

# **Pontine-bulbar Hemorrhage in a Complicated form of Preeclampsia with Eclampsia and HELLP Syndrome “Case Report”**

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## **Authors' contributions**

*This work was carried out in collaboration among all authors. Authors EAN and ZH conceived of the presented idea. Author EAN developed the theory and performed the computations. Authors EB, GS and EHZ verified the observation and investigate the intra cerebral hemorrhage. Author TSA supervised the findings of this work. All authors discussed the results and contributed to the final manuscript. All authors read and approved the final manuscript.*

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**Case Report**

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## **ABSTRACT**

The mortality rate from stroke in pregnant women is 1.4 per 100,000 births. Vascular malformations are the most common cause of hemorrhagic stroke in this population; preeclampsia and other risk factors have been identified. However, the cause of almost one in four strokes is unknown. Spontaneous intracranial hemorrhage (ICH) is less common but causes significant morbidity. Pontine-bulbar hemorrhage in the absence of trauma or dislocation of the vessels is an uncommon complication during pregnancy. Hypertension is the typical cause, Less frequently, these

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hemorrhages accompany a hemorrhagic diathesis or vascular malformation. We report the case of pontine-bulbar hemorrhage following an eclampsia attack. This case report aims to shed light on this complex medical situation, highlighting the need for careful consideration of the potential risks and benefits of treatment options.

**Keywords:** Pontine-bulbar; eclampsia; HELLP syndrome; pregnancy; case report.

## 1. INTRODUCTION

Intracranial hemorrhage during pregnancy is a rare but serious medical condition that can pose significant risks to both the mother and the developing fetus. This case report aims to shed light on this complex medical situation, highlighting the need for careful consideration of the potential risks and benefits of treatment options. Pre-eclampsia is a specifically obstetric pathology, the prevalence of which is estimated to be between 1 and 2% of pregnant women and which, in its severe forms, can be life-threatening for the mother. Eclampsia is defined as the occurrence of convulsions in a woman with preeclampsia [1,2]. The relationship between eclampsia and cerebral hemorrhage has been recognized [1].

## 2. PATIENT AND OBSERVATION

### 2.1 Patient Information

This is a 30-year-old parturient, single nulliparous, without cardiovascular risk factors, not vaccinated against SARS-CoV-2, current pregnancy was unknown. Admitted to the obstetrical emergency room for eclampsia, the history of the disease goes back to the day of her admission by the installation of a generalized tonic-clonic crisis with reversion of the eyes and loss of urine in a context of apyrexial, the evolution was marked by the resumption of the consciousness after a post critical coma of 10 minutes.

### 2.2 Clinical Findings

The clinical examination on admission found a blood pressure of 210/120 mmHg, heart rate of 110 beats per minute with a regular sinus rhythm and a saturation of 98% with room air, the Glasgow score was 15 in the post-critical period, the patient reported neurosensorial signs such as headache and ringing in the ears with epigastralgia, The neurological examination revealed a flaccid left hemiplegia with abolished ROT on the left and sharp on the right, the

cranial pairs were intact, there were no language or comprehension disorders, the cardiovascular and respiratory examination was without particularity. The obstetrical examination showed an estimated gestational age of 25 weeks of amenorrhea, the uterine height was 20 cm, the fetal heart sounds were not perceived, the cervix was long and closed posteriorly, the parturient had a pelvis and a perineum without any particularities.

### 2.3 Diagnostic Assessment

The obstetrical ultrasound scan showed a FetalDeath In Utero, a biparietal diameter of 54 mm, an abdominal contour of 201 mm, and a femoral length of 31 mm The patient was admitted to the intensive care unit for management. The biological workup showed a Hb level of 13 g/dl, platelet count of 93,000, blood urea level of 0.33 g/l, creatinine level of 12.1 mg/l, transaminase level of 3 times normal, LDH level of 1,400 mg/l, bilirubin level of 16 mg/l. In view of the neurological deficit, a cerebral angiography and MRI was performed, showing a pontine-bulbar hemorrhage (Fig. 1) and a vascular encephalopathy (Fig. 2). The angiography by MRI did not show any arteriovenous malformations.

### 2.4 Therapeutic Interventions

In the intensive care unit, the patient was put on antihypertensive treatment as well as magnesium sulfate with an electric syringe pump and protection against thromboembolic disease by means of compression stockings.

In view of the stability of the blood pressure figures and the improvement of the cytotoxicity and the platelet count, the decision was made to favor the vaginal route, the gynecological examination did not find any contraindication to the vaginal route.

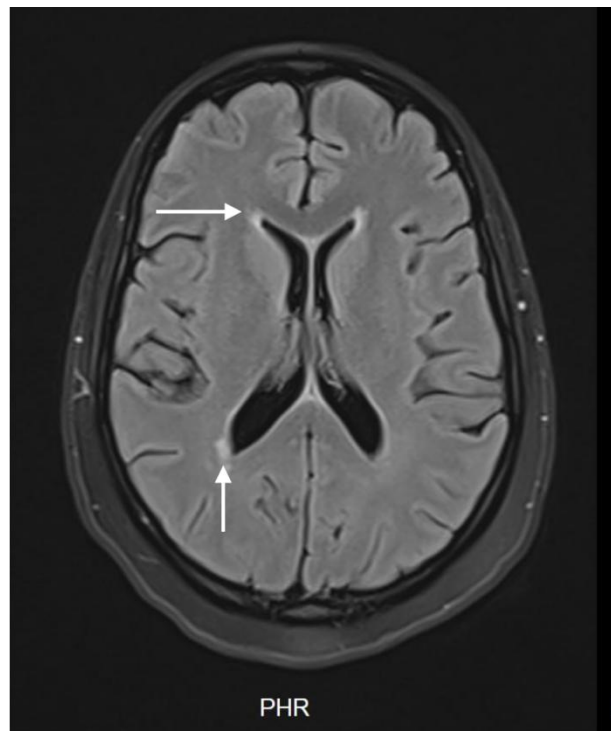
### 2.5 Follow-up and Outcome of Interventions

The patient expelled a stillborn baby at 12 hours of her admission to the intensive care unit.

