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Case Report

CASE REPORT

A global amnesia associated with the specific variant of posterior reversible encephalopathy syndrome (PRES) that developed due to severe preeclampsia and malignant hypertension

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Abstract

A case is reported of a 26-year-old primiparous woman in the 32nd week of gestation who presented to the emergency department with the symptoms of a severe headache, nausea and vomiting. The patient was diagnosed with preeclampsia that later progressed to eclampsia. This state was characterized by a sudden onset of a headache and diplopia that advanced to cortical blindness and precipitated significant alterations in mental status, most notable being global amnesia that resolved within 48 h. A post-partum magnetic resonance imaging of the brain in FLAIR mode revealed multiple cortico-subcortical areas of hyperintense signals suggestive of edematous lesions that chiefly involved occipital and parietal lobes with additional atypical manifestations. Such radiologic findings suggested a posterior reversible encephalopathy syndrome variant with the global amnesia as an extraordinary constituent. This unique feature should be acknowledged when treating a preeclamptic or hypertensive patient that exhibits neurological symptomatology and vision disturbances.

INTRODUCTION

Posterior reversible encephalopathy syndrome (PRES) and cortical blindness can occur as the acute complications of severe preeclampsia in 1–15% of cases [1]. PRES should be diagnostically suspected in a hypertensive gravid patient that exhibits symptoms such as visual disturbances, headache, mental status alterations, seizures and vomiting. A magnetic resonance imaging (MRI) reveals edema in the posterior cerebral regions, particularly in parieto-occipital lobes, a hallmark feature of PRES [2]. In the setting of pregnancy, rapid diastolic blood pressure lowering and magnesium administration for the control of seizures should be instituted. It is important to promptly recognize the symptoms of PRES since the early intervention can achieve good outcomes without neurological sequelae;

otherwise, the condition can progress to irreversible cytotoxic edema with fatal consequences. In this case, our patient had a specific pattern of PRES and developed both retrograde and anterograde amnesia that persisted for 48 h, which is a novel feature within the context of PRES, previously unreported in the literature.

CASE REPORT

A primiparous, 26-year-old female in the 32nd week of gestation was admitted to the emergency department with the symptoms of preeclampsia. The arterial blood pressure (BP) of 190/110 mmHg was measured, while the antihypertensive therapy consisted of urapidil (25 mg, IV), amlodipine (10 mg, per os) and methyldopa (3 × 500 mg daily, per os). Likewise, $MgSO_4$ was administered for seizure prevention (40 + 60 ml 0.9% NaCl, IV). Regardless of therapeutic management, preeclampsia translated into eclampsia. An emergency delivery via cesarean section was performed, and she was then treated in the clinical context of *HELLP syndrome* within the gynecology intensive care unit (ICU) since blood analysis revealed hemolysis (hemoglobin count of <90 g/l and dysmorphic erythrocytes in peripheral blood smear), elevated liver enzymes [aspartate aminotransferase (AST) level of 100 U/l] and a low platelet count of 72×10^9/l. A fluid-attenuated inversion recovery (FLAIR) mode of the MRI of the brain was performed to assess the neurologic complications, and it revealed bilateral brain edema (hyperintense lesions) in occipital and parietal lobes, with additional cerebellar, periventricular, temporo-occipital and frontal cortex lesions. These findings suggested a possible variant of PRES (Fig. 1).

Furthermore, a patient displayed neuropsychiatric symptoms of confusion, agitation and anxiety but also presented with a global memory loss in a post-partum period which was an unexpected finding. During the psychiatric evaluation, the patient was unable to retrieve episodic memory content and had difficulties in establishing coherent temporal and spatial relationships about the events. In a practical sense, she could not remember that she was married or if she had any siblings and was unaware of date and place where she was born or lived. Moreover, she had no recollections of pregnancy and childbirth and was distrustful toward the familiar faces of her loved ones when they were permitted to visit. The anterograde memory was affected as well—the patient failed to create memories about recently acquired information. The remainder of a neurologic exam was in order. These amnesia symptoms clinically regressed within 48 h, following an aggressive antihypertensive and anticoagulation treatment of PRES. Patient was discharged in a stable condition and was given a prescription regimen of ramipril (2.5 mg per day, per os) for the BP control (1-month duration).

A 6-month follow-up MRI scan of the brain revealed normal brain morphology, with complete remission of edematous lesions and no radiologic signs of pathological demyelination processes (Fig. 4). Likewise, a complete memory content was evaluated at the 6-month follow-up regular outpatient check-up, and the patient reported no cognitive difficulties in acquiring or retrieving information. In addition, she achieved normal BP values, and her antihypertensive therapy was discontinued.

