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Case Report

Treatment of postpartum posterior reversible encephalopathy syndrome (PRES) with peripheral block

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ABSTRACT

Posterior reversible encephalopathy syndrome (PRES) is associated with high blood pressure and various neurological symptoms. The most common neurological symptom is headache. It is usually diffuse and progressive at onset. If left untreated, symptoms progressively worsen over days to weeks. The excruciating headache associated with this syndrome may also trigger or worsen hypertension, thereby placing patients into a vicious cycle that complicates management. Preeclampsia is one of the reported causes of PRES. In developed countries, 16% of maternal deaths are attributed to hypertensive disorders. There is no specific, established antihypertensive regimen for the treatment of acute hypertension in patients with PRES. The use of intravenous antihypertensives may necessitate admission to the intensive care unit until a stable blood pressure target is achieved. Early recognition and treatment of PRES can help reduce the frequency of complications and improve patient outcomes.

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1. Introduction

Posterior reversible encephalopathy syndrome (PRES) encompasses a series of neuroradiological symptoms first described by Hinchey et al. in 1996 [1]. The most common symptoms include headache, encephalopathy, visual disturbances, altered consciousness, and focal neurological deficits. The characteristic radiological finding of the disease is edema in the occipitoparietal region. Predisposing factors include preeclampsia, eclampsia, hemolysis, elevated liver enzymes, and low platelets (HELLP) syndrome, the postpartum period, and the use of cytotoxic drugs [2]. In the management of PRES, in addition to careful treatment of hypertension, identifying, treating, and managing the underlying etiology is crucial [3].

Preeclampsia is end-organ damage that can be accompanied by proteinuria as a result of newly onset hypertension, affecting 3-8% of pregnant women [2]. It typically occurs at or after the 20th week of pregnancy, with delivery being the definitive treatment [4]. Severe cases of PRES can be life-threatening and may require aggressive supportive care at the intensive care unit level.

Supraorbital nerve block (SONB) is a regional technique used in the treatment of acute and chronic headaches. In this block, the targeted nerve is the supraor-

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bital nerve, which branches from the ophthalmic nerve, a division of the trigeminal nerve [5].

Greater occipital nerve block (GONB) is an increasingly popular approach for posterior headaches. The greater occipital nerve originates from the C2 and C3 spinal nerves and provides a significant portion of the scalp's innervation [6].

We planned to present our patient who was diagnosed with preeclampsia at the 24th week of pregnancy and admitted to the emergency department 21 days postpartum with complaints of headache, nausea, and vomiting, and was treated in the intensive care unit using regional techniques.

2. Case Presentation

Written informed consent was obtained for the case report. A 35-year-old pregnant patient with a history of hypertension was under regular follow-up and was diagnosed with preeclampsia at the 24th week of gestation. At the 37th week, she underwent a cesarean section under spinal anesthesia and delivered a healthy baby. The patient was discharged home after stabilization of her blood pressure.

On the 20th day post-discharge, she presented to the emergency department with complaints of dizziness, nausea, vomiting, and severe headache. On examination, her Glasgow Coma Scale (GCS) score was 15, and her blood pressure was measured at 180/95 mmHg. Laboratory tests revealed elevated liver enzymes (ALT, AST) without other pathological findings. Magnetic resonance imaging (MRI) showed edema in the anterior parieto-occipital region (Fig 1). With a normal neurological examination, the patient was diagnosed with PRES syndrome and was admitted to the intensive care unit for monitoring and treatment.

The patient was started on an infusion of nitroglycerin at 0.25 mcg/kg/min and nimodipine at 10 mcg/kg/h, along with non-steroidal anti-inflammatory drugs (NSAIDs) and tramadol. On the second day of intensive care admission, despite antihypertensive therapy, blood pressure remained uncontrolled. The patient experienced a stabbing, pulsatile, and diffuse headache localized to the occipital region, along with elevated liver enzymes. To avoid NSAIDs, a SONB and GONB were planned. Informed written consent was obtained from the patient for the procedure and for the use of clinical data for scientific publication.

After obtaining informed consent, the patient was placed in a seated position. Using ultrasound guidance, the superior orbital notch was identified bilaterally just above the globes, and 1.5 mL of 0.5% bupivacaine was injected to complete the SONB. For the GONB, the patient was repositioned posteriorly, and after identifying the semispinalis capitis muscle via ultrasound, 2 mL of 0.5% bupivacaine was injected between the obliquus capitis superior muscles. Following the procedure, the patient was repositioned with the bed elevated to 60 degrees. Approximately 25-30 minutes after the procedure, the patient experienced a reduction in headache intensity, followed by a gradual decrease in blood pressure. Effective analgesia was achieved. The procedures were repeated 12 hours later, leading to the discontinuation of antihypertensive treatment.

After 24 hours of monitoring, the patient's headache symptoms had regressed, blood pressure had stabilized, and liver enzyme levels showed a downward trend. Consequently, she was transferred to the general ward for further follow-up.

