

# Posterior Reversible Encephalopathy Syndrome (PRES) in the Differential Diagnosis of Eclampsia: Case Report

## Eklampsinin Ayırıcı Tanısında Posterior Geri Dönüşümlü Ensefalopati Sendromu

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**ABSTRACT** Posterior reversible encephalopathy syndrome (PRES) is a well-recognized, clinical neuro radiological entity characterized by transitory neurological disturbances including altered mental status, seizures, headache and blurred vision, with acute or subacute onset. It is more often associated with acute hypertension or immunosuppression. It is usually considered to be a reversible condition if promptly recognized and correctly treated. Otherwise; a delayed or incorrect diagnosis may lead to irreversible damage. Here, we present a case of PRES, which developed in 32 weeks of pregnancy who admitted to our intensive care unit as supposed to eclamptic crisis.

**Key Words:** Eclampsia; posterior leukoencephalopathy syndrome

**ÖZET** Posterior geri dönüşümlü ensefalopati sendromu (PRES) iyi tanımlanmış, mental durumda bozulma, nöbet, baş ağrısı ve bulanık görme gibi geçici nörolojik bozukluklarla karakterize akut veya subakut başlangıçlı klinik nöroradyolojik bir antitedir. Sıklıkla akut hipertansiyon veya immüno-supresyon ile birlikte gelir. Genellikle iyi tanımlanır ve doğru tedavi edilirse geri dönüşümlü bir durumdur. Aksi takdirde gecikmiş veya yanlış tanı geri dönüşümsüz hatalara yol açabilir. Bu çalışmada, 32. gebelik haftasında gelişen ve yoğun bakıma eklampatik kriz düşünülerek kabul edilen bir olgu sunulmuştur.

**Anahtar Kelimeler:** Eklampsia; posterior lökoensefalopati sendromu

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Posterior reversible encephalopathy syndrome (PRES) is a well-recognized, clinical neuro radiological entity characterized by transitory neurological disturbances including altered mental status, seizures, headache and blurred vision, with acute or subacute onset.<sup>1</sup> It is more often associated with acute hypertension or immunosuppression.<sup>2</sup> Neuroradiological findings are mainly represented by bilateral involvement of the white and gray matter in posterior regions of the cerebral hemispheres.<sup>3</sup> It is usually considered to be a reversible condition if promptly recognized and correctly treated.<sup>4</sup> Otherwise, a delayed or incorrect diagnosis may lead to irreversible damage.<sup>5</sup>

Here, we present a case of PRES, which developed in 32 weeks of pregnancy who admitted to our intensive care unit (ICU) as supposed to eclamptic crisis.

## CASE REPORT

A 17-year-old woman, at the 32<sup>nd</sup> weeks of her first gestation, was admitted to emergency for convulsive status epilepticus (SE), confusion and cortical blindness. Her blood pressure was 140/90 mmHg and heart frequency was 88/minute. Initial treatment with magnesium sulphate was started with 4 g in 20 minutes. Despite treatment with intravenous magnesium sulfate (2 g/hour), the patient experienced additional seizures during transportation to the intensive care unite. Her airway was secured via rapid sequence induction with pentothal and isoflurane, then the trachea was intubated for emergent cesarean delivery. A 1945 -g female neonate was delivered with one and 5-minute Apgar scores of 6 and 8, respectively.

Perioperative laboratory studies included: no protein in the urine; aspartate aminotransferase (AST) 15 U/L; creatinine, 0.5 mg/dL; platelet count, 208.000 K/mm<sup>3</sup>; and negative toxicology screen. Despite the mother's presenting clinical picture, she was hemodynamically stable throughout surgery and required no intraoperative antihypertensive medications.

To fully elucidate a definitive diagnosis (to rule out intracranial hemorrhage or tumor as an etiologic source), magnetic resonance imaging (MRI) of the brain were obtained immediately after sur-

gery. Axial FLAIR weighted MRI showed hyper intense lesion in the subcortical region of right parieto-occipital region (Figure 1A-1B).

The patient did well at post surgery period but she reported left homonyms hemianopsia. Anti-edematous treatment with mannitol, anti-aritmic treatment with amiodarone, antiepileptic treatment with diphenylhidantoin was initiated and then continued. In the postoperative period; the patient had no proteinuria in the urine and she was also negative for toxicology screen. The patient was then discharged with no neurological deficit and remained asymptomatic on the outpatient service one month later.

