Int. j. adv. multidisc. res. stud. 2026; 6(3):570-571

Received: 26-04-2026
Accepted: 06-05-2026

International Journal of Advanced Multidisciplinary Research and Studies

ISSN: 2583-049X

Letter to the Editor

Structural Lesions on Cerebral MRI in Patients with Primary and Secondary Headaches

Josef Finsterer
Department of Neurology, Neurology & Neurophysiology Center, Vienna, Austria

DOI: https://doi.org/10.62225/2583049X.2026.6.3.6323
Corresponding Author: **Josef Finsterer**

Letter to the Editor

We read with interest the article by Woldeyohannes *et al*. on a retrospective observational study at a single center on the nature and frequency of magnetic resonance imaging (MRI) abnormalities in 497 patients admitted to the emergency department for acute headache, defined as headache lasting less than one month [1]. The most common MRI abnormalities were nonspecific white matter lesions (WML) in 16% of patients, followed by neoplasms in 11% and infections in 8% of patients [1]. Tuberculosis was the most common infectious cause of headache [1]. The likelihood of a structural lesion on imaging increased with age and fever [1]. It was concluded that acute headache is often associated with significant underlying pathology, especially in older patients and those with comorbidities such as HIV or hypertension [1]. Some points should be discussed.

The first point is that no distinction has been made between primary and secondary headaches [1]. Primary headaches include migraine, tension headaches and cluster headaches [2]. Primary headaches, especially migraines, can also cause cerebral lesions [3]. Secondary headaches are headaches caused by an underlying condition or structural problem in the head or neck [4]. Secondary headaches are due to brain tumors, subarachnoid hemorrhage, encephalitis/meningitis, reversible cerebral vasoconstriction syndrome (RCVS), dissection, hydrocephalus, arterial hypertension, sinusitis, head and neck trauma, vasculitis (e.g. giant cell arteritis, primary cerebral vasculitis), cranial nerve neuralgia, ischemic stroke, arterial dissection, cerebral venous sinus thrombosis, insomnia, glaucoma, musculoskeletal pain, medication (e.g. nitrates) [4]. Since only 61% of the patients who underwent MRI had a structural lesion, it is conceivable that the remaining patients had primary headaches.

The second issue is that the imaging protocol did not include magnetic resonance angiography (MRI) or magnetic resonance venography (MRV) [1]. As secondary headaches may be due to a vascular lesion or occlusion, it would have been useful to include MRA and MRV with contrast in the analysis. Vascular causes of secondary headache include dissection, RCVS, vasospasm after subarachnoid hemorrhage or during a migraine attack, vasculitis, vascular malformations, and aneurysm with compression of a cranial nerve or sinus vein thrombosis. In how many patients with a normal MRI was an MRA or MRV the explanation for the headache?

The third point is that several causes of secondary headache manifesting with a cerebral lesion were not considered [1]. Pituitary apoplexy [5], hypophysitis [6], stroke-like lesions (SLLs) in mitochondrial disease [7], pseudotumor cerebri, meningeal carcinomatosis, parasitosis (e.g. neurocysticercosis, neuroschistosomiasis), vascular malformations (e.g. arteriovenous malformation), autoimmune encephalitis, and cerebral radiotherapy were not considered.

The fourth point is the retrospective design of the study [1]. Retrospective designs have several disadvantages. Since they are based on the review of medical charts that were not originally designed to collect data for research, some information is inevitably missing. Selection and recall errors also affect the results [8].

In summary, the etiologic spectrum of brain lesions in headache patients is broader than assumed. When searching for cerebral lesions in headache patients, not only parenchymal lesions but also vascular abnormalities should be investigated.

Declarations
Ethical Approval: Not applicable.

Consent to Participation: Not applicable.

Consent for Publication: Not applicable.

Funding: None received.

Availability of Data and Material: All data are available from the corresponding author.

Completing Interests: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Author Contribution: All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

Acknowledgements: None.

Keywords: Headaches, Cerebral MRI, Structural Lesions, Imaging Abnormalities, Cephalalgia

References
1. Woldeyohannes AM, Iegesse TK, Andarge NS, Negussie MA. Acute Headaches: Patterns of MRI Findings, Ethiop Med J. 2025; 63:329-335. Doi: https://dx.doi.org/10.4314/emj.v63i1.6
2. Headache Classification Committee of the International Headache Society (IHS) The International Classification of Headache Disorders, 3rd edition. Cephalalgia, Jan 2018; 38(1):1-211. Doi: 10.1177/0333102417738202
3. Wijeratne T, Wijeratne C, Korajkic N, Bird S, Sales C, Riederer F. Secondary headaches - red and green flags and their significance for diagnostics. eNeurologicalSci, Jun 30, 2023; 32:100473. Doi: 10.1016/j.ensci.2023.100473
4. Kurth T, Mohamed S, Maillard P, Zhu YC, Chabriat H, Mazoyer B, *et al*. Headache, migraine, and structural brain lesions and function: Population based Epidemiology of Vascular Ageing-MRI study. BMJ, Jan 18, 2011; 342:c7357. Doi: 10.1136/bmj.c7357
5. Qureshi M, Thozhuthumparambil KP. Pituitary apoplexy in the setting of severe headache and unconsciousness. BMJ Case Rep, May 22, 2025; 18(5):e263585. Doi: 10.1136/bcr-2024-263585
6. Astafieva LI, Fomichev DV, Chernov IV, Shishkina LV, Klochkova IS, Pavlova MG, *et al*. Analysis of a series of 14 clinical cases of neurosurgical treatment of hypophysitis. Zh Vopr Neirokhir Im N N Burdenko. English, Russian. 2025; 89(2):39-47. Doi: 10.17116/neiro20258902139
7. Shi Y, Dong G, Pan H, Tai H, Zhou Y, Wang A, *et al*. Stroke-like episodes in patients with adult-onset neuronal intranuclear inclusion disease and patients with late-onset MELAS: A comparative study. Ann Clin Transl Neurol, Dec 2024; 11(12):3125-3136. Doi: 10.1002/acn3.52219
8. Talari K, Goyal M. Retrospective studies - utility and caveats. J R Coll Physicians Edinb, Dec 2020; 50(4):398-402. Doi: 10.4997/JRCPE.2020.409