CASE REPORT

Preeclampsia with Hemorrhagic Stroke: A Case Report of a Woman's Perilous Journey through Motherhood with a Miraculous Ending

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Abstract

Aim and objective: The aim of the study was to highlight the infrequent occurrence and timely multidisciplinary management of hemorrhagic stroke in preeclampsia (PE), thereby averting serious maternal and fetal morbidity and mortality.

Background: Hemorrhagic stroke is a result of severe PE, which is a known but fortunately uncommon complication. In comparison with nonpregnant women, stroke rates are relatively rare during pregnancy. Despite the high maternal and fetal mortality rates in such a scenario, we report a case where the outcome for both mother and infant was excellent.

Case description: We report the case of a 23-year-old primigravida who presented at 32 weeks 6 days period of gestation with sudden onset of right-sided hemiplegia associated with aphasia and blood pressure (BP) of 200/120 mm Hg. Cerebral computed tomography (CT) scan confirmed a left frontoparietal lobe parenchymal hemorrhage with intraventricular extension. Emergency Cesarean delivery was done followed by left frontotemporoparietal decompression craniotomy with intracranial hemorrhage (ICH)'s evacuation. She recovered completely without any neurological deficit.

Conclusion: Acute cerebrovascular accidents are a challenge in both diagnosis and management when it involves a pregnant woman. Early diagnosis using CT and a multidisciplinary approach will help reduce maternal mortality and morbidity in cases where the stroke is suspected.

Clinical significance: The significance of optimal control of BP in patients with hypertensive pregnancy disorders cannot be overemphasized. As per the primary prevention, the patient's education at first contact with health care about the PE is a sine qua non, emphasizing antihypertensive compliance.

Keywords: Maternal and perinatal outcome, Preeclampsia, Stroke.

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Background

In India, the incidence of preeclampsia (PE) is reported to be 8–10%.[1] PE can cause considerable morbidity and mortality in both the mother and the fetus, second only to postpartum hemorrhage. Intracranial hemorrhage (ICH) is a rare but life-threatening complication associated with PE. This report is a narrative of a young, healthy female's perilous journey with PE and ICH.

Case Description

Our case is a 23-year-old primigravida, 32 weeks 6 days period of gestation presenting with a history of right-sided hemiplegia and aphasia for 2 days. A week before presentation, at a local hospital, the patient was diagnosed with gestational hypertension and was started on peroral labetalol 100 mg eighth hourly. Ultrasound (USG) abdomen showed reduced liquor. Prophylactically, she received betamethasone injection 12 mg 24 hours apart. However, the patient was noncompliant and stopped medications after 2 days. Four days later, she developed 5–6 episodes of vomiting followed by sudden onset weakness of the right half of the body associated with speech difficulties. On initial evaluation at a local hospital, the patient was found to have blood pressure (BP) of 200/120 mm Hg with right-sided hemiplegia with aphasia. Computed tomography (CT) of the brain showed a parenchymal hemorrhage of 5.8 × 2.7 × 5.0 cm in the left frontoparietal lobe with intraventricular extension and no evidence of dural venous sinus thrombosis (Fig. 1). The patient was administered 20 mg of labetalol injection, started on magnesium sulfate (Zuspan regimen), and referred to us to manage PE with ICH further.

On the presentation at our center, BP was 180/100 mm Hg. Both the pupils were equal and reactive with the Glasgow Coma Scale (GCS) score that was E3V1M5 (9/15), localizing with the left side. There was hypotonia of the right upper and lower limbs. The per abdomen examination revealed that the uterus size was correlating to 26 weeks relaxed, with a regular fetal heart rate of 140 beats per minute. As an initial stabilization measure, labetalol infusion was started at 1 mg/minute. Laboratory values were as follows:

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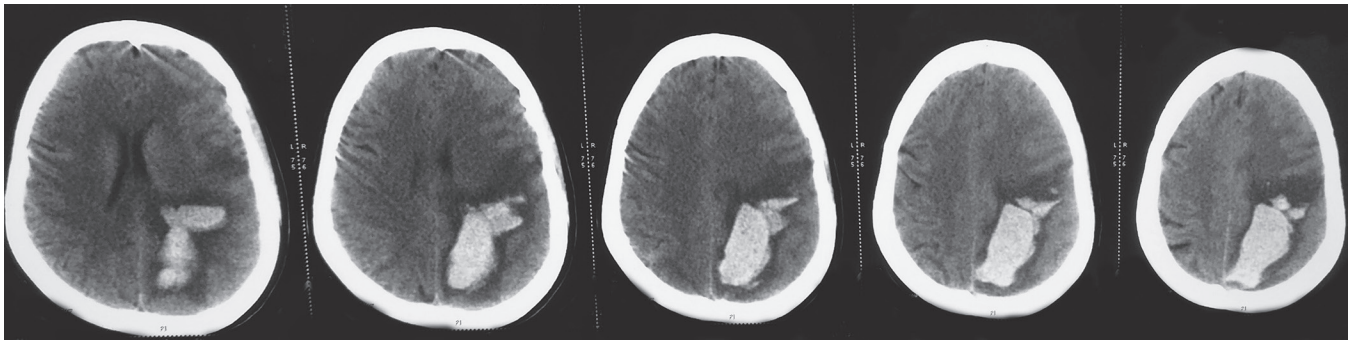

Fig. 1: Computed tomography of the brain showed a parenchymal hemorrhage of 5.8 × 2.7 × 5.0 cm in the left frontoparietal lobe with intraventricular extension and no evidence of dural venous sinus thrombosis

hemoglobin 10.8 g/dL, total leukocyte count 15380/mm^3, platelets 30000/mm^3, blood urea 40 mg/dL, serum creatinine 1.0 mg/dL, serum uric acid 6.4 mg/dL, and lactate dehydrogenase 1979 U/L. The peripheral smear showed microcytic hypochromic anemia with neutrophilic leukocytosis and thrombocytopenia. The coagulation profile was normal, with an international normalized ratio (INR) of 0.8. Obstetric USG showed single live intrauterine gestation SLIUG of 29 weeks gestation with estimate of fetal weight (EFW) of 1.3 kg and amniotic fluid index (AFI) 9 cm in breech presentation.

As an emergency optimization measure, the patient received packed red blood cells, platelets, and fresh frozen plasma transfusions. The patient was wheeled in for an emergency C-section under general anesthesia. She delivered a live preterm girl baby weighing 1.16 kg with a good Apgar score.

In the immediate postoperative period, repeated CT of the brain was suggestive of no change in the brain's hematoma size. However, there was an increase in midline shift with a mass effect. A review of a neurosurgical consult was sought. The patient underwent left frontotemporoparietal decompression craniectomy (DeCra) with ICH's evacuