1-11-2021

Prolonged postictal hemianopsia after a focal extraoccipital onset seizure

Vibhangini S. Wasade
Henry Ford Health, VWASADE1@hfhs.org

Jennifer L. Logan
Henry Ford Health, jlogan2@hfhs.org

Recommended Citation
Wasade VS, and Logan JL. Prolonged postictal hemianopsia after a focal extraoccipital onset seizure. BMJ Case Rep 2021; 14(1).

Prolonged postictal hemianopsia after a focal extraoccipital onset seizure

Vibhangini S Wasade, Jennifer L Logan

Neurology, Henry Ford Medical Group, Detroit, Michigan, USA

Correspondence to
Dr Vibhangini S Wasade; vwasade1@hfhs.org

Accepted 21 December 2020

SUMMARY

We report a case of a prolonged postictal hemianopsia occurring after a focal extraoccipital seizure. A 55-year-old man with a history of neurosyphilis, treated with penicillin, presented to our epilepsy monitoring unit (EMU) for diagnostic evaluation of his spells occurring for 2 years. The spell semiology was stereotypical, described as oral and manual automatisms, speech difficulty and unresponsiveness. During the EMU stay, after his typical seizure was recorded, he experienced right hemianopsia lasting for 2 hours. Electrographically, the ictal pattern was prominent over the left temporal derivation and propagated to the left occipital derivation as the seizure progressed. Interictal epileptiform activity was over the left temporal derivations. We support the view that postictal phenomenon may represent merely a seizure termination zone and not be necessarily localising to the seizure onset zone. Furthermore, prolonged isolated postictal symptom of hemianopsia could also be noted in rare situations.

BACKGROUND

Clinical seizure semiology in focal epilepsy depends on the area of brain involved during the seizure. Some of the common postictal signs include postictal aphasia, postictal amnesia, postictal hemiparesis, postictal nose wipe and postictal headache.[1] Postictal hemianopsia has also been described in the setting of occipital lobe seizures.[2 3] Prolonged symptom of postictal hemiparesis (Todd's) was initially described more than one and a half century ago,[4] other postictal symptoms have been well described in the literature,[5] and prolonged symptom of postictal hemianopsia has been described with occipital onset seizures.[2] Here, we describe the first rare case of an isolated prolonged hemianopsia as a postictal manifestation following an extraoccipital onset seizure.

CASE PRESENTATION

A 55-year-old right-handed man was admitted to the Henry Ford Epilepsy Monitoring Unit (EMU) for diagnostic evaluation of his recurrent spells that started 2 years prior. These were brief episodes of staring, speech difficulty, loss of awareness and unresponsiveness that lasted for up to 1 min, as described to him by the witnesses. The patient reported that he did not experience any warning or any visual phenomenon before the spell or any visual symptoms of blindness after. He lived alone and the frequency was unclear. He also reported one episode of a convulsive seizure that occurred a year ago. At the time of EMU admission, his antiseizure medications included levetiracetam 1000 mg two times per day and lacosamide 100 mg two times per day, as per his referring neurologist. His medical history was significant for a diagnosis of neurosyphilis 5 years ago, when he exhibited short-term memory problems. At that time, lumbar puncture showed positive Veneral Disease Research Laboratory (VDRL) test, and MRI of the brain reportedly showed findings in keeping with neurosyphilis. His condition improved after the treatment with intravenous penicillin.

INVESTIGATIONS

During the EMU evaluation, scalp electroencephalography (EEG) showed interictal epileptiform activity in the form of occasional, moderate amplitude, sharp wave discharges over the left temporal derivations. His recorded typical spell was consistent with a focal seizure with impaired awareness, clinically characterised by oral automatisms in the form of lip smacking and mouth chewing movements, intermittent bimanual automatisms with loss of awareness. On assessment, he did not report any warning prior to the seizure or recall having the seizure. However, on examination, he was noted to have right hemianopsia during the postictal state that lasted for up to 2 hours. He did not experience such symptom of right visual field defect after his seizure ever before the admission and reported it for the first time. EEG recorded at the clinical seizure onset was obscured by brief glossokinetic artefact. As the seizure progressed, the ictal pattern was prominent over the left temporal derivations and propagated over the left occipital derivations, with repetitive spikes over the left occipital derivations (O1) that continued until the seizure ended (figure 1). The ictal pattern lasted for a total duration of 144 s. The diagnosis of focal epilepsy was confirmed.

TREATMENT

The dose of levetiracetam was optimised to 1500 mg two times per day and lacosamide was optimised to 200 mg two times per day, before the patient was discharged home.

OUTCOME AND FOLLOW-UP

At 1-year follow-up, after the EMU evaluation, the patient's seizures remained under control, and he denied having any recurrence of postictal hemianopsia.

