



Occipital Lobe Epilepsy Presenting With Eyelid Blinking Following Cerebral Venous Sinus Stenotic Thrombosis

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Dear Editor,

Occipital lobe epilepsy (OLE) is relatively uncommon and may remain undiagnosed because it is challenging to identify.^{1,2} The cardinal symptom of OLE is visual hallucination, but an oculoclonic seizure—which includes symptoms such as eyelid flutter or forced rapid blinking—is much less common and has been anecdotally reported decades ago.^{1,2} We report a patient presenting with bilateral ictal blinking associated with OLE due to unilateral cerebral venous sinus thrombosis (CVST) associated with transverse sinus stenosis.

A 41-year-old female was referred to our department in a psychiatry clinic because of abnormal findings on diffusion-weighted imaging (DWI). She had no medical history, and reported right-side vascular headache with nausea and visual hallucinations that first appeared 1 month previously. She described vivid hallucinations in her right-side visual field, such as the presence of several metallic objects, people running toward her, or fruits floating in the air. She also complained of macropsia, with objects viewed in the hallucination appearing bigger than they are in reality. Perimetry revealed left homonymous hemianopsia (Supplementary Fig. 1 in the online-only Data Supplement). DWI revealed an acute infarction in the right temporo-occipital lobe (Fig. 1A). Additional brain MRI excluded posterior reversible encephalopathy syndrome, tumors, traumatic lesions, and cortical malformations, while T1-weighted imaging revealed stenosis in the right transverse sinus to the sigmoid sinus with an intraluminal high signal intensity (Supplementary Fig. 2 in the online-only Data Supplement). Digital subtraction angiography demonstrated a partial filling defect in the right transverse sinus with flow obstruction in the venous phase (Fig. 1B).

The patient exhibited constant repeated forced eyelid blinking bilaterally, which was more severe on the left side and tended to worsen when viewing objects in brighter lighting conditions (Supplementary Video 1 in the online-only Data Supplement). Electroencephalography (EEG) showed no definite interictal epileptiform discharges, but there was an ictal pattern from the right occipital region with fast rhythm preceding the forced blinking, which was not affected by photic stimulation (Fig. 1C and D). Laboratory findings revealed newly diagnosed diabetes mellitus (HbA1c at 11.4%) and hypercholesterolemia, but there was no evidence of hyperosmolar hyperglycemia, mitochondrial disorders, or autoimmune diseases associated with thrombosis and coagulopathy.

The patient was managed with a direct oral anticoagulant (dabigatran at 300 mg/day), high-dose atorvastatin (80 mg/day), and levetiracetam (1,000 mg/day). Her eyelid flutters recovered gradually after this drug treatment, and follow-up EEG performed 6 days later showed no epileptiform discharges when the ictal blinking was apparently attenuated in the presence of visual hallucination (Supplemental Video 2 in the online-only Data Supplement). She was free of any symptoms or signs related to OLE at the 5-month follow-up visit. Follow-up brain T2-weighted fluid-attenuated inversion recovery imaging depicted chronological signal resolution of the previous ischemic lesion in the right temporo-occipital lobe (data not

