PREVALENCE OF AND FACTORS ASSOCIATED WITH SYSTOLIC DYSFUNCTION IN ISCHEMIC STROKE PATIENTS: THE SICFAIL COHORT STUDY

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BACKGROUND

Systolic dysfunction (SD) is an established risk factor for ischemic stroke (IS). Conversely, evidence from animal studies suggests that IS itself might cause SD. However, reliable data on the frequency of SD in IS and factors associated with its occurrence are lacking.

METHODS

Data were collected within the ongoing prospective hospital-based SICFAIL (Stroke Induced Cardiac Failure in Mice and Men) cohort study assessing the natural course of cardiac function after IS. In consecutive patients, cardiac function was assessed at baseline (median 4 days after IS) including clinical examination, echocardiography performed by an expert sonographer and detailed cardiac medical history. SD was defined as left ventricular ejection fraction (LVEF) ≤ 55%. Logistic regression was performed to identify factors associated with SD prevalence.

Table 2: Factors associated with SD prevalence in multivariable logistic regression analysis

	OR (95% CI)
Sex, male	2.77 (1.58-4.86)
NT-proBNP > 125 pg/ml	7.73 (3.13-19.04)
Myocardial infarction pre-stroke	2.54 (1.32-4.88)
Heart rate day 3 after IS	1.02 (1.00-1.04)

CONCLUSION

The SICFAIL cohort study is the first study providing reliable data on the prevalence of SD in subjects with IS and identifying factors associated with its prevalence. Ongoing follow-up will show the prognostic value.

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RESULTS

Between January 2014 and February 2017, 696 subjects met the inclusion criteria; baseline echocardiography was possible in 647 (93.0%) subjects. **13.8% (95%CI 11.3–16.6%) showed evidence for SD (range LVEF 22-55%).** Men had a higher probability of SD (OR 2.77). Further, NT-proBNP above 125 pg/ml (OR 7.73), pre-stroke myocardial infarction (OR 2.54) and heart rate at day 3 after IS (OR 1.02) increased probability of SD (see Table 2). No other statistical significant association was found, e.g. for stroke severity or TOAST classification. Restricting analysis to assessment of cardiac function within 5 days after IS did not change results substantially.

Table 1: Patient characteristics

	All patients	Patients with SD	Patients without SD	P-value
Patients, n	647	89	558	
Age, median (IQR)	71 (60-78)	73 (65-78)	70 (60-78)	0.13
Sex, male, n (%)	400 (61.8)	69 (77.5)	331 (59.3)	0.001
BMI, median (IQR)	27 (24-30)	27 (24-30)	27 (24-30)	0.80
NIHSS, median (IQR)	3 (1-5)	3 (2-5)	3 (1-5)	0.38
Heart rate day 3 after IS, median (IQR)	69 (63-75)	70 (66-79)	69 (62-74)	0.002
Heart failure symptoms pre-stroke, n (%)	18 (2.8)	4 (4.5)	14 (2.5)	0.29
Myocardial infarction pre-stroke, n (%)	56 (8.7)	18 (20.2)	38 (6.8)	<0.001
Heart failure pre-stroke, n (%)	58 (9.0)	15 (16.9)	43 (7.7)	0.002
TOAST classification,n (%)				0.61
large-artery atherosclerosis	75 (11.7)	12 (13.5)	63 (11.4)	
cardioembolism	207 (32.2)	32 (36.0)	175 (31.7)	
small artery occlusion	34 (5.3)	2 (2.3)	32 (5.8)	
stroke of other determined cause	17 (2.7)	2 (2.3)	15 (2.7)	
stroke of undetermined cause	309 (48.1)	41 (46.1)	268 (48.5)	
NT-proBNP > 125 pg/ml, n (%)	346 (67.5)	70 (92.1)	276 (63.2)	<0.001
hs Troponin T > 14 ng/l, n (%)	185 (35.9)	42 (55.3)	143 (32.8)	<0.001
Medication pre-stroke potenitally indicative for HF treatment, n (%)	233 (36.0)	33 (37.1)	200 (35.8)	0.82
Insular lesion	82 (12.7)	14 (15.7)	68 (12.19)	0.35

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