**Background**

Posterior reversible encephalopathy syndrome (PRES) is a relatively common condition associated with a multiplicity of risk factors, and the most notable is hypertension. Much debate has occurred regarding the naming of this entity, as it is neither universally reversible nor isolated to the posterior circulation. This case adds to the naming challenge by bringing the encephalopathy component into question.

Reversible posterior leukoencephalopathy syndrome was first reported as a case series in 1998, but imaging findings related to hypertensive encephalopathy had been noted previously. The syndrome involved headache, mental status changes, seizures, and visual loss. The name came under immediate scrutiny as other authors described cases that were not reversible, and cases with atypical imaging findings involving frontal regions and gray matter. A multitude of etiologies have been identified, but hypertension has remained the most common. Although seizures are one of the most common presenting features of the syndrome, most are generalized and only a small percentage of patients have focal seizures.

The diagnosis in the presented case was initially unclear due to the atypical presenting features and imaging findings. It only became obvious when a recurrent and more significant episode of PRES developed.

**Case Report**

The case is a twenty-nine-year-old woman with a history of anxiety, depression, hypertension, headaches, and gastric bypass surgery two months prior to presentation. She came to the hospital to be evaluated for seizures after an episode of shaking. She reported that she felt herself "going into a seizure" and recalled EMS arriving. A family member referred to the event as a panic attack, which the patient was known to have. Her neurologic examination was normal, but she complained of some occasional twitching and an EEG was obtained. Following this inconclusive EEG, she continued to complain of twitching. She also noted seeing flashes of light, similar to a camera flash. At this point, she was placed on continuous EEG monitoring to capture these events.

An MRI was obtained due to focal findings on the EEG. The MRI showed two areas of T2/T2 FLAIR hyperintensity in the left parietal and occipital lobes, corresponding to the EEG findings. She was started on carbamazepine, which resulted in cessation of seizures and reduction in epileptiform discharges on EEG. She had also been restarted on blood pressure medication and was discharged with a plan for a follow-up MRI to re-evaluate the abnormalities.

She presented to the hospital three weeks later complaining of seeing rainbow-colored spots in her right visual field and seeing black spots in her left visual field. She also complained of intermittent arm twitching, headaches, dizziness, and nausea. A repeat EEG and MRI were obtained. The MRI revealed typical imaging findings for PRES as shown.

**Admission 1**

**EEG:** Intermittent periods of semi-rhythmic 1-2 Hz slowing seen maximally at P7 and O1 with occasional faster 12 Hz beta frequencies superimposed. They could be as brief as 1-2 seconds or as long as 10-20 seconds without clear evolution. At times, this pattern was accompanied by right shoulder twitching and internal rotation of the right forearm. At other times there was no movement and the pattern was seen while she was in a quiet drowsy state. There are no epileptiform abnormalities. These findings are associated with left posterior dysfunction and could represent an ictal pattern.

24-hour EEG: At 7 AM, the patient had an electrographic seizure that lasted about 4 minutes. Clinically she was awake and being interviewed by a physician. She did not have any visible motor manifestations of the event, did not express any subjective symptoms, was able to carry on a conversation and answer ordering questions throughout the event. This video/EEG monitoring session captured four subclinical left posterior seizures that were electrographically similar to that seen during her routine EEG. Her inter-ictal background was also abnormal over the left posterior region, predominantly over O1 and P7, demonstrating nearly continuous slowing and abundant epileptiform discharges. The remainder of the awake and sleep recording was within normal limits. Overall, these findings indicate neuronal dysfunction and an epileptogenic zone over the left parieto-occipital region. This pattern is concerning for an underlying structural abnormality. No further seizures were detected following treatment with carbamazepine. Her epileptiform discharges became simpler in appearance.

**MRI Brain:** One foci of abnormal high T2/T2 FLAIR signal with associated restricted diffusion in the left posterior parietal region (A and B). Another foci abnormal high T2/T2 FLAIR signal with associated restricted diffusion (C) in the left occipital lobe. These findings most likely represent post-ictal changes. Other causes such as demyelination or embolic infarcts cannot be excluded.

**MRI Brain:** Multiple areas of abnormal high T2/T2 FLAIR signal affecting bilateral occipital and parietal lobes (A,B,D), involving the splenium of the corpus callosum (C) and some involvement of the posterior frontal lobes (E). Overall these findings are most consistent with PRES.

**Conclusion**

PRES prototypically presents with mental status changes, headache, visual disturbance and seizures, but seizure is the most common and can be partial and subclinical, as this case demonstrates.

Colorful visual phenomena are more likely consistent with seizure than migraine.

Consider PRES in the evaluation of new onset seizures in patients with risk factors.

Imaging is key to the diagnosis of PRES and the severity of MRI findings may relate to the degree of blood pressure elevation.

Blood pressure management is key in preventing PRES, but blood pressure control does not immediately eliminate the risk of seizure.

Further study is necessary to determine recommendations in terms of anti-epileptic medication choice and length of treatment for seizures in the setting of PRES. However, initial studies suggest that a large majority of patients do not continue to be at risk for seizures in the long-term.

**References**


