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Letter to the Editor

Before Headaches can be Attributed to an Acute Ischemic Stroke, the Entire Spectrum of Headache causes must be Ruled Out

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We read with interest the article by Abed *et al.* about a 56-year-old diabetic and hypertensive, smoking man who suffered a multifocal ischemic stroke in the right pons, both cerebellar hemispheres, on both sides of the occipital region and in the thalamus and simultaneously developed a new-onset moderate headache over the right frontal projection that was attributed to the stroke^[1]. The headache was classified as a primary trigeminal autonomic headache by transcranial Doppler sonography^[1]. The study is encouraging, but some points should be discussed.

The first point is that a causal relationship between headache and ischemic stroke has not been proven. The patient developed left-sided migraine-like headaches with a frequency of 3-5 times per week six months before the stroke^[1]. A new onset migraine at the age of 56 is unusual, so the headache is more likely to be due to uncontrolled arterial hypertension or cervical syndrome than to a trigeminal autonomic cause^[1]. The different character of right-sided headache compared to left-sided headache does not necessarily indicate a different pathophysiology. There is a lack of explanation and classification of left-sided headache.

The second point is that the course of the headache was not described in detail^[1]. As the main topic of the study is post-stroke headache, one would expect that a more detailed description of the clinical presentation, diagnostic procedures, therapeutic management, headache course and outcome, as well as a more comprehensive clarification of possible causes of headache would have been performed. Differential causes of headache not considered include vasospasm, venous sinus thrombosis (VST), reversible cerebral vasoconstriction syndrome (RCVS), vasculitis, alcoholism, caffeine dependence, sleep deprivation, chronic stress, meningitis, exsiccosis, metabolic acidosis, physical exertion and skipped meals.

The third point is that the patient did not undergo a 24-hour blood pressure measurement to assess whether the right-sided headache was actually due to occasionally elevated systolic blood pressure values. A single measurement does not rule out the possibility that the patient actually had occasional elevated blood pressure readings, especially in light of the fact that he was a smoker, diabetic and hypertensive.

The fourth point is that no ophthalmologic examination was performed to determine whether or not the index patient had papilledema. Since ischemic stroke can be complicated by elevated intracerebral pressure (ICP) due to perifocal edema or expansion of stroke volume, it would have been imperative to rule out or confirm that the index patient had elevated ICP. The easiest way to determine whether the intracranial pressure is elevated or not is by ophthalmoscopy. Did the ophthalmologists diagnose papilledema?

The fifth point is that the cause of the multifocal stroke was not clarified^[1]. Was it due to arterial hypertension, heart failure, macroangiopathy, microangiopathy, embolism (e.g. atrial fibrillation) or coagulopathy? Knowing the cause of the stroke is crucial for initiating the most appropriate long-term treatment.

The sixth point is that the quality of the images in Figure 1 is poor. The acute stroke in the right pons is barely visible. Furthermore, it is not indicated which modalities have been depicted. It can only be assumed that diffusion-weighted imaging (DWI) and apparent diffusion coefficient (ADC) are shown in Figure 1. However, this needs to be confirmed by a proper description of Figure 1.

In summary, this interesting case study has limitations that put the results and their interpretation into perspective. Addressing these limitations could strengthen the conclusions and support the message of the study. All unanswered questions need to be clarified before readers can uncritically accept the conclusions of the study. Before headache can be attributed to acute ischemic stroke, the entire spectrum of headache causes must be ruled out.

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