



Unexpected Outcomes for Headache Under Evaluation; A Case Series of Four Cases

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Abstract

Headache is a common cause of hospital visits and admissions throughout the world. Headaches may be primary or secondary; the primary one being far more common. Although the primary cases by far outnumber the secondary cases the role of the physician is to separate the benign causes from the more sinister ones. Using clinical examination and history alone this can often be a mountain-moving task. However, radiology can help as a problem-solving tool in equivocal cases. This case series highlights the role of radiological imaging in four cases of chronic headaches that were being treated empirically as primary headaches for a long time before neuroimaging revealed a secondary cause.

Keywords: Headache; Chronic; Radiology; Magnetic resonance imaging.

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Introduction

Headache is one of the most common causes for which individuals seek the attention of health care providers.¹ Headaches are considered primary if there are no underlying causes. In secondary headaches, a distinct cause of headache is identified. Secondary causes of headaches can range from fairly simple causes such as sinusitis, drug-induced and metabolic causes to highly dangerous ones such as subarachnoid hemorrhage, neoplasms, vascular malformations, and meningitis.² Often it becomes difficult for the clinician to determine the type of headache based on clinical examination and history alone and whether or not to order neuroimaging.³ Our case highlights the importance of radiology in four cases of chronic headaches that were being treated as primary headaches. However, neuroimaging with computed tomography (CT) and magnetic resonance imaging (MRI) illustrates four cases of chronic headaches that were being treated empirically as primary headaches for a long time before neuroimaging revealed a secondary cause.

Case Presentation

Case 1

A 30-year-old woman was admitted to the emergency reception (ER) of North Bengal Medical College and Hospital (NBMCH), West Bengal, India with an acute headache. The patient gave a history of recurrent attacks

of headache since childhood with loss of consciousness on one occasion and loss of vision in the right eye since childhood. After an initial neurological examination, she was ordered a CT scan to rule out subarachnoid hemorrhage. Non-contrast CT (NCCT) scan revealed multiple calcified cortical tubers and subependymal nodules (Figure 1A). There was moderate atrophy of the medulla. There was a hyperdense lesion in the right eyeball with Hounsfield unit (HU) + 61 and rim calcification (Figure 1B). A provisional diagnosis of tuberous sclerosis complex was made and the patient was scheduled for an abdominal ultrasound and MRI brain but the patient did not turn up on the next visit.

Case 2

A 25-year-old man was admitted to the ER with complaints of chronic headaches for the past few years. A general survey and a systematic survey were unremarkable. A brain MRI was ordered. MRI brain revealed herniation of a part of the frontal lobe into the left nasal cavity through a 3 cm defect in the cribriform plate of the ethmoid (Figure 2). A diagnosis of frontonasal encephalocele was made. After an otorhinolaryngology examination, the patient was sent to the Apex Institute of Neurosurgery for better management.

Case 3

A 22-year-old woman was admitted to the ER with



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a chronic headache and an NCCT scan was ordered. NCCT revealed the right cerebral hemisphere atrophy with cortical bone thickening and dilation of the right-sided frontal sinus. MRI brain findings were similar with evidence of bilateral peritrigonal hyperintensities (Figure 3). A provisional diagnosis of Dyke Davidoff Mason Syndrome was made. The patient was referred to the Department of Neuro Medicine for further management.

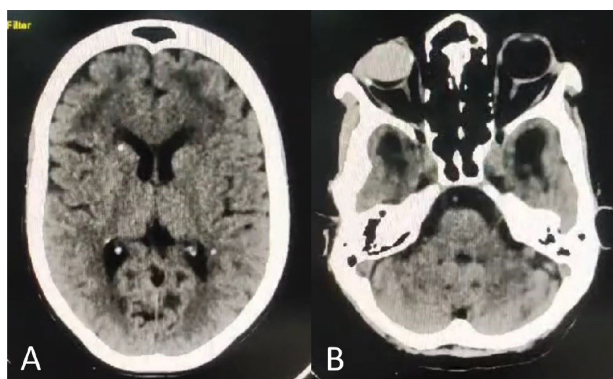


Figure 1. (A and B) Multiple Calcified Cortical Tubers And Subependymal Nodules With Atrophy of the Brainstem and Distorted Right Globe With Hyperdense Content

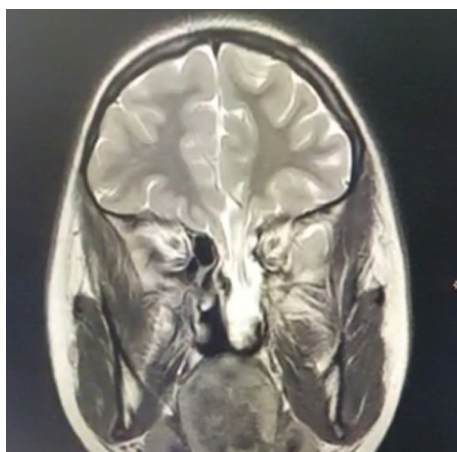


Figure 2. Herniation of the Left Frontal Lobe Into the Left Nasal Cavity Along With Meninges

