



# Intracranial Tumor in a Patient with Eclampsia: The Importance of Differential Diagnosis

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## Abstract

Preeclampsia is a condition that usually occurs after the 20<sup>th</sup> week of pregnancy and is often accompanied by hypertension and proteinuria. Eclampsia is accompanied by convulsions. Presented herein is a case of a 32-year-old, 32-week pregnant woman, who presented with generalized tonic-clonic seizures and developed respiratory arrest, thus an emergency cesarean section was performed. The seizures did not stop in the postoperative period, and a brain tumor was diagnosed with magnetic resonance imaging. Therefore, every pregnant patient with convulsion, as in our case, should not only be considered as eclampsia but with other possible causes in the differential diagnosis.

**Keywords:** Pregnant, seizure, differential diagnosis

## INTRODUCTION

Preeclampsia is defined as hypertension (HT) with accompanying proteinuria or end-organ damage in a normotensive female after the 20<sup>th</sup> week of pregnancy (1). According to this definition, proteinuria is not excluded from the definition but is not an essential criterion. Pregnancy-related hypertensive diseases are the second most common cause of maternal death after thromboembolic diseases (2).

Preeclampsia is defined as the development of HT together with proteinuria after the 20<sup>th</sup> gestational week (3,4), and is seen in 2-3% of all pregnancies (5-7% of nulliparity pregnancies), wherein eclampsia develops in 2% (5). Generally, death occurs as a result of cerebral hemorrhage due to uncontrolled HT (systolic blood pressure of  $\geq 160$  mmHg). Cases of pre-eclampsia in the 2<sup>nd</sup> trimester have a worse prognosis than those after the 34<sup>th</sup> week. Symptoms usually recover within 48 hours after delivery (6). Eclampsia is the occurrence of generalized tonic-clonic convulsions, which cannot be explained by any other reason in a patient with preeclampsia. Generally, spontaneous recovery is achieved within 60 s and occasionally lasts for 3-4 min (7). The

definitive and only treatment for eclampsia is the delivery of the infant (8).

Presented herein is a case of a patient diagnosed with eclampsia, with convulsions continuing after cesarean section delivery, who was then determined with a frontal intracranial mass on the magnetic resonance imaging (MRI). This presentation aimed to emphasize the importance of differential diagnosis.

## CASE PRESENTATION

A 32-year-old female patient in the 32<sup>nd</sup> week of pregnancy, without a known history of chronic disease, presented at the emergency department having a generalized tonic-clonic seizure. An infusion of 5 gr IV magnesium sulfate ( $MgSO_4$ ) over 20 mins was started. However, with the development of respiratory arrest, orotracheal intubation was performed under emergency conditions. The blood gas values were observed as pH of 6.95, partial pressure of oxygen ( $PaO_2$ ) of 64 mmHg, partial pressure of carbon dioxide ( $PaCO_2$ ) of 90 mmHg, and bicarbonate ( $HCO_3^-$ ) of 19 mmol/L. The obstetric examination revealed fetal distress, thus an emergency cesarean section was performed with the



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diagnosis of eclampsia. The blood test results were normal: Aspartate aminotransferase: 20 U/L, alanine aminotransferase: 10 U/L, hemoglobin: 12.6 g/dL, and platelet: 235.000  $\mu$ L. Blood gas values during the procedure were: pH 6.87, PaCO<sub>2</sub> 81.1 mmHg, PaO<sub>2</sub> 48.7 mmHg, and HCO<sub>3</sub> 14.5 mmol/L and after 10 mins were: pH 7.4, PaCO<sub>2</sub> 36 mmHg, PaO<sub>2</sub> 405.8 mmHg, and HCO<sub>3</sub> 21.6 mmol/L. A healthy infant was delivered and the patient was extubated on the operating table, then transferred to the intensive care unit for advanced follow-up.

At postoperative 2 hours, despite normal blood tests and oxygen therapy using a mask, the orientation and cooperation were weak and the general condition was moderate. The patient was referred to the neurology department, which recommended administering 1 ampoule (10 mg) of diazepam in 150 cc mediflex and 3 ampoules (total 750 mg) of phenytoin in 500 cc of 0.9% NaCl in 45 mins. After the treatment initiation, the patient's level of consciousness started to recover, but she experienced another seizure during the treatment. The respiration worsened and the SpO<sub>2</sub> dropped, thus orotracheal intubation was applied and the patient was again referred to the neurology department. Cranial MRI and electroencephalography were recommended by the neurologist. On the same day, the patient recovered with full consciousness and was co-operative, thus extubated. A 2x1 tb of levetiracetam (Keppra® 500 mg) was started upon the recommendation of the neurologist. The patient was conscious, co-operative, oriented, and was followed up with TA: 113/65 mmHg, pulse: 87/min, SpO<sub>2</sub>: 99%, and clear diuresis. The postoperative 5<sup>th</sup>-hour urine test revealed trace amounts of protein and ketone, blood ++, erythrocytes were 17, and leukocytes were 0. On the following day, the patient no longer required intensive care and was transferred to the obstetrics postnatal ward.

