

Supplementary Table 1. Conditional logistic regression analyses showing the association between cystatin C and early neurological deterioration

	Unadjusted OR (95% CI)	P value	Model 1 <u>Adjusted OR(95% CI)</u>	P value	Model 2 <u>Adjusted OR(95% CI)</u>	P value
Cystatin C		0.026		0.026		0.037
Q1	1 (Reference)		1 (Reference)		1 (Reference)	
Q2	1.33(0.63-2.82)	0.457	1.59(0.70-3.58)	0.267	1.33(0.61-2.90)	0.474
Q3	2.14(1.07-4.31)	0.032	2.75(1.25-6.04)	0.012	2.34(1.11-4.93)	0.025
Q4	2.53(1.28-5.03)	0.008	3.12(1.36-7.16)	0.007	2.76(1.25-6.11)	0.012
Sex	0.79(0.50-1.26)	0.324	0.64(0.36-1.13)	0.126	0.50(0.27-0.95)	0.035
Hypertension	1.20(0.76-1.88)	0.432	1.08(0.65-1.79)	0.761	1.07(0.65-1.76)	0.801
CHD	3.35(1.26-8.88)	0.015	2.84(0.94-8.58)	0.064	2.73(0.91-8.22)	0.073
Previous TIA/stroke	1.40(0.71-2.77)	0.335	1.34(0.64-2.81)	0.445	1.30(0.62-2.72)	0.492
Smoking	0.62(0.19-2.04)	0.427	0.55(0.16-1.95)	0.355	0.56(0.16-1.98)	0.367
Hemoglobin	0.98(0.86-1.10)	0.686	1.00(0.86-1.17)	0.973	1.01(0.86-1.17)	0.941
Triglyceride	1.00(0.99-1.00)	0.302	1.00(0.99-1.00)	0.215	1.00(0.99-1.00)	0.213
HDL cholesterol	1.00(0.98-1.02)	0.992	1.01(0.99-1.03)	0.535	1.01(0.99-1.03)	0.556

Significant stenosis	1.39(0.88-2.18)	0.155	1.33(0.80-2.22)	0.265	1.37(0.83-2.26)	0.215
Lesion location		0.006		0.026		0.030
Anterior circulation	1(Reference)		1(Reference)		1(Reference)	
Posterior circulation	0.69(0.39-1.22)	0.204	0.68(0.37-1.27)	0.228	0.72(0.39-1.31)	0.279
Multiple territory	2.10(1.17-3.76)	0.013	1.95(1.02-3.73)	0.044	1.94(1.02-3.66)	0.042
GFR	1.00(0.99-1.01)	0.721	1.01(1.00-1.02)	0.117	Not included	
Age	1.06(1.03-1.09)	<0.001	1.04(1.00-1.08)	0.037	1.04(1.00-1.08)	0.031
Infection	2.31(1.17-4.56)	0.016	1.63(0.74-3.59)	0.230	1.61(0.73-3.56)	0.240
WBC (10/ul)	6.65(1.27-34.89)	0.025	4.90(0.83-28.98)	0.080	4.26(0.74-24.61)	0.106
FBS	1.01(1.00-1.01)	0.022	1.01(1.00-1.01)	0.068	1.01(1.00-1.01)	0.033

CHD: coronary heart disease, GFR: glomerular filtration rate, WBC: white blood cell, FBS: fasting blood sugar,

Model 1: Adjusting for cystatin C, age, sex, hypertension, smoking, CHD, previous stroke/TIA, lesion location, GFR, FBS, WBC, Hemoglobin, HDL, TG, infections, significant stenosis

Model 2: Adjusting for cystatin C, age, sex, hypertension, smoking, CHD, previous stroke/TIA, lesion location, FBS, WBC, Hemoglobin, HDL, TG, infection, significant stenosis

Supplementary Table 2. Baseline characteristics of the young patients

	Total (n=270)	END group (n=17, 6.3%)	Non-END group (n=253, 93.7%)	P-value
Age (mean±SD), years	49.8±7.6	50.0±8.3	49.8±7.5	0.932
Male, n (%)	179(66.3)	12(70.6)	167(66.0)	0.699
BMI (mean±SD), kg/m²	24.3±3.3	24.3±3.7	24.3±3.3	0.947
Hypertension, n (%)	77(28.5)	4(23.5)	73(28.9)	0.785
Diabetes mellitus, n (%)	41(15.2)	1(5.9)	40(15.8)	0.484
Hyperlipidemia, n (%)	41(15.2)	2(11.8)	39(15.4)	1.000
Smoking, n (%)	23(8.5)	1(5.9)	22(8.7)	1.000
Previous stroke/TIA, n (%)	7(2.6)	1(5.9)	6(2.4)	0.369
Coronary heart disease, n (%)	3(1.1)	2(11.8)	1(0.4)	0.011
Atrial fibrillation, n (%)	9(3.3)	1(5.9)	8(3.2)	0.448
Initial NIHSS [median,(IQR)]	2(0.75-5)	5(1-8.5)	2(0-4)	0.028
Stroke mechanism, n (%)				0.966
LAA	95(35.2)	5(29.4)	90(35.6)	
SVO	45(16.7)	3(17.6)	42(16.6)	
CE	40(14.8)	3(17.6)	37(14.6)	
Other determined	39(14.4)	2(11.8)	37(14.6)	
Undetermined	51(18.9)	4(23.5)	47(18.6)	

eGFR (mean±SD),	96.5±24.7	108.7±37.5	95.7±23.5	0.177
mL/min/1.73 m²				
Quartiles of Cystatin C				0.162
Q1 (0.010-0.620)	67(24.8)	3(17.6)	64(25.3)	
Q2 (0.622-0.715)	67(24.8)	4(23.5)	63(24.9)	
Q3 (0.716-0.792)	68(25.2)	8(47.1)	60(23.7)	
Q4 (0.793-1.314)	68(25.2)	2(11.8)	66(26.1)	
Cystatin C, mg/L	0.716±0.152	0.704±0.112	0.717±0.154	0.747

END: early neurological deterioration, BMI: body mass index, TIA: transient ischemic stack, LAA: large artery atherosclerosis, SVO: small-vessel occlusion, CE: cardioembolism, eGFR: estimated glomerular filtration rate

Supplementary Table 3. Multivariate analysis using a usual definition for END (as ≥2 points of NIHSS within 72 hours of admission)

	Unadjusted OR (95% CI)	P value	Adjusted OR(95% CI)	P value
Cystatin C		0.038		0.047
Q1	1 (Reference)		1 (Reference)	
Q2	1.36(0.63-2.97)	0.434	2.14(0.88-5.22)	0.093
Q3	2.11(1.02-4.34)	0.044	2.85(1.18-6.91)	0.020
Q4	2.56(1.26-5.20)	0.009	3.56(1.43-8.86)	0.006
Age	1.06(1.02-1.09)	0.001	1.04(1.00-1.08)	0.062

CHD	3.65(1.38-9.70)	0.009	3.22(1.05-9.93)	0.042
Infection	2.24(1.11-4.52)	0.025	1.67(0.73-3.8)	0.224
WBC (10/ul)	5.44(0.99-29.84)	0.051	3.75(0.59-23.93)	0.162
FBS	1.01(1.00-1.01)	0.014	1.01(1.00-1.01)	0.069

CHD: coronary heart disease, GFR: glomerular filtration rate, WBC: white blood cell, FBS: fasting blood sugar,

Adjusting for cystatin C, age, sex, hypertension, smoking, CHD, previous stroke/TIA, lesion location, GFR, FBS, WBC, Hemoglobin, HDL, TG, infections, significant stenosis