DISCUSSION

An anterograde and retrograde amnesia associated with PRES has been described in our patient's case, and this is a novel and uncommon finding within the context of this condition. PRES was first introduced in the literature by Hinchey *et al*. and was described as a transient clinical and neuroradiological entity accompanied with symptomatology that includes nausea, headache, vomiting, altered mental status and, in the most dramatic form—seizures, focal neurologic deficits and vision abnormalities [3]. Certain conditions such as malignant hypertension and eclampsia, among others, are reported as the potential causes of PRES, while the pathophysiological mechanisms implicated are a breakthrough of vascular autoregulation and endothelial dysfunction [4]. Only a few sporadic reports in the literature exist that bring amnesia or amnesia-like symptomatology into association with PRES [5, 6]. However, a dramatic memory deficit that included both anterograde and retrograde memory processing, as implicated in our case, has not been previously elaborated. In these previous cases, only mild amnesia or transient global amnesia (TGA) that resolved within 24 h was reported. Thus, in these reports anterograde amnesia dominated, while the retrograde amnesia was only slight or mild in character. This was not the case in our report—we found substantial retrograde and anterograde amnesia that persisted for slightly less than 48 h.

We suggest that this unique representation of symptoms might correlate with the specific anatomical pattern of cerebral lesions. This pattern of lesions within PRES could perhaps be seen as a variant that precipitates altered mental status and functional deficits in the form of global amnesia. In addition to these atypical lesions, a classic PRES pattern of brain vasogenic edema in FLAIR imaging mode on the MRI was preserved. As suggested by Bartynski *et al*., this edema is often widespread but predominates in the parietal and occipital white matter, followed by the frontal lobes, the inferior temporal–occipital junction and the cerebellum [7]. While the majority of lesions in our case followed

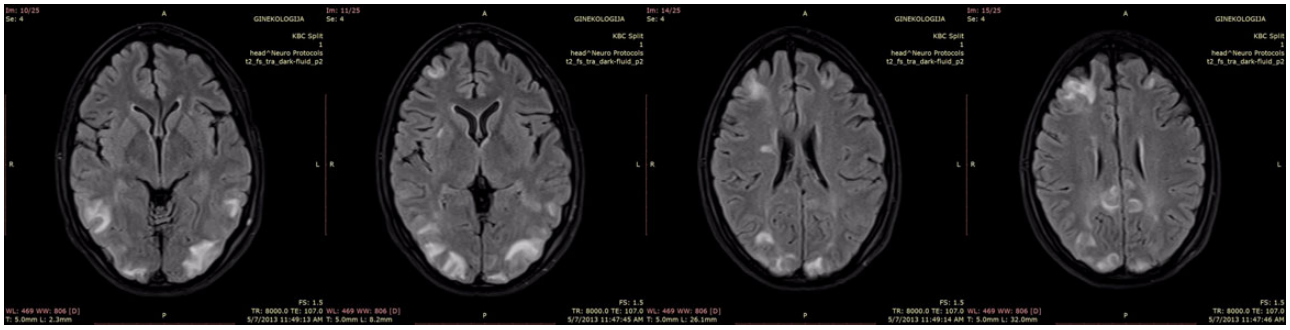

Figure 1: A horizontal FLAIR MRI mode showing hyperintense vasogenic edematous lesions in parietal, temporo-occipital, frontal and periventricular brain regions.