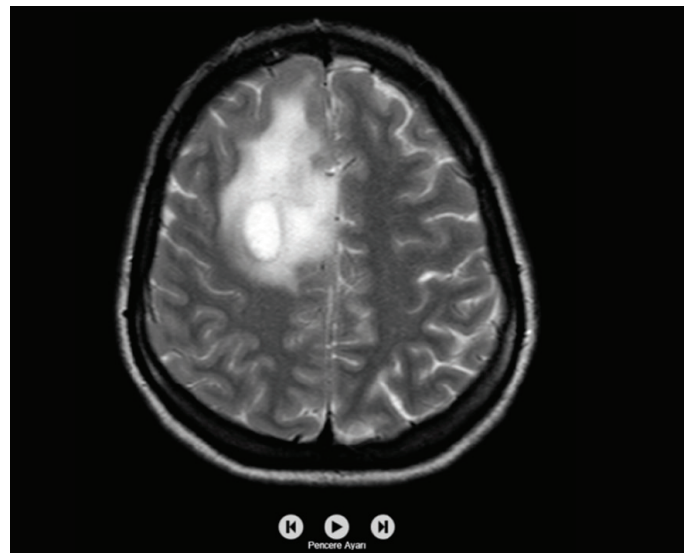
The cranial MRI evaluation revealed a mass lesion in the right frontal lobe parenchyma, within an area of parenchymal edema with margins that could not be differentiated from the edema (Figure 1, 2). The patient was evaluated as a frontal glial tumor and referred for brain surgery. The patient was operated on under elective conditions, was discharged without any sequelae, and was followed up by the brain surgeon.

## DISCUSSION

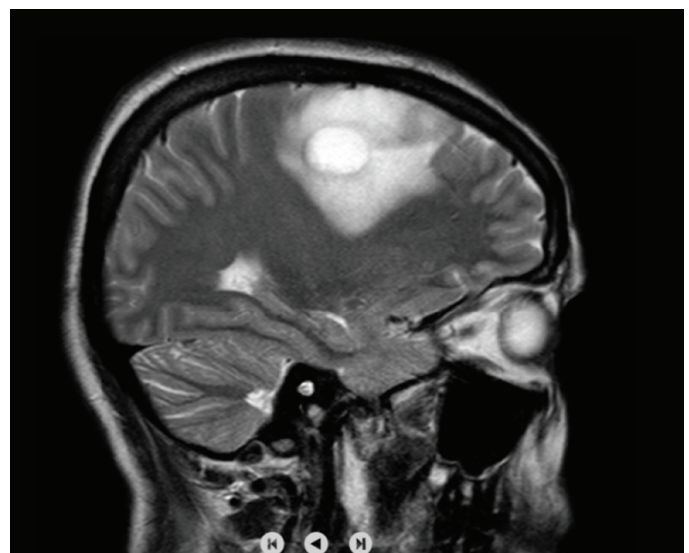
The patient was diagnosed with eclampsia, and as convulsions continued after the cesarean section delivery, an MRI was performed, which determined a frontal intracranial mass. This case report aimed to emphasize the importance of differential diagnosis.

In cases of eclampsia, without crisis and coma condition recovery, delivery of the infant is initiated as an intervention when the patient is hemodynamically stable. During the crisis and coma, findings of fetal distress are observed but are usually temporary.

The only treatment for uncontrolled preeclampsia is to terminate the pregnancy irrespective of the gestational week (9). Other causes of convulsions must be considered in the differential diagnosis (Table 1) (10). In the current case, an emergency cesarean section was performed as the fetal heart sounds decreased, fetal distress was observed, the mother developed respiratory arrest, and the definitive treatment for eclampsia is delivery of the infant (8).



**Figure 1.** Horizontal section brain MRI  
MRI: Magnetic resonance imaging



**Figure 2.** Sagittal section brain MRI  
MRI: Magnetic resonance imaging

**Table 1. Causes of seizures**

A. Primary (idiopathic)
B. Secondary (symptomatic)
1. Trauma
2. Tumors
3. Vascular events
a) Subarachnoid and intraparenchymal hemorrhage
b) Subdural and epidural hematoma
c) Stroke
d) Vasculitis
4. Infections
a) Meningitis
b) Encephalitis
c) Brain abscess
5. Metabolic
a) Hypoglycemia
b) Hyponatremia and hypocalcemia
c) Hypomagnesemia
d) Hepatic failure and uremia
6. Toxic
a) Cocaine and sympathomimetics
b) Tricyclic antidepressants
c) Anticholinergic drugs
d) Isoniazid
7. Eclampsia
8. Hypertensive encephalopathy

Brain MRI should be applied in patients who have undergone trauma, MgSO<sub>4</sub> treatment-resistant, and crisis development after the 24<sup>th</sup>-hour postpartum. The differential diagnosis is important. Seizures in patients with eclampsia are generally self-limiting in 60 s and occasionally last 3-4 mins. This period was longer in the current patient in the emergency department, and the development of respiratory arrest suggested a differential diagnosis. In the postoperative imaging of the current patient, an intracranial mass was determined, explaining the convulsions.

Due to the urgency and rapid deterioration of the general condition of the current patient, she was admitted immediately for surgery, but in cases that are not this severe, other reasons for convulsions should be determined. For treatable reasons, time should be allowed for better fetal development.

## CONCLUSION

The first was diagnosed as eclampsia for this pregnant patient with seizures; however, the nature of this case demonstrates the need to consider other reasons that may cause convulsions.

### Ethics

**Informed Consent:** Informed consent was obtained from the patient that it would be a case report.

**Peer-review:** Externally peer-reviewed.

### Authorship Contributions

Surgical and Medical Practices: F.G., Concept: F.G., Design: F.G., E.A.T., Data Collection or Processing: F.G., E.A.T., Analysis or Interpretation: F.G., E.A.T., Literature Search: F.G., E.A.T., Writing: F.G.

**Conflict of Interest:** No conflict of interest was declared by the authors.

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