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Ictal Epileptic Headache in an Elderly Patient with a Hippocampal Tumor

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Dear Editor,

The interesting phenomenon of an association between a headache and epileptic seizure is often observed. Seizure-related headache has been subdivided into four types based on the temporal relationship: preictal headache, ictal headache, postictal headache, and interictal headache.[1] Ictal headache is a very rare type of seizure-related headache,[2] which has resulted in video-EEG recordings of ictal headache being exceptionally rare.[3,4] In the literature, the origin of ictal headache has been predominantly reported to be the occipital lobe, and ictal headache most commonly occurs in young individuals.[2,4,5] Here we report an elderly patient with a hippocampal tumor who presented with ictal headache as the sole manifestation. This is a rare case of the ictal events being documented with video-EEG recordings.

A 74-year-old right-handed man was admitted to hospital with the presentation of the sudden onset of headache. His headache was unresponsive to analgesics such as paracetamol, ibuprofen, and acetaminophen, and had started approximately 1 month earlier with episodes of severe intensity that lasted for up to 1 minute. The headache was characterized by a sudden lightning strike of pain affecting the entire head. The patient was conscious during these episodes and could remember the situation occurring around him. The episodes had become much more frequent (up to 20 times per day) immediately preceding hospitalization, and they occurred daily. During a video-EEG recording session, the patient complained of a sudden, severe headache affecting the entire head. Concurrent with the headache, the EEG showed the onset of rhythmic beta activity beginning in the right temporal area and spreading to the right hemisphere lasting for approximately 30 seconds (Fig. 1A, Supplementary Video 1 in the online-only Data Supplement). The disappearance of ictal activity on the EEG corresponded to the resolution of the headache. No epileptiform discharges were present outside the headache episode. The patient did not report any other symptoms associated with the headache and did not show any other convulsive movements. Brain MRI revealed a solitary enhanced lesion in the right hippocampus, suggesting a brain tumor (Fig. 1B-E). The patient was diagnosed as having a hippocampal tumor and ictal epileptic headache based on the electroclinical and neuroimaging findings. The patient was treated with intravenous phenytoin, which resulted in the attacks subsiding immediately. No further episodes were reported at the 1-month follow-up.

The pathophysiological mechanisms underlying ictal headache have not been clearly determined. Headache has previously been associated with activation of the trigeminovascular system.[2,3] Cortical spreading depression is an electrophysiological phenomenon representing a neuronal depolarization wave followed by the suppression of bioelectrical activity.[2,3] This phenomenon is proposed to induce activation of the trigeminovascular system, which accompanies epileptic discharge, resulting in ictal headache.[2,3] Another plausible explanation is the association with synaptic transmission in the trigeminal nucleus. Antiepileptic drugs (AEDs) did not suppress the cortical spreading depression observed in an experimental study,

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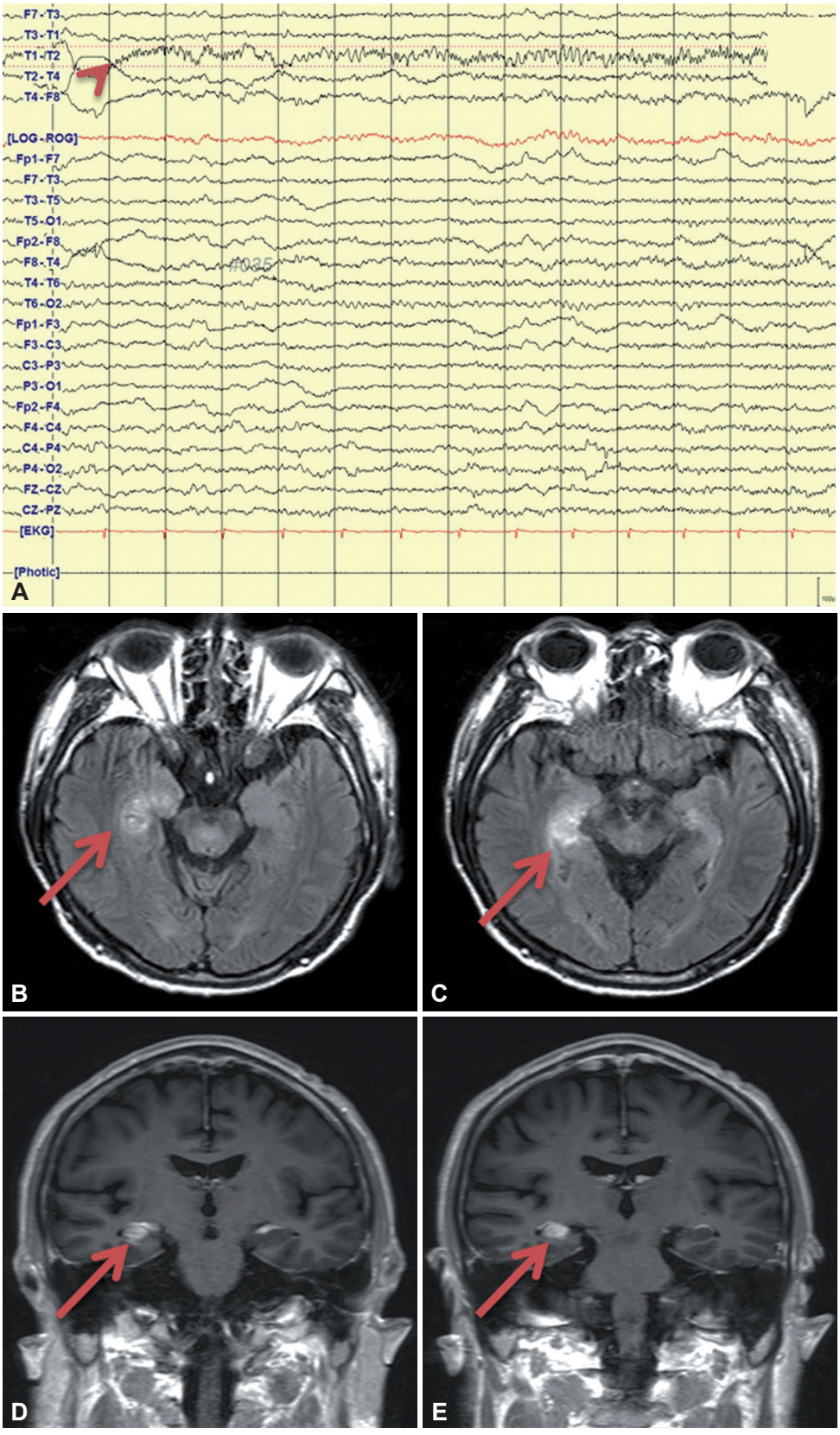