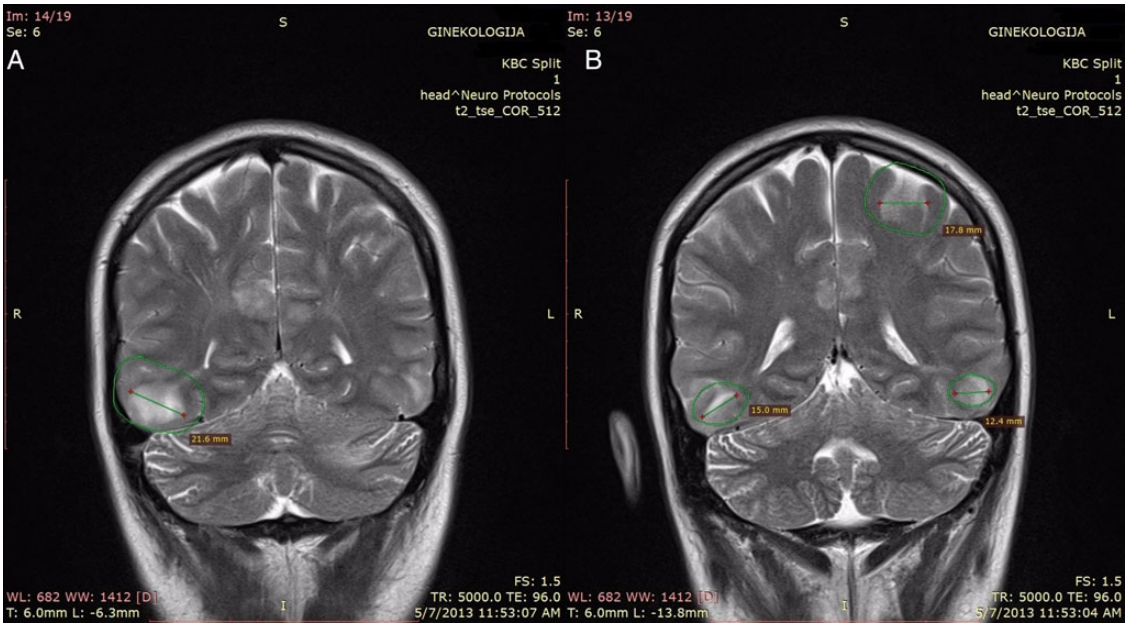

Figure 2: A coronal FLAIR MRI mode revealing hyperintense vasogenic edematous lesions in temporo-occipital brain regions.

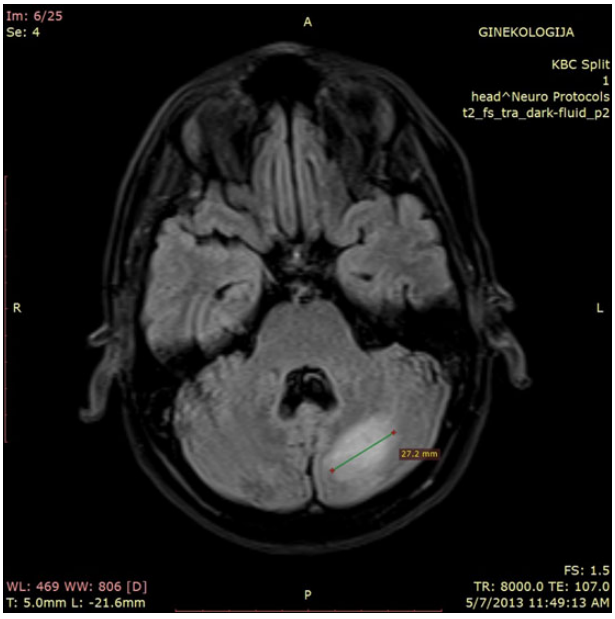

Figure 3: A horizontal FLAIR MRI mode showing hyperintensity of signal in the left cerebellar hemisphere.

classical PRES distribution, we found additional elements that could precipitate amnesia or amnesia-like clinical symptoms. On a FLAIR coronal MRI section of the brain, an edematous infiltrate of 21.6 mm in diameter was implicated in the right temporo-occipital junction, most likely affecting inferior temporal and lateral occipitotemporal gyri (Fig. 2). Likewise, a temporal–occipital junction on the left side of the brain was affected (Fig. 2B). In addition, the horizontal FLAIR MRI sections revealed unilateral subcortical lesion found in the left cerebellar hemisphere, measuring 27.2 mm in diameter (Fig. 3). The same MRI mode discovered bilateral hyperintense lesions in parieto-occipital cortex, frontal cortex and lateral periventricular areas (Fig. 1). Such imaging patterns and lesion distribution in PRES have been elaborated in the literature—a relevant study showed that lesions in the frontal lobe were present in 68% of PRES cases, while inferior temporal lobe and cerebellar hemisphere manifestations are not uncommon [8]. A recent study by Kastrup *et al.* conducted in Europe found involvement of posterior regions in 65.3% of cases, temporal lesions in 10.6% of cases, cerebellum lesions in 6.5% and basal ganglia in 1.6% of total PRES cases [9].

It still remains a formidable challenge to correlate clinical symptoms with anatomical characteristics of brain lesions in PRES; however, to a certain degree, some parallels could be drawn. The vasogenic edema found in the occipital cortex can explain transient cortical blindness, lesions in the inferior temporal gyrus and occipitotemporal junction are implicated in semantic memory deficits and prosopagnosia, while frontal cortex lesions can elicit a wide spectrum of higher executive function and behavioral abnormalities, including memory loss, impulsivity and similar [10]. While dissociative amnesia can also be included in the differential diagnosis and can occur in post-partum period due to severe trauma, we suggest that organic etiology of amnesia should be considered first if the clinical context is sufficient and imaging studies detect brain lesions that might be implicated in memory and cognitive processing. Thus, if amnesic symptoms are not reversed within 48 h period, mechanisms other than edema itself should be suspected.

