

Successful Medical Management of Eclampsia-Induced Severe Intraventricular Haemorrhage in a Resource Limited Setting: A Case Report

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How to cite this paper: Ofeh, M.A., Nzometia, C.Y., Berrinyuy, E.N., Njel, K.G., Pondji, E.W., Ambassa, M.E., Shumbang, Q.-J.T., Kouam, B.B., Elong, F. and Nana Njamien, T. (2026) Successful Medical Management of Eclampsia-Induced Severe Intraventricular Haemorrhage in a Resource Limited Setting: A Case Report. *Open Journal of Obstetrics and Gynecology*, 16, 1217-1223.
<https://doi.org/10.4236/ojog.2026.169112>

Received: July 29, 2026

Accepted: September 6, 2026

Published: September 9, 2026

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Abstract

Background: Preeclampsia is one of the hypertensive disorders in pregnancy which is still a leading cause of maternal mortality. It can be complicated by eclampsia and other neurological manifestations. Intracerebral haemorrhage is a rare complication, for which intraventricular haemorrhage has high mortality. **Case Presentation:** A 32-year-old multiparous woman was referred to our service in the immediate postpartum period after having a seizure 10 minutes after delivery. She received anticonvulsants, antihypertensives and was admitted to our ICU. A Brain CT scan revealed the presence of severe intraventricular haemorrhage for which she was treated with mannitol. The evolution was favourable and she was discharged on day 10 postpartum. On follow-up 2 weeks after discharge, she had no severe signs or neurological signs. **Conclusion:** Timely diagnosis is important, conservative management with anticonvulsants, anti hypertensives, control of raised intracranial pressure symptoms and multidisciplinary care can result in favourable outcomes in cases of eclampsia with intracranial haemorrhage.

Keywords

Preeclampsia, Eclampsia, Intracerebral Haemorrhage, Intracranial

Haemorrhage

1. Introduction

Hypertensive disorders in pregnancy are the second leading cause of maternal mortality worldwide. [1]. There are 4 main classifications of hypertensive diseases in pregnancy depending on the period of onset of hypertension or manifestations [2]. Preeclampsia can present with signs of noble organ damage, one of which is the brain and which will manifest neurologically with symptoms such as visual disturbances, headache, seizures and altered conscious [3] and has a high mortality of 11% to 14% worldwide [4].

Intracerebral haemorrhage (ICH), is a serious complication of preeclampsia, with incidence ranging from 3.5 to 26 cases per 100,000 deliveries [5] [6]. This rare condition is associated with significant maternal mortality, estimated to be 9% - 38% [5]. Intracerebral haemorrhage in pregnancy usually occurs as a result of gestational hypertension, preeclampsia, eclampsia, rupture of arteriovenous malformations, cerebral aneurysms, or cerebral venous sinus thrombosis [6]. The pathophysiological mechanisms underlying intracerebral haemorrhage in preeclampsia and its associated disturbances to seizures, posterior reversible encephalopathy syndrome (PRES), and stroke have been related to Blood brain barrier dysfunction [3].

Intraventricular haemorrhage (IVH) has been reported to occur in up to 45% of ICH and has been associated with significantly worse outcomes [7]. Depending on the manifestations and imaging findings, management may be conservative or necessitate surgery as described before [7]. We present the case of post-partum eclampsia complicated by IVH managed medically in a health facility in Buea, Cameroon.

2. Case Presentation

A 32-year-old woman G3P2012 was brought in upon referral from another health facility for loss of consciousness. She earlier consulted at the said facility complaining of labour like pain at 38 weeks 4 days of amenorrhea and had given birth a few minutes after her arrival there. Ten minutes after delivery she was reported to have had a tonic clonic seizure that lasted about 10 minutes without regaining consciousness. She was administered Magnesium sulphate and diazepam, intubated and referred to our facility.

She had attended 6 antenatal consultations beginning at the 13th week of gestation. Normal blood pressure values were recorded throughout. A urine dipstick was negative for albumin and sugar at 31 weeks during antenatal consultations. She had a vaginal delivery at term in her first pregnancy and the second ended in a spontaneous abortion. No history of hypertension was noted in both pregnancies and no chronic medical conditions were noted.

On physical examination, she had an altered general state with a Glasgow coma scale of 6/15. Initial blood pressure was 133/87 mmHG, pulse 101 beats per minute, respiratory rate 24 cycles per minute, temperature 41.6°C, Oxygen saturation 90%. Conjunctivae were pink, anicteric sclerae, reactive pupils. Chest examination was normal. The abdomen was slightly distended with a contracted non gravid uterus of fundal height 21 cm. Vulva soiled with lochia rubra, having one sanitary pad in place. The lower limbs had no oedema.

