

THE CONTRIBUTION OF CHOLESTEROL LEVELS TO THE SHORT- AND LONG-TERM PROGNOSIS OF ISCHEMIC STROKE

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Background and Aims: We assessed the impact of total cholesterol levels (TChol) on the prognosis of patients with a first-ever ischemic stroke (FEIS).

Methods: Prospective population-based registry including all residents with a FEIS in 2011-2013 followed up to August 2018. Values of TChol <200 mg/dL were considered normal, regardless of statin treatment at stroke onset.

Results: Out of 919 patients with a FEIS, TChol was available in 759 (82.6%), was normal in 511 (67.3%), and high in 248 (32.7%). Compared with those with high TChol, patients with normal values were older, had more severe strokes and higher proportion of atrial fibrillation resulting in a higher proportion of cardioembolic strokes ($P<0.05$ for all comparisons) (**Table 1**). Besides, patients with normal TChol had worse after stroke 30-day ($P=0.001$), 1-year ($P=0.002$), and 5-year CFRs ($P=0.002$) and survival probability at 30 days ($P<0.001$), 1 year ($P<0.001$), and 5 years ($P<0.001$) compared to those with high TChol (**Table 1 and Figure 1**). The Cox analysis showed that age (HR 1.03, 95% CI 1.01-1.05), atrial fibrillation (HR 1.39, 95% CI 1.07-1.80), and diabetes mellitus (HR 1.43, 95% CI 1.08-1.89), but not normal TChol were independent predictors of 5-year mortality. Notably, patients with normal TChol had worse 30-day (20.4% vs 6.9%), 1-year (30.9% vs 13.7%), and 5-year (47.5% vs 28.4%) CFRs than those with normalized TChol because of ongoing statin treatment ($P<0.05$ for all comparisons).

Conclusions: Our results suggest that patients with normal TChol have higher stroke severity and reduced survival after the FEIS, possibly depending on their older age and higher rate of cardiac embolism. The better prognosis of patients with high TChol is not modified by the effective use of statins.

Table 1. Baseline Characteristics of Patients with First Ever Ischemic Stroke with Normal (n=511) and High (n=248) Total Cholesterol Levels.

Characteristics	Normal TChol (n=511)	High TChol (n=248)	P Value
Female, n (%)	259 (50.7)	139 (56.0)	0.165
Mean age±SD	77.93±11.5	73.00±12.37	<0.001
Arterial hypertension, n (%)	397 (77.7)	189 (76.2)	0.648
Atrial fibrillation, n (%)	190 (37.2)	49 (19.8)	<0.001
Diabetes mellitus, n (%)	120 (23.5)	54 (21.8)	0.572
Peripheral artery disease, n (%)	25 (4.9)	11 (4.4)	0.781
Coronary heart disease, n (%)	69 (13.5)	39 (15.7)	0.411
Cigarette smoking, n (%)	62 (12.1)	41 (16.5)	0.097
NIHSS score at onset, median [IQR]	6 [3-13]	5 [3-12]	0.001
mRS score at discharge, median [IQR]	3 [2-5]	3 [2-4]	0.289
TOAST classification, n (%)			
Large artery atherosclerosis	68 (13.3)	33 (13.3)	
Cardioembolism	197 (38.6)	62 (25.0)	
Small artery occlusion	55 (10.8)	38 (15.3)	0.040
Other causes	21 (4.1)	14 (5.6)	
Undetermined	169 (33.1)	101 (40.7)	
OCSP criteria, n (%)			
Total anterior circulation infarct	100 (19.6)	34 (13.7)	
Partial anterior circulation infarct	263 (51.5)	120 (48.4)	0.047
Lacunar infarct	58 (11.4)	39 (15.7)	
Posterior circulation infarct	86 (16.8)	53 (21.4)	
30-day case-fatality rate, n (%)	93 (18.2)	23 (9.3)	0.001
1-year case-fatality rate, n (%)	143 (28.0)	44 (17.7)	0.002
5-year case-fatality rate, n (%)	226 (44.2)	80 (32.3)	0.002

Table 2. Kaplan–Meier 5-year Survival Probability in First Ever Ischemic Stroke Patients With Normal (n=511) and High (n=248) Total Cholesterol Levels.