DISCUSSION

We report the first and rare case of prolonged postictal hemianopsia noted in the setting of an

To cite: Wasade VS, Logan JL. *BMJ Case Rep* 2021;**14**:e239021. doi:10.1136/bcr-2020-239021

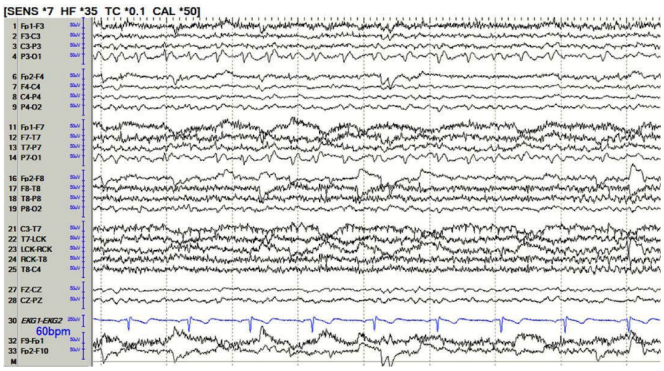

Figure 1 Noted rhythmic spikes over the left occipital derivation (O1) at the ictal offset.

extraoccipital lobe seizure onset. In this patient, initial symptomatogenic zone or the area of brain producing ictal signs and symptoms seemed to be over the temporal region, however the seizure progressed and terminated over the left occipital lobe clinically correlating with the right hemianopsia.

Postictal hemianopsia is rarely encountered, and in a systematic review and meta-analysis of postictal findings,[5] such manifestation was not even described. Positive symptoms like hallucinations during ictal phase and negative symptoms of blindness/hemianopsia in postictal phase have been described with seizure onset over the contralateral occipital lobe.[3] In our patient, right hemifield visual defect was noted as a postictal manifestation of the seizure, with initial electrographic ictal pattern over the left temporal derivations and not over the left occipital regions. In addition to his typical seizure semiology that is similar to that commonly seen with temporal lobe seizures, interictal epileptiform discharges were also noted over the left temporal derivations. Right hemianopsia was noted in the postictal state, possibly due to significant dysfunction and exhaustion of the left occipital lobe that was involved late in the seizure.

We argue that postictal signs help in localising the seizure onset,[1] and allude to the notion that postictal signs or symptoms are indicators of cortical dysfunction over the brain area unfavourably involved during that seizure. It is possible that this area was substantially involved to experience prolonged refractory period or prolonged local inhibition from surrounding area, as a protective mechanism and/or decreased blood flow leading to oxygen deprivation, causing transient neuronal dysfunction in that region.

Our patient did not experience the symptoms of right hemianopsia with his earlier seizures, although he experienced numerous of his stereotypical seizures prior. It is possible that he was not aware or could not recognise the symptoms in postictal phase as he usually lived alone, however he did confidently report this being an isolated event and that even the witnessed seizures in the past were never followed by visual field defect over the right side of his visual field.

It is known that postictal clinical findings may alter due to age-related physiologic changes that include cerebral blood flow, metabolism and neurotransmitter function.[6] In addition, with a prior history of neurosyphilis, the patient's brain networks possibly altered for seizure propagation and termination. Analogous to postictal paresis as described with Todd's paresis[4] that could occur occasionally during some seizures in a patient and subside within a few hours, our patient had his first such postictal manifestation of prolonged right hemianopsia that subsided in 2 hours. The phenomenon seems to be self-limiting with supportive treatment and resolution without any intervention.

Learning points

- Postictal hemianopsia in focal epilepsy can occur after an extraoccipital onset seizure.
- Postictal phenomenon should be interpreted with caution with regard to seizure onset zone. Seizure propagation pattern may vary, depending on the individual's brain network. Understanding the seizure semiology in chronological order of clinical presentation may help reflect in approximating the seizure onset, seizure propagation and seizure termination areas involved during the seizure.
- Postictal hemianopsia in focal epilepsy could represent a seizure termination region in the contralateral occipital lobe.
- Additionally, prolonged postictal hemianopsia could occur, analogous to Todd's paresis, and should be managed accordingly.

Acknowledgements The authors would like to thank nursing staff and EEG technologists at Henry Ford Epilepsy Monitoring Unit who were actively involved in delivering efficient care for this patient during his EMU stay.

Contributors VSW planned for the submission of case report and prepared for the submission. Both authors were together involved in the clinical care of the patient and reporting the case.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent for publication Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

1 Leutmezer F, Baumgartner C. Postictal signs of lateralizing and localizing significance. *Epileptic Disord* 2002;4:43–8.
2 Ghosh P, Motamedi G, Osborne B, *et al*. Reversible blindness: simple partial seizures presenting as ictal and postictal hemianopsia. *J Neuroophthalmol* 2010;30:272–5.
3 Spatt J, Mamoli B. Ictal visual hallucinations and post-ictal hemianopia with anosognosia. *Seizure* 2000;9:502–4.
4 Todd RB. The Lumleian lectures for 1849. on the pathology and treatment of convulsive diseases. *Epilepsia* 2005;46:995–1009.
5 Subota A, Khan S, Josephson CB, *et al*. Signs and symptoms of the postictal period in epilepsy: a systematic review and meta-analysis. *Epilepsy Behav* 2019;94:243–51.
6 Theodore WH. The postictal state: effects of age and underlying brain dysfunction. *Epilepsy Behav* 2010;19:118–20.