An initial diagnosis of postpartum eclampsia was made based on the occurrence of seizures followed by coma and despite the absence of initially raised blood pressure. Differentials being severe malaria with neurological manifestations, amniotic fluid embolism and stroke. The patient was admitted to the intensive care unit (ICU). Laboratory tests requested on entry and results requested were: urea 0.41 g/L, creatinine 7.2 mg/L, ASAT 36 IU/L, ALAT 29 IU/L, FBC platelets 201,000/uL and haemoglobin 10.4 g/dL, malaria parasite negative, C Reactive Protein 6 mg/L, prothrombin time 12.8 s, activated partial thromboplastin 30.3 s and urine dipstick with 2+ proteinuria. A head CT scan was equally requested. She was placed on oxygen therapy at 6 L per min, a nasogastric tube was placed and she was given injectable paracetamol 1 g/6hourly. Uterotonics misoprostol 600 micrograms were added Intrarectally. Monitoring was being carried out in the ICU. Two hours after admission blood pressure rose to 145/83 mmHg. She was then placed on antihypertensive Nicardipine with an electric syringe and MgSO₄ Loading dose (5 g in each buttock and 4 g intravenously) and the maintenance doses (5 g/4hours IM).

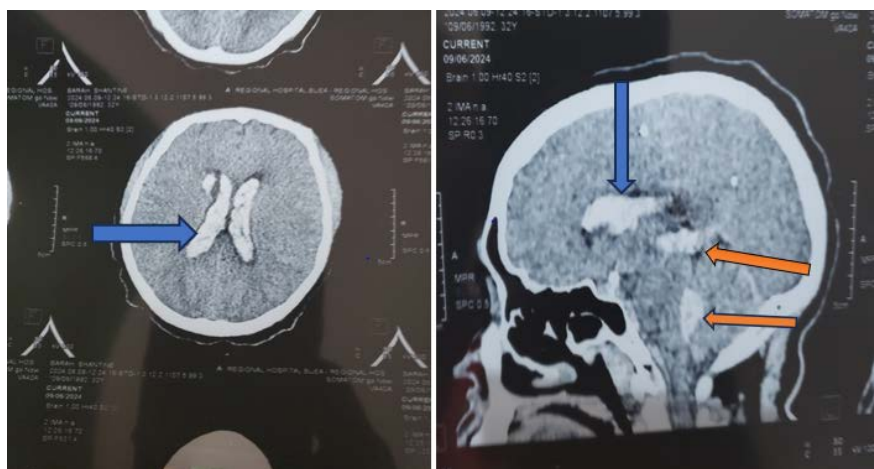


Figure 1. Axial and Sagittal views of Cerebral CT scan showing haemorrhage in all 4 ventricles. Blue arrows: Lateral ventricles, orange arrows: 3rd and 4th ventricles.

On day 2 of admission, there was no net amelioration with GCS of 13/15. She was extubated. Blood pressure values were normal. The CT scan results revealed an intracerebral haemorrhage in the thalamic area with intraventricular extension (IVH). (**Figure 1**). A neurological consultation was sought. The LeRoux score was evaluated at 13/16, but no mass effect nor midline shift nor hydrocephalus was

observed. Also there was a significant improvement in the patient's clinical state. To her treatment were added Mannitol 20% 200 ml every 12 hours passed intravenously over 30 mins, hydroxyzine 25 mg half tablet 8 hourly, and nicardipine tablet 20 mg 1 tab 6 hourly. Overall general state and blood pressures normalised but headache persisted graded by the patient at 5/10 in a verbal numerical scale. On day 5 the patient had another tonic clonic seizure which lasted a minute. Care was continued in the ICU. Days 6 and 7 were remarkable for headaches with reduced intensity, however the GCS was 15/15, there was no motor deficit noted and no seizures were recorded. The patient was discharged home on day 10 with oral paracetamol and nicardipine and was seen again one week after discharge at neurological and gynaecological follow up where she had normal blood pressure values and no signs of severity.

