ORIGINAL RESEARCH PAPER
Volume - 15 | Issue - 08 | August - 2026 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

SUCCESSFUL MANAGEMENT OF SEVERE PRE-ECLAMPSIA WITH HELLP SYNDROME COMPLICATED BY INTRAVENTICULAR HEMORRHAGE: A RARE NEUROLOGICAL COMPLICATION

Obstetrics & Gynaecology

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ABSTRACT

Severe pre-eclampsia is a complex multisystem disorder of pregnancy and a significant contributor to maternal morbidity and mortality worldwide1. Thrombocytopenia is a recognized marker of disease severity and may predispose affected women to serious maternal complications[1,8]. Neurological manifestations, including eclamptic seizures, cerebral venous sinus thrombosis, and intracranial hemorrhage, represent rare but devastating complications associated with substantial clinical challenges[2-4,10]. Early recognition, comprehensive evaluation, vigilant monitoring, and timely therapeutic intervention are essential to mitigate adverse outcomes1,2. Increased awareness of these uncommon yet life-threatening neurological complications is critical for facilitating prompt diagnosis, optimizing management strategies, and improving maternal prognosis in patients with severe pre-eclampsia[1,2].

KEYWORDS

INTRODUCTION

Severe pre-eclampsia is a serious hypertensive disorder of pregnancy and a major cause of maternal and perinatal morbidity and mortality worldwide[1,9].It may involve multiple organ systems, including hematological, hepatic, respiratory, and neurological systems[1].Neurological complications are uncommon but potentially catastrophic manifestations of severe pre-eclampsia[2,10]. Among these, intracranial hemorrhage, particularly intraventricular hemorrhage, is exceedingly rare and carries significant morbidity and mortality[10].**Reported incidence of Intraventricular Hemorrhage is of 0.5-2% of women with eclampsia[9,10].**In many tertiary care studies from developing countries, the incidence is around 0.8-0.9%[9]. HELLP Syndrome is one of the most common hematological abnormalities associated with severe pre-eclampsia and is considered an important marker of disease severity[8].

CASE REPORT

A 25-year-old woman, Gravida 2 Para 1 Living 1, at 31 weeks of gestation, was referred to our tertiary care center from a peripheral hospital with a diagnosis of severe pre-eclampsia complicated by HELLP Syndrome, moderate anemia, mild hepatomegaly, right-sided pleural effusion, severe oligohydramnios, and intrauterine growth restriction (IUGR) for further management.

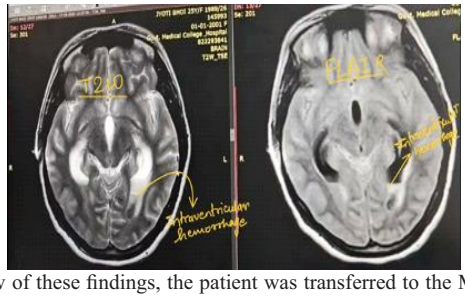
On admission, the patient had persistently elevated blood pressure. Laboratory investigations revealed hemoglobin of 7.9 g/dL, platelet count of 27,000/cumm [**Mississippi Classification Class 1 { Severe}]** [8]and absolute platelet count of 40,000/cumm.Elevated liver enzymes in Liver function tests { AST= 49.7 u/L and ALT=43.6 u/L}, renal function tests, and coagulation profile (PT/INR) were within normal limits. Prior to referral, she had received 2 units of packed red blood cells (PRBCs) and 6 units of random donor platelets (RDPs).

After admission to our center, optimization was undertaken with transfusion of 1 unit PRBC, 10 units RDPs, and 20% human albumin. Following multidisciplinary assessment and stabilization, Patient taken for planned cesarean section and which was uneventful. A female child 1.9 kg was delivered and shifted for appropriate neonatal care.

In the postoperative period, the patient developed two episodes of generalized tonic-clonic seizures (GTCS). She was immediately intubated, sedated, and transferred to the Trauma Intensive Care Unit (TICU) for further management. Despite discontinuation of sedation, the patient remained neurologically unresponsive for four days, prompting further evaluation.

