75-590.50)	0.57
OTR	417 (345-516)	484.5 (326-688.25)	0.33
Clinical outcome, n (%)			
SICH	0	10 (8.26)	0.21
90 days			
mRS, median (IQR)	4 (1-5)	5 (1-6)	0.23
mRS 0-3	12 (38.71)	50 (41.32)	0.79
Mortality	6 (19.35)	51 (42.15)	0.02
1-year			
mRS, median (IQR)	5 (1-6)	6 (1-6)	0.69
mRS 0-3	15 (44.10)	56 (46.28)	0.78
Mortality	15 (44.10)	69 (51.10)	0.47

IQR indicates interquartile range; NIHSS, National Institutes of Health Stroke Scale; pc-ASPECTS, posterior circulation Acute Stroke Prognosis Early Computed Tomography Score; PC-CS, Posterior Circulation Collateral Score; LAA, large artery atherosclerosis; CE, cardioembolism; BA, basilar artery; VA-V4, vertebral artery-V4 segment; OTP, onset to puncture time; OTR, onset to recanalization time; sICH, symptomatic intracranial hemorrhage; mRS indicates modified Rankin Scale.

eFigure 1. Distribution of the modified Rankin Scale (mRS) scores at 1-year before multiple imputations in young (aged 18–55 years) and old (aged >55 years) patients undergoing endovascular therapy.



eFigure 2. Kaplan–Meier survival estimate of cumulative mortality during the 1-year follow-up period in female versus male patients undergoing endovascular therapy.

