



# Acute headache attributed to ischemic stroke: pain characteristics and features associated with ischemic stroke

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## Objective

Acute headache attributed to ischemic stroke (AHAIS) is, according to the International Classification of Headache Disorders, a new headache caused by an acute ischemic stroke (AIS) and associated with focal neurological signs. It should resolve within 3 months after the symptoms of the AIS have stabilized. Our aims were to determine the incidence of AHAIS, and describe its characteristics and those associated with AIS.

## Methods

A cross-sectional observational study was conducted to evaluate consecutive patients admitted to a public emergency department due to AIS from July to September 2024. Patients were asked about the onset of an acute new headache within the first 24 hours of AIS symptoms onset, as well as its characteristics, using a semi-structured questionnaire. In addition, information regarding AIS was collected from medical records, such as the National Institutes of Health Stroke Scale (NIHSS), neuroimaging, the Trial of ORG 10172 in Acute Stroke Treatment classification and the Oxfordshire Community Stroke Project classification.

## Results

During the study period, 72 patients were admitted to the emergency department due to AIS and 20 of them were excluded, mainly due to decreased consciousness (40%) and severe aphasia (40%). Of the 52 patients included, 31 denied headache, 6 (11.5%) reported pain similar to a previously existing headache and 15 (28.8%) presenting a new acute headache considered AHAIS. The patients diagnosed with AHAIS were majority male (60%) with mean age of 67.5 ( $\pm$  12.3) years. The pain was pulsating (73.3%), unilateral (53.4%), moderate intensity (53%) and located in the temporal region (33.3%), with associated symptoms on 40% of cases. Regarding the characteristics of AIS, most presented NIHSS  $\leq$  5 (73.3%), large vessel atherosclerosis etiology (33.3%) and there was predominantly partial involvement of the anterior circulation (46.6%).

## Conclusion

Considering the large occurrence of AIS globally, the incidence of acute headache attributed to ischemic stroke should not be ignored. Because it is rarely a prominent symptom in stroke, knowledge of the main characteristics of stroke that are related to AHAIS and the characteristics of the pain itself can help identify patients with this headache and treat them appropriately.

## Disclosure of Interest

None

**Table 1 - Characteristics of pain and stroke in patients diagnosed with acute headache attributed to ischemic stroke (AHAIS)**

Characteristics of AHAIS			
		AHAIS (N=15)	
<b>Type</b>			
Pulsatile		10 (73.3%)	
Stabbin		2 (13.3%)	
Tightness		1 (6.7%)	
Pressure		1 (6.7%)	
<b>Intensity</b>			
Mild		1 (6.7%)	
Moderate		8 (53.3%)	
Severe		6 (40%)	
<b>Location</b>			
Temporal		5 (33.3%)	
Parietal		3 (20%)	
Frontal		3 (20%)	
Frontotemporal		2 (13.3%)	
Occipital		1 (6.7%)	
Hemicrania		1 (6.7%)	
<b>Side</b>			
Unilateral		8 (53.3%)	
Bilateral		7 (46.7%)	
<b>Accompanying symptoms</b>			
Nausea and vomiting		6 (40%)	
Photophobia		2 (13.3%)	
Phonophobia		2 (13.3%)	
None		9 (60%)	
Stroke characteristics			
	Not AHAIS (N=37)	AHAIS (N=15)	P value
<b>NIHSS score <math>\leq</math> 5</b>			1
Yes	27 (73%)	11 (73.1%)	
No	10 (27%)	4 (26.9%)	
<b>TOAST</b>			0.65
Large Artery Atherosclerosis	5 (13.5%)	5 (33.3%)	
Cardioembolism	7 (18.9%)	4 (26.7%)	
Small Vesses Disease	2 (5.4%)	1 (6.67%)	
Other Determined Etiology	1 (2.7%)	0	
Investigation not completed	22 (59.5%)	5 (33.3%)	
<b>OCSP</b>			0.2
PACI	8 (21.6%)	7 (46.6%)	
POCI	8 (21.6%)	4 (26.7%)	
LACI	20 (54.1%)	4 (26.7%)	
TACI	1 (2.7%)	0	
<b>mRS at discharge</b>			0.75
$\leq$ 2	25 (67.6%)	11 (73.3%)	
$>$ 2	12 (32.4%)	4 (26.7%)	

Abbreviations: N/A = not evaluated; NIHSS = National Institutes of Health Stroke Scale; TOAST = Trial of ORG 10172 in Acute Stroke Treatment; OCSP = Oxfordshire Community Stroke Project; PACI = partial anterior circulation infarction; POCI = posterior circulation infarction; LACI = lacunar infarction; TACI = Total Anterior Circulation Infarction; mRS = Rankin's modified scale.