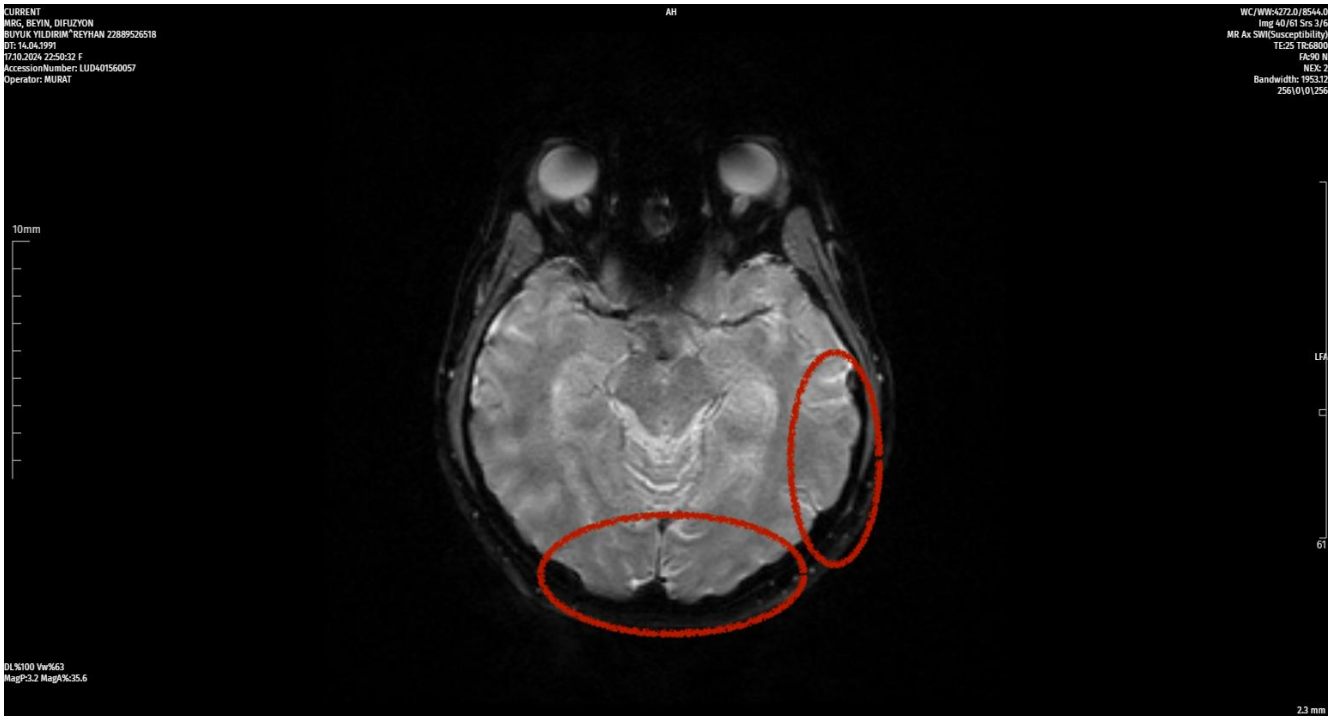

Fig. 1. Magnetic resonance imaging (MRI) showed edema in the anterior parieto-occipital region.

3. Discussion

Pregnancy-related complications pose significant health challenges. Studies have shown that pain experienced during this period plays a significant role in the development of chronic pain later in life as a form of learned pain [7].

Preeclampsia is one of the most feared complications of pregnancy. Patients with preeclampsia are discharged with specific recommendations. When postpartum patients present to the hospital, their medical history should be carefully reviewed, considering complications encountered during pregnancy and potentially related symptoms.

In cases of severe headache, after ruling out cranial emergencies, the patient's history should be assessed alongside headache characteristics such as distribution, exacerbation with movement, and duration to guide the preliminary diagnosis and treatment plan.

In our patient, a history of cesarean delivery under spinal anesthesia 20 days earlier and an alert mental state initially suggested a post-dural puncture headache. However, the fact that the headache did not improve with positional changes (standing up or lying down) led us to reconsider this diagnosis.

PRES is a clinical and radiographic diagnosis, making a thorough history and physical examination essential. In our case, the diagnosis of PRES syndrome was established based on the presence of preeclampsia, a known predisposing factor, and the characteristic MRI findings.

In their study, Triplett and colleagues recommend managing hypertension and providing symptomatic treatment in the management of the disease [8]. There is no specific, established antihypertensive regimen for the treatment of acute hypertension in patients with PRES. In our case, since the patient's hypertension could not be controlled with pharmacological agents and was thought to be pain-related, regional techniques were considered and applied for pain management. As a result, both pain relief and blood pressure stabilization were achieved.

Low-dose local anesthetics were used to effectively control the headache. The method we used in the treatment of PRES syndrome extends beyond the conventional indications for regional blocks. These techniques are generally employed in chronic pain management, and their use in symptomatic treatment remains limited.

In patients where NSAID use is contraindicated and opioid use is a concern, regional techniques should be considered for pain management. This approach is not only effective and rapid-acting but also enhances patient comfort, making it a promising alternative for selected cases.

4. Conclusions

With the increasing use of ultrasonography, we believe that regional techniques should not be overlooked in the management of refractory pain. They offer a viable and safe alternative, especially in cases where conventional pharmacologic treatments are inadequate or contraindicated. Their broader application in acute symptomatic scenarios like PRES may open new avenues for multidisciplinary pain management.

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Conflict of Interest
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Data Availability
The datasets generated and/or analyzed during the current study are not publicly available but are available from the corresponding author upon reasonable request.

AI Assistance
No AI-based tools were used in the preparation of this manuscript.

Ethics Approval and Consent to Participate
Informed consent form was obtained from the patient.

Author Contributions

Osman Celik: *conceptualization, data curation, formal analysis, validation, visualization, writing – original draft, writing – review & editing.*
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Ceren Karaduman: *investigation, methodology, project administration, resources, software, supervision, validation, visualization.*
Ayse Vahapoglu: *writing – original draft, writing – review & editing.*

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