Fig. 1. EEG and Brain MRI. Ictal EEG showing the onset of rhythmic beta activity beginning in the right temporal area (arrowhead) (A). Fluid-attenuated inversion recovery axial (B and C) and T1-weighted coronal (D and E) brain MRI scans showing an enhanced mass lesion in the right hippocampus (arrows).

but ictal headaches are typically well controlled by AEDs, which are associated with the blockage of synaptic transmission.[2,3] The pathophysiology underlying ictal headache might therefore involve a neuromediated mechanism, such as synaptic transmission.[3] Ictal headache could also be an autonomic symptom. If the cortical discharges are too weak to produce sensory and motor signs, or if the signal originates from autonomic cortical areas, then ictal headache is solely characterized by autonomic signs.[3,4]

The present patient represents a rare case of ictal epileptic headache due to old age, and a temporal-lobe origin has been documented by video-EEG.[5] The reason why ictal headache is more common at a young age remains unclear. Indeed, the clinical signs are more autonomic in younger epileptic patients.[4] Panayiotopoulos syndrome is a good example of this class of epilepsy and demonstrates various symptoms such as vomiting, tachycardia, and incontinence. If ictal headache is one of the autonomic symptoms, then it would explain why this headache type is more common at a young age.[4] In addition, the origin of ictal headache is predominantly reported to be the occipital lobes.[2,4,5] The occipital cortex is a vulnerable region in which activation of the hyperexcitable cortex, facilitated by a pathologically low threshold, may generate a cortical-spreading-depression phenomena.[2,4] Moreover, the occipital visual cortex plays an important role in the genesis of eye closure-induced seizures and photosensitivity in several common forms of epilepsy.[3] If cortical spreading depression represents the connection between headache and epilepsy, it can be explained as occurring more in the occipital region in ictal headache.

This case suggests that clinicians should consider the likelihood of ictal epileptic headache when patients present with paroxysmal headache and do not respond to analgesics.

Supplementary Video Legend

Video 1. Ictal video-EEG recording at the time of the headache attacks. The EEG showed the onset of rhythmic beta activity beginning in the right temporal area and spreading to the right hemisphere, lasting approximately 30 seconds.

Supplementary Materials

The online-only Data Supplement is available with this article at https://doi.org/10.3988/jcn.2018.14.1.120.

Conflicts of Interest

The authors have no financial conflicts of interest.

REFERENCES

1. Headache Classification Committee of the International Headache Society (IHS). The International Classification of Headache Disorders, 3rd ed. (beta version). *Cephalalgia* 2013;33:629-808.
2. Fanella M, Morano A, Fattouch J, Albini M, Basili LM, Casciato S, et al. Ictal epileptic headache in occipital symptomatic epilepsy: not only a matter of cortex. *Headache* 2017;57:956-961.
3. Vydrova R, Kršek P, Kyncl M, Jahodova A, Dvorak J, Komarek V, et al. Peri-ictal headache due to epileptiform activity in a disconnected hemisphere. *Epileptic Disord* 2014;16:213-217.
4. Cianchetti C, Pruna D, Porcu L, Peltz MT, Ledda MG. Pure epileptic headache and related manifestations: a video-EEG report and discussion of terminology. *Epileptic Disord* 2013;15:84-92.
5. Fanella M, Morano A, Fattouch J, Albini M, Manfredi M, Giallonardo AT, et al. Ictal epileptic headache in adult life: electroclinical patterns and spectrum of related syndromes. *Epilepsy Behav* 2015;53:161-165.