Relation of Post-stroke Headache to Cerebrovascular Pathology and Hemodynamics

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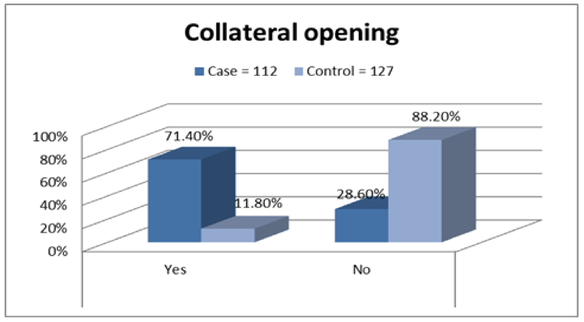
Introduction

Despite the high prevalence of cerebrovascular stroke, headache attributed to ischemic strokes is often undertreated and overlooked. Till now, many theories have been introduced to justify this headache. Activation of the trigeminovascular pathway is the most accepted theory for headache production . Atherosclerosis and collateral opening can be considered as another triggering factors in the pathogenesis of post-stroke headache..

Objective

The aim is to detect the relation of a post-stroke headache to cerebrovascular pathology and changes in hemodynamics through a high-resolution duplex ultrasound examination.



Material and Methods

This is a case-control study that was conducted in Kasralainy hospital, Cairo University, and Al-Azhar University hospitals from January 2021 to August 2021.The study was conducted on 239 patients who presented with an acute ischemic stroke. Patients were subdivided into two groups; Group I included patients with headache attributed to ischemic stroke (cases) and Group II included headache-free stroke patients (controls). History included headache characteristics and risk factors. Clinical and radiological examination were preformed to detect the type of stroke. Ultrasound duplex examination of the extracranial and intracranial cerebrovascular system was carried for both groups.

Multivariate logistic regression to detect independent predictors of post-stroke headache

Predictor variables	OR	95% C.I.		P value
		Lower	Upper	
Pre-stroke Headache	28.187	6.612	120.158	< 0.001
PCA stenosis <50%	84.657	10.418	687.947	< 0.001
VA4 stenosis <50%	842.472	50.262	14121.06	< 0.001
Intracranial cerebrovascular system pathological changes	25.071	6.498	96.722	< 0.001
Collateral opening	60.826	13.003	284.541	< 0.001

PCA, posterior cerebral artery; VA4, vertebral artery segment 4.
p<0.05 was considered statistically significant.

Results

Group I included 112 patients (mean age 57.66 ±6.59 years), Group II included 127 patients (mean age 57.73±7.89 years). Post-stroke headache was more frequent in patients with posterior circulation infarction (58%). Post-stroke headache was reported within 7 days post-stroke in (61.6%) of patients. Pre-stroke headache was an independent predictor for post-stroke headache occurrence (OR=28.187, 95%CI; 6.612-120.158, P<0.001). Collateral opening and various degrees of intracranial vascular stenosis were strong predictors of headache occurrence (OR=25.071, 95% CI; 6.498-96.722, P<0.001).

Conclusion

Post-stroke-headache is a common phenomenon especially in patients with pre-stroke headache, history of old stroke, posterior circulation infarction, and large artery disease. This headache was of moderate-intensity with clinical characteristics of tension-type. The intracranial cerebrovascular pathological changes including opening of the collateral channels and variable degrees of stenosis of cerebrovascular systems were implicated in the production of that headache.

Acknowledgment

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