The patient continued to have motor and sensory disturbances, and after discharge from the ICU, the patient was referred to neurology for appropriate care and psychomotor rehabilitation.



**Fig. 1. Brain Magnetic resonance imaging showing a pontine-bulbar hemorrhage (white arrow)**



**Fig. 2. Brain Magnetic resonance imaging showing a vascular encephalopathy (white arrow)**

## 2.6 Patient Perspective

The patient, initially admitted in a state of fainting, testifies after she gradually regained consciousness, which was initially manifested by a smile showing her satisfaction, and then a verbal response, giving her testimony an emotional element and a lot of gratitude that was devoted to the medical team and appreciation of the development of medicine,

## 3. DISCUSSION

ICH in pregnancy can be categorized into four subtypes: subarachnoid hemorrhage, intraparenchymal hemorrhage, epidural hematoma, and subdural hematoma. The incidence of ICH in pregnancy is estimated to be around 8.5 per 100,000 pregnancies, with a higher incidence in the postpartum period. Risk factors for ICH in pregnancy include hypertension, preeclampsia, eclampsia, coagulopathy, and arteriovenous malformations [3]. The case we report had 3 risk factors: hypertension, eclampsia and HELLP syndrome which is a coagulopathy disorder. Preeclampsia is usually clinically asymptomatic but can cause symptoms of neurological dysfunction such as headache, blurred vision, and disturbance of consciousness. Eclampsia is a seizure associated with preeclampsia, which usually, but not always, presents with the neurologic symptoms described above. Some patients also had stroke-like episodes with focal neurologic deficits. Increased systemic vascular resistance in preeclampsia is associated with hypertension and decreased cardiac output and plasma volume [4].

The presentation of ICH in pregnancy can be similar to that in non-pregnant patients, with symptoms such as headache, seizures, and altered mental status. However, the diagnosis and management of ICH in pregnancy can be challenging due to the need to balance the risks to both the mother and the fetus. Imaging studies, such as CT and MRI, can aid in the diagnosis of ICH in pregnancy. Treatment of ICH in pregnancy involves a multidisciplinary approach, with close monitoring of both the mother and fetus [4,5].

The occurrence of hypertension during pregnancy exposes an increased risk of ICH [5], in our patient the pregnancy was unknown and there was no screening for pre-eclampsia. A 2011 study showed that the stroke rate is

estimated to be 25-34 cases per 100,000 deliveries, as well as the direct involvement of hypertensive disorders in the occurrence of ICH [6]. Intracranial hypertension in eclampsia must be closely managed with antihypertensive and anticonvulsant drugs, including magnesium sulfate [7]. In this reported case, the patient received nicardipine-based antihypertensive therapy with an automatic pulse injector, stopped the eclamptic crisis with a loading dose of magnesium sulfate, and then maintained the dose with an automatic pulse injector. Hemorrhagic lesions have a particularly poor prognosis. Because eclampsia is most often a complication of poorly attended pregnancies, the most effective strategy for detecting preeclampsia is to monitor blood pressure levels during the second and third trimesters of pregnancy [8].

Ascanio et al. (2019) recommend that treatment decisions should be made on a case-by-case basis, taking into account the severity of the hemorrhage, gestational age, and maternal and fetal status. A multidisciplinary approach is essential to ensure the best possible outcomes for both the mother and the fetus [5].

The neurosurgical management of spontaneous ICH did not differ significantly from the neurosurgical management of ICH in non-pregnant patients. In neurosurgical cases involving pregnant women, a multidisciplinary team is required to assess and care for the patient; treatment decisions are based on the mother's clinical presentation, gestational age, and fetal status [5]. In the case reported, the neurosurgeons have not retained a surgical indication. The size of the hematoma and its location do not allow an intervention.

Several therapeutic agents are used as preventive measures for eclampsia. Currently, aspirin therapy has been shown to be effective in terms of prevention [9,10]. Indeed, a prospective randomized study showed a significant decrease in the rate of pre-eclampsia in the group of women with a major obstetrical history treated with 150 mg/d of aspirin and 300 mg/d. In practice, doses of 50 to 100 mg/d are used at 14 weeks if there is a pathological history or at 22 weeks if the doppler is pathological [11].

## 4. CONCLUSION

In conclusion, ICH in pregnancy is a serious complication that requires prompt diagnosis and

management. Our case suggests the importance of A multidisciplinary approach to ensure the best possible outcomes for both the mother and the fetus. and the need for thorough laboratory tests and close monitoring of patients with headache and hypertension.

## INFORMED CONSENT

Clear consent was obtained from the patient before publication of this observation.

## ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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