CLINICAL DIFFERENCES OF CRYPTOGENIC ISCHEMIC STROKE IN YOUNG PATIENTS WITH AND WITHOUT PATENT FORAMEN OVALE

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Introduction

Patent foramen ovale (PFO) is a frequent finding in young patients with cryptogenic ischemic stroke (IS). However, little is known about clinical characteristics of PFO-related stroke. We compared acute circumstances and symptomatology between cryptogenic IS with and without PFO.

Methods

We included patients with cryptogenic IS at age 18-49 enrolled in the multicenter SECRETO study (NCT01934725) who underwent standardized transesophageal echocardiography with Valsalva maneuver and contrast to examine presence of PFO (any degree of shunt). We compared demographics, premonitory symptoms, mode of symptom onset, neurological and cardiac symptoms (chest pain/palpitation), and occurrence of Valsalva inducing activity or heavy physical exertion within 2 hours prior to stroke in patients with and without PFO.

Results

Of the 201 patients (mean age 38.6+/-8.0 years; 57.1% men; median admission NIH Stroke Scale [NIHSS] score 2, range 0-20; 21.7% treated with iv-thrombolysis, 6.9% with thrombectomy), 109 (54.2%) had PFO. PFO patients' symptom onset was more often abrupt than gradual compared to non-PFO patients (79.4% vs. 64.1%; P=0.002), aphasia more common (36.7% vs. 19.6%; P=0.008), but nausea/vomiting (16.5% vs. 29.3%; P=0.030) and headache less frequent (31.2% vs. 46.7%; P=0.024). PFO patients had lower NIHSS score (median 1 vs. 3; P<0.001).

In logistic regression adjusted for age and sex, abrupt mode of stroke onset (OR 2.11, 95% CI 1.06-4.21), aphasia (OR 2.89, 95% CI 1.36-6.13), and lower NIHSS score (OR 0.88, 95% CI 0.80-0.95) were independently associated with PFO-related IS.

Table 1. Demographic and physiologic parameters

	PFO -	PFO +	p-value
Age (mean)	37.7 y [36.0-39.5]	40.2 y [38.8-41.5]	0.337
Sex	male 50 (54.3%) female 42 (45.7%)	male 65 (59.6%) female 44 (40.7%)	0.451
Treated with i.v thrombolysis	23 (11.3%)	21 (10.3%)	0.370
Treated with thrombectomy	8 (3.9%)	6 (3.0%)	0.399
Mean NIHSS on admission	4.5 [3.56-5.44]	2.4 [1.73-3.04]	0.001
Systolic BP on admission	145.2 mmHg [139.9-150.5]	140.0 mmHg [136.0-144.0]	0.077
Diastolic BP on admission	87.8 mmHg [84.6-91.1]	84.3 mmHg [81.9-86.8]	0.076
Heartrate on admission	79.7 b/min [76.5-83.0]	77.0 b/min [74.0-80.0]	0.148
Temperature on admission	36.7 °C [36.6-36.9]	36.7 °C [36.6-36.8]	0.398
Systolic BP following morning	132.2 mmHg [128.0-136.5]	126.8 mmHg [123.1-130.6]	0.045
Diastolic BP following morning	79.0 mmHg [76.0-82.0]	75.2 mmHg [72.8-77.5]	0.057
Heartrate following morning	68.5 bmin [66.1-70.9]	68.5 bmin [66.3-70.8]	0.975
Prior TIA	5 (5.4%)	4 (3.7%)	0.658
Wake up stroke	21 (22.8%)	24 (22.2%)	0.282

Table 2. Symptomatology

	PFO -	PFO +	p-value
Mode of stroke onset - gradual	14 (15.2%)	2 (1.9%)	0.565
Mode of stroke onset - abrupt	59 (64.1%)	85 (79.4%)	0.029
Aphasia	18 (19.6%)	40 (36.7%)	0.008
Nausea or vomiting	27 (29.3%)	18 (16.5%)	0.030
Headache	43 (46.7%)	34 (31.2%)	0.024
Decreased conciousness	6 (6.5%)	9 (8.3%)	0.641
Dysarthria	33 (36.3%)	37 (33.9%)	0.629
Hemianopsia	18 (19.6%)	16 (14.7%)	0.440
Gaze deviation	6 (6.5%)	5 (4.6%)	0.462
Ataxia	33 (35.9%)	28 (25.9%)	0.307
Diplopia	10 (10.9%)	13 (11.9%)	0.815
Vertigo	43 (46.7%)	41 (38.0%)	0.317
Motor paresis	63 (68.5%)	65 (59.6%)	0.312
Sensory deficit	60 (65.2%)	58 (53.7%)	0.160
Dysphagia	7 (7.7%)	4 (3.7%)	0.310
Chest pain	1 (1.1%)	0 (0.0%)	0.273
Palpitation	4 (4.4%)	1 (0.9%)	0.198
Valsalva 1-2h prior to stroke	10 (13.9%)	16 (17.6%)	0.522
Heavy physical exertion during 1h prior to stroke	3 (1.5%)	3 (1.5%)	0.783
Heavy physical exertion during 2h prior stroke	1 (1.1%)	2 (1.9%)	0.694

Conclusions

Cryptogenic IS patients with PFO had more often sudden symptom onset suggestive of embolic etiology than non-PFO-patients, albeit they had milder symptoms on admission.