3. Discussion

Preeclampsia is a hypertensive disorder of pregnancy occurring in about 3% to 8% of pregnancies worldwide and has several complications including eclampsia [8] [9]. Eclampsia, a complication of preeclampsia is defined clinically as the new onset of seizures or coma in a patient with preeclampsia [10]. Our patient had presented with eclamptic seizures, the most common complication of preeclampsia found in a study in Northern Cameroon [11]. Our patient equally had no history of previous hypertensive disease nor episodes of hypertension noted during her antenatal consultations as has been reported before [12]. The occurrence of seizures in the immediate postpartum period is contrary to the findings of a study where most patients presented with delayed postpartum eclampsia between 7 and 10 days [12]. This lets us think that events leading to the seizures had probably begun during labour or sometime before. The patient was in coma after her first seizure, had an initial normal blood pressure reading and hyperthermia. Coma or post ictal loss of consciousness can occur after an eclamptic seizure [9]. Our patient's initial blood pressure reading may have been normal as a result of the Magnesium Sulphate dose which she received after the seizure as Magnesium sulphate by its mechanism of action also helps in better regulation of blood pressure [13]. However, she may have developed seizures without hypertension as some patients do [9]. Hyperthermia is not a classical finding in eclampsia except associated with an infectious origin or in cases of complication by intracranial haemorrhage and it has been reported in up to 71% of cases of ICH of non-infectious origin in one study [14]. On evaluation of the severity of the IVH we had a LeRoux score of 13/16 (Severe) which is associated with higher risks of death.

The patient was being managed as postpartum eclampsia despite initial normal blood pressure values and 2+ proteinuria only. There were no other paraclinical criteria for severity. We did not have a baseline creatinine level to compare for doubling in the initial reperussion workup. All were all normal except 2+ proteinuria and CRP level which were slightly elevated. This can be explained by the stress and trauma of labour. Malaria parasite test was equally negative. The cere-

bral CT scan done revealed the presence of an intraventricular haemorrhage (IVH) (**Figure 1**) which is a rare complication of eclampsia reported [4] [15] and occurs in up to 45% of cases of ICH and is usually of worse outcome. [16] [17].

Initial supportive measures are very important in a patient with eclampsia [9]. Our patient received these in the intensive care unit, as she was intubated and placed on oxygen therapy and nasogastric tube. Magnesium sulphate is the most commonly used antiseizure medication in eclampsia. Our patient had received a non documented initial dose of magnesium sulphate and diazepam before arrival. Diazepam should be used as an alternative in situations where seizures persist after 20 minutes, or more than 2 seizures occur despite magnesium therapy [9]. Despite these doses, we administered a loading dose and maintenance doses of magnesium sulphate a few hours after admission and monitored for signs of toxicity. Our patient's fever was corrected with antipyretics as recommended.

After a neurological review of the CT scan, we had a high LeRoux score of 13/16. Higher scores have been associated with complications such as hydrocephalus requiring ventriculoperitoneal shunt and death [18]. Surgery for ventricular drainage should be performed in patients with IVH/ICH with hydrocephalus contributing to decreased level of consciousness [7]. However, the decision to manage medically was supported since the patient had major clinical improvement (GCS improvement) and neither mass effect nor midline shift nor hydrocephalus was observed. Mannitol was added to the patient's treatment to reduce intracranial pressure and alleviate their symptoms. The use of hyperosmolar agents in reducing intracranial pressure is a weak recommendation by the American Heart Association and American Stroke Association for the management of raised intracranial pressure [7]. However, a study found mannitol and hyperosmolar saline to be effective in reduction of intracranial pressure [19], and mannitol it was used here due to its availability. The persistent headache and second seizure experienced by this patient may have been as a result of intraventricular haemorrhage and raised intracranial pressure. Patients with intracerebral haemorrhage have a 30-day post-ICH risk of seizure around 8% [16].

4. Conclusion

Here we show that intraventricular haemorrhage is a rare but life-threatening complication of eclampsia. Though high IVH scores predict poor outcome, it can however be managed conservatively depending on patient symptoms and evolution. Timely diagnosis is important, anticonvulsants, anti hypertensives, control of raised intracranial pressure symptoms and multidisciplinary care can result in favourable outcomes. Follow-up is an integral part of care.

Ethical Consideration

The patient provided written informed consent for publication with all identifying information anonymized to protect her privacy. Management decisions were made in accordance with current guidelines, and reporting this case contributes

to medical knowledge while respecting the patient's autonomy.

Author Contributions

MAO: Case management, conception of paper and write up of initial draft.

CYN, ENB: Case management, write up, proof reading.

KGN: Case management, proof reading.

EWP, MEA, QTC, BBK: Case management.

FE, TNN: Proof reading and corrections of the final draft.

Conflicts of Interest

The authors declare none.

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