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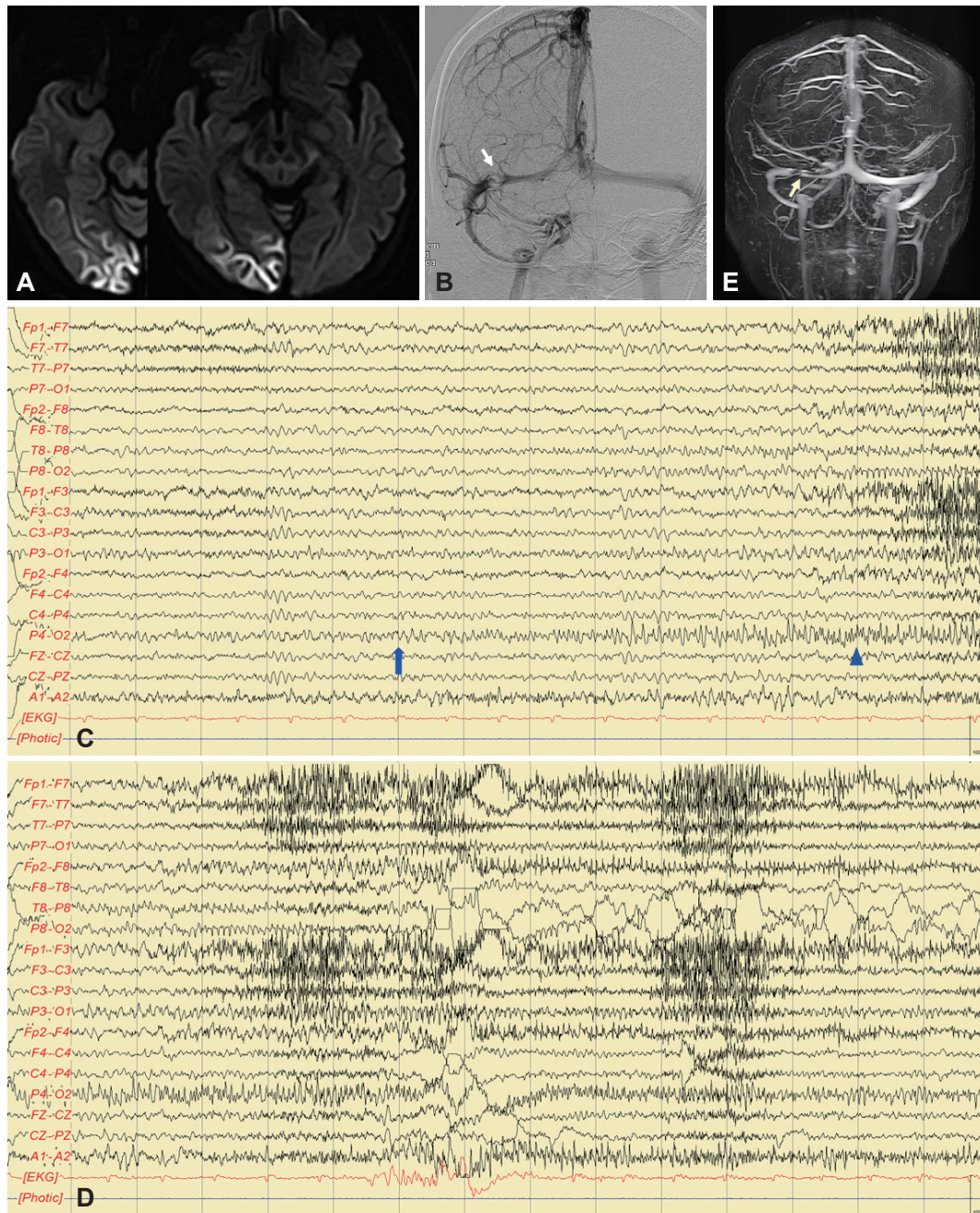


Fig. 1. Brain imaging and electroencephalography (EEG) findings. A: Diffusion-weighted image showing a high signal intensity in the right temporo-occipital lobe. B: Digital subtraction angiography in the venous phase reveals a partial filling defect in the right transverse sinus (arrow). C and D: EEG shows a fast rhythm associated with right occipital lobe seizure preceding repetitive blinking or eyelid flutter. The arrow indicates the starting point of the fast rhythm, while the arrowhead indicates the starting point of clinical ictal blinking. E: Follow-up contrast-enhanced MR venography shows a stenotic venous sinus with double tract-sign (yellow arrow).

shown). Contrast-enhanced MR venography showed a right stenotic transverse sinus with two hyperintense linear tracts of contrast agent that were separated by the hypointense signal of a noncontrast thrombus, suggestive of a double-track sign³ (Fig. 1E). The double-track sign is a sensitive imaging marker for detecting CVST in transverse sinus stenosis.³

The etiology of the transverse sinus stenosis in this case

was unclear, but the presence of venous flow disturbances in the culprit lesion that resulted in venous blood draining from the ipsilateral occipital cortex may have produced a state of venous hypertension leading to headache and contributing to the development of seizures. Eyelid blinking has been reported to be one of the clinical manifestations of OLE, but to our knowledge this is the first case report of clinical findings of

OLE due to CVST associated with transverse sinus stenosis.

Supplementary Video Legend

Video 1. The key clinical finding of right occipital lobe epilepsy before treatment, characterized with constant repeated forced eyelid blinking bilaterally, which is more severe on the left side. Video 2. The repetitive forced eyelid flutter is remarkably disappeared following anti-epileptic drug therapy.

Supplementary Materials

The online-only Data Supplement is available with this article at <https://doi.org/10.3988/jcn.2021.17.4.585>.

Ethics Statement

A written informed consent was obtained from the patient for her information on demographic data, medical condition, images, videos, treatment, and prognosis anonymously.

Availability of Data and Material

The datasets generated or analyzed during the study are available from the corresponding author on reasonable request.

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Conflicts of Interest

The authors have no potential conflicts of interest to disclose.

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None

REFERENCES

1. Williamson PD, Thadani VM, Darcey TM, Spencer DD, Spencer SS, Mattson RH. Occipital lobe epilepsy: clinical characteristics, seizure spread patterns, and results of surgery. *Ann Neurol* 1992;31:3-13.
2. Taylor I, Scheffer IE, Berkovic SF. Occipital epilepsies: identification of specific and newly recognized syndromes. *Brain* 2003;126:753-769.
3. Zhu DS, Fu J, Zhang Y, Xie C, Wang XQ, Zhang Y, et al. Sensitivity and specificity of double-track sign in the detection of transverse sinus stenosis: a multicenter retrospective study. *PLoS One* 2015;10:e0135897.