Magnetic Resonance Imaging (MRI) of the brain revealed:

- Cerebral venous sinus thrombosis (CVST)
- Intraventricular hemorrhage involving all four ventricles
- Subarachnoid hemorrhage along the bilateral cerebral convexities
- Cytotoxic edema involving the splenium of the corpus callosum



In view of these findings, the patient was transferred to the Medical Intensive Care Unit (MICU) for specialized neurological management. Multidisciplinary consultations with Neurology and Neurosurgery teams were obtained, both of which recommended conservative medical management.

Anticoagulation therapy was initiated with Inj. Heparin thrice for one day, followed by Tablet Dabigatran for eight days. Measures to reduce cerebral edema included administration of Inj. Mannitol with gradual tapering, followed by oral Acetazolamide (Diamox). Simultaneously, an extensive thrombophilia workup including Protein C, Protein S, Antithrombin III, Homocysteine, Cardiolipin IgG and IgM antibodies, and Antiphospholipid antibodies (IgG and IgM) was performed to identify any underlying prothrombotic state. With timely diagnosis, intensive critical care support, and coordinated multidisciplinary management involving Obstetrics, Critical Care Medicine, Neurology, Neurosurgery, and Hematology teams, the patient showed gradual neurological recovery and achieved a favorable maternal Outcome.

DISCUSSION

Severe pre-eclampsia is a multisystem disorder characterized by endothelial dysfunction, vasospasm, and activation of the coagulation cascade, leading to significant maternal and fetal morbidity[1,8]. Cerebral venous sinus thrombosis (CVST) is an uncommon but serious cerebrovascular complication during pregnancy and the puerperium[2-4,7]. Pregnancy itself is a hypercoagulable state due to physiological changes in coagulation factors, reduced fibrinolysis, and venous stasis[6,7]. In the presence of severe pre-eclampsia, endothelial injury and

platelet activation further increase the risk of thrombotic events[1,8]. Neurological complications are among the most feared consequences of severe pre-eclampsia and contribute substantially to maternal mortality[1,10].

This case represents an exceptionally rare and challenging clinical scenario involving severe pre-eclampsia with thrombocytopenia complicated by the coexistence of cerebral venous sinus thrombosis (CVST) and intraventricular hemorrhage (IVH). The simultaneous occurrence of these two entities posed a significant therapeutic dilemma, as CVST conventionally requires anticoagulation to prevent thrombus propagation[2,3,12], whereas IVH demands caution to avoid worsening intracranial bleeding[2,4]. The presence of severe thrombocytopenia further increased the complexity of management and heightened the risk of both thrombotic and hemorrhagic complications[8].

An important learning point from this case is the role of early neuroimaging in patients with severe pre-eclampsia/eclampsia who demonstrate atypical neurological features or delayed neurological recovery[2,3]. Although eclamptic seizures are a well-recognized complication of severe pre-eclampsia[1], persistent unconsciousness following seizure control should prompt evaluation for alternative intracranial pathologies [2,4]. In the present case, the patient's inability to regain consciousness despite discontinuation of sedation raised suspicion of an underlying neurological event. Timely MRI of the brain established the diagnosis of cerebral venous sinus thrombosis with associated intraventricular and subarachnoid hemorrhage, findings that significantly altered subsequent management[2-4]. Early identification of these rare neurological complications enabled appropriate multidisciplinary intervention, resulting in gradual neurological recovery and a favorable maternal outcome[2,5].

This case therefore highlights that neuroimaging should not be delayed in patients with severe pre-eclampsia/eclampsia who exhibit persistent altered sensorium, recurrent seizures, focal neurological deficits, or unexplained neurological deterioration[2,3].

CONCLUSION

Severe pre-eclampsia complicated by thrombocytopenia can, albeit rarely, culminate in catastrophic neurological sequelae such as cerebral venous sinus thrombosis (CVST) and intracranial hemorrhage, posing significant diagnostic and therapeutic challenges[2-4]. This case highlights the necessity for maintaining a high index of clinical suspicion in patients demonstrating delayed neurological recovery following eclamptic seizures[1,10]. Early and timely neuroimaging was pivotal in establishing the diagnosis and facilitating prompt initiation of targeted management[2,3]. Successful maternal outcome was achieved through a multidisciplinary approach involving critical care support, individualized therapeutic decision-making, and close interdisciplinary coordination[2,5,12]. This case reinforces that even in rare and life-threatening neurological complications associated with hypertensive disorders of pregnancy, early recognition and timely intervention can significantly improve maternal prognosis and clinical outcomes[1,2].

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