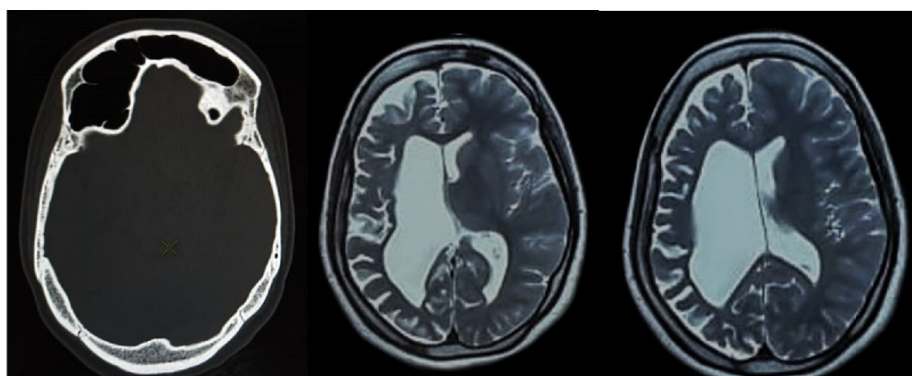


Figure 3. CT Scan and MRI Showing Hemiatrophy of the Right Cerebral Hemisphere With Right Sided Cortical Thickening and Dilated Right Frontal Sinus

Case 4

A 27-year-old man who was admitted to the Psychiatric Ward with a diagnosis of bipolar disorder complained of headaches for the last few months whenever he took medications. An MRI brain was ordered to rule out any organic cause. MRI revealed a cerebrospinal fluid (CSF) lined cleft in the left cerebral hemisphere extending from the ependyma to the pia mater, lined by grey matter (Figure 4). A diagnosis of open lip schizencephaly was made. The patient was referred to the Department of Neuro Medicine for further management.

Discussion

People of all ages and ethnicities across the world are impacted by headache disorders which has a 50% predicted worldwide incidence.¹ The International Classification of Headache Disorders distinguishes primary headaches (disorders brought on by distinct pathomechanisms) from secondary headaches, which are signs of a separate ailment that is recognized to be the source of the pain. Primary headaches are by far the most prevalent form of headache, with tension headaches and migraines occurring 60% and 15% more frequently, respectively.² Despite their innocuous nature, headache disorder is a major global public health issue because it leads to disability, excessive pharmaceutical usage, and societal costs.¹

A patient's clinical presentation can effectively divide his headache into two categories: acute and chronic. CT is generally preferred as the initial method for evaluating acute headaches due to its fast timing, easy availability, and increased sensitivity to early bleeding.³ Also, patients who need monitoring devices can get a CT scan more easily as most medical equipments are still not MRI compatible especially in developing nations. Due to its higher sensitivity to vascular disease, malignancy, infection, and posttraumatic alterations, MRI is the best method for evaluating chronic headaches. Although its use is constrained by the high costs of the examination.⁴ The posterior fossa, which is difficult for CT to detect, has great resolution with MRI, which can more precisely show

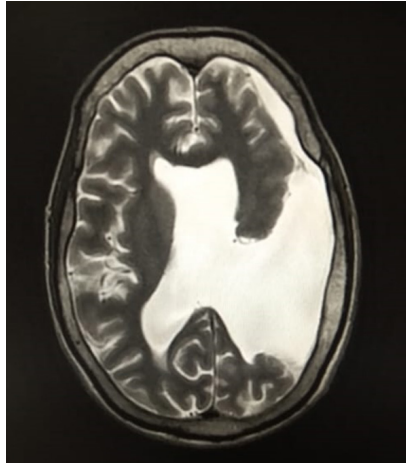


Figure 4. A Large Grey Matter Lined CSF Cleft in Left Cerebral Hemisphere Communicating Between Ependyma and Pia Mater

gliosis and demyelination. In patients with trigeminal neuralgia, migraine, and temporomandibular joint dysfunction, MRI may spot alterations that CT cannot.^{5,6}

Several studies conducted in different settings and using different methodological approaches have produced variable estimates of the prevalence of normal and abnormal brain imaging in patients presenting with headaches and normal as well as abnormal neurological examination.^{4,7,8} However, to date, there is a lack of a standardized consensus as to which cases should undergo neuroimaging and which cases may be exempted, and the decision to imaging is often rested on the clinical expertise and judgment of the clinician.

Conclusion

Headache is a very common clinical presentation throughout the world. Patients with classical migraine and tension-type headaches generally do not need neuroimaging. However, whenever there is a definitive suspicion of a secondary cause or if the presentation is atypical, it is prudent to order a neuroimaging to rule out any organic causes which may alter the course of treatment.

Authors' Contribution

Conceptualization: Uddalok Das, Debasish Dey.

Data curation: Uddalok Das.

Formal analysis: Uddalok Das.

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Supervision: Uddalok Das.

Validation: Uddalok Das.

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Writing-review & editing: Uddalok Das, Debasish Dey.

Competing Interests

The authors declare that they have no competing interests.

Consent for Publication

Written informed consent was obtained and the anonymity of the patient was ensured.

Data Availability Statement

Not applicable.

Ethical Approval

Procedures followed were in accordance with the Declaration of Helsinki.

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