## DISCUSSION

The pathophysiology of PRES is mainly attributed to failure of cerebral autoregulation and endothelial dysfunction.<sup>6</sup> The leading pathophysiologic hypothesis for PRES involves a breakdown of brain vascular autoregulation due to an increase in blood pressure above the patient's baseline level. It is believed that the posterior brain is at greater risk for autoregulation breakdown because it is less extensively innervated, rendering it less able to adjust to blood pressure fluctuations.<sup>7</sup> The failure of autoregulation results in vasogenic edema.<sup>8</sup> The presence of endothelial dysfunction decreases the threshold blood pressure at which vasogenic ede-

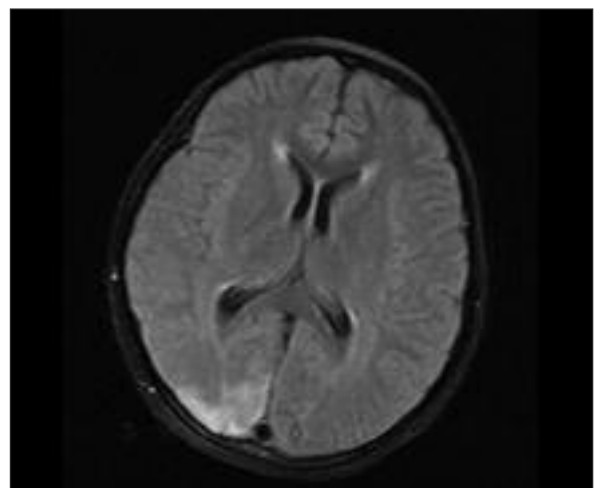
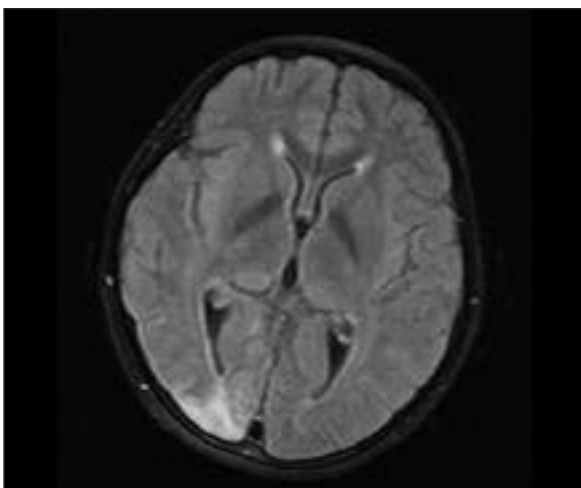


FIGURE 1A-1B: Axial FLAIR weighted MRI show right parieto-occipital hyperintense lesion.

ma occurs. For this reason, vasogenic edema may occur with mildly elevated or normal blood pressure.<sup>6,7</sup>

PRES is seen in the absence of hypertension in 20-40% of patients, and more recently it has been related to a wide variety of conditions, particularly pregnancy.<sup>9-11</sup> Multiple etiologies for PRES have been described.<sup>1,12</sup> Common causes include hypertensive encephalopathy, renal failure, and treatment with immunosuppressant or cytotoxic medications.<sup>1,12</sup> It has also been reported in intermittent porphyria, cryoglobulinemia, and in par-turient.<sup>1,3</sup>

PRES is diagnosed by cerebral imaging techniques.<sup>12,13</sup> The hallmark feature is bilateral symmetrical vasogenic edema in the territories of the posterior cerebral circulation (occipital and posterior parietal lobes).<sup>12,13</sup> The preferential distribution of these changes is in the subcortical white matter. The cerebral cortex is more tightly packed and organized than is the white matter, thereby tending to resist accumulation of large amounts of edema. Progressive edema therefore tends to migrate to subcortical white matter.<sup>1,12,13</sup> In patients with extensive involvement, other structures such

as brain stem, cerebellum, basal ganglia, and frontal (as observed in our case) lobes also can be affected.<sup>1,12</sup> Such changes are best characterized by fluid-attenuated inversion recovery (FLAIR) and diffusion imaging sequences.<sup>12</sup> FLAIR imaging was judged superior to proton density and T2-weighted spin-echo for detection of supratentorial brain lesions.<sup>12</sup> Due to the widespread utilization of MRI, this syndrome is becoming more frequently diagnosed. Nevertheless, PRES remains a relatively unfamiliar condition to clinicians.<sup>1,4</sup>

As a conclusion; Obstetricians and other healthcare professionals involved in the care of pregnant women need to be aware of this rare but increasingly reported syndrome of PRES. It is reversible when adequate treatment is promptly instituted, but delayed diagnosis and treatment can result in permanent neurological sequel.<sup>5</sup> If promptly recognized and treated (including delivery in the pregnant patient), resolution of neurologic signs occurs within two weeks, and MRI changes resolve within 8 days to 17 months after diagnosis.<sup>1,4,12,14</sup> This syndrome always should be kept in mind in the differential diagnosis of eclampsia in pregnant patients.

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