It is evident that PRES can present with a wide spectrum of MRI patterns. We presented a variant of PRES that had anterograde and retrograde memory loss or global amnesia as one of the constituent symptoms. In conclusion, a preeclamptic or hypertensive patient that exhibits altered mental status with amnesia or amnesia-like symptoms should be examined for PRES with possible frontal and inferior temporal lobe lesion involvement established on MRI/CT.

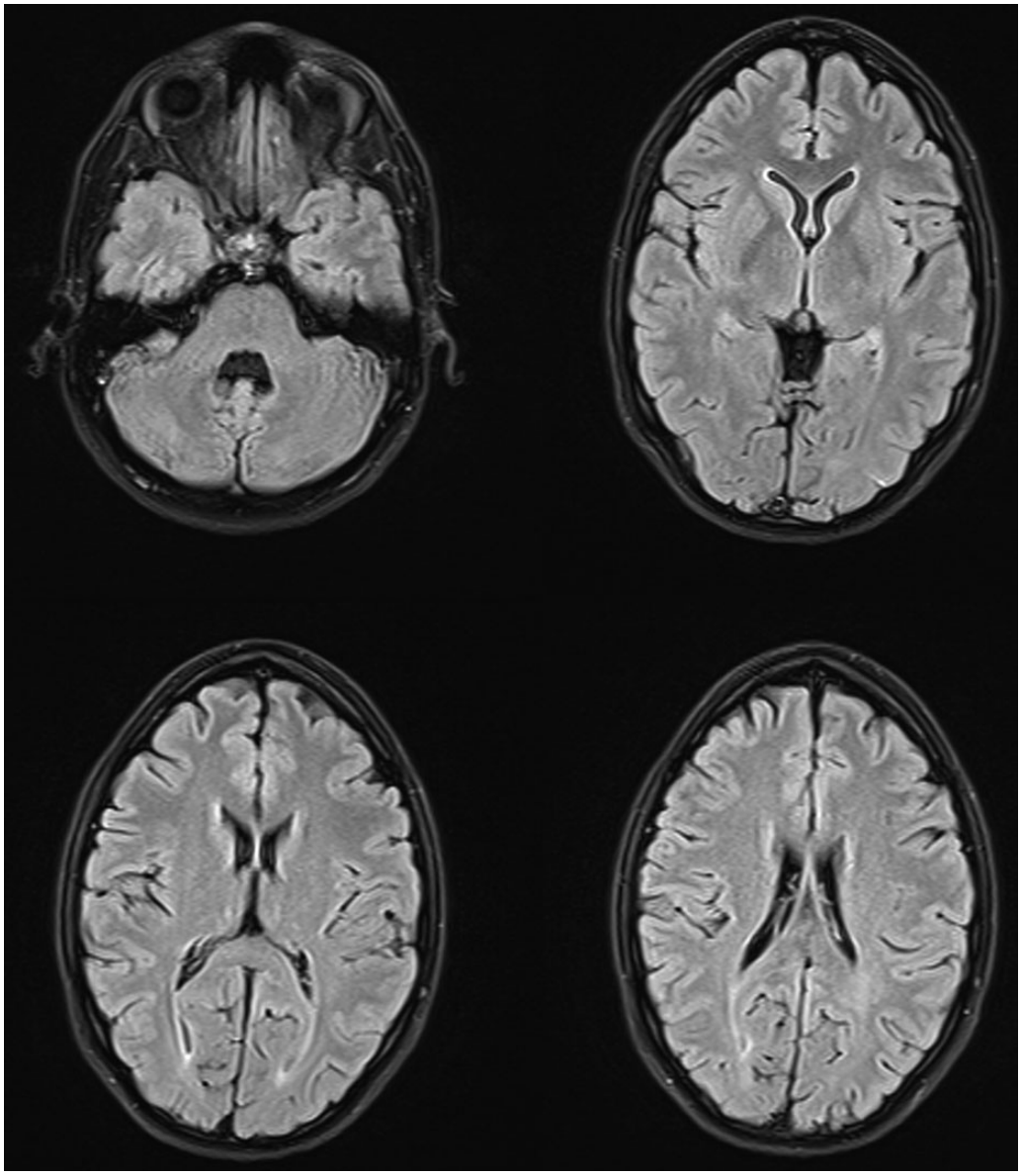

Figure 4: A 6-month follow-up horizontal FLAIR MRI scan showing full regression of PRES and no signs of edema or demyelination processes—full recovery.

CONFLICT OF INTEREST STATEMENT

None declared.

FUNDING

Nothing to declare.

ETHICAL APPROVAL

Institutional IRB ethical guidelines were fulfilled.

CONSENT

An informed patient consent has been obtained from the patient described in this case report.

GUARANTOR

J.A.B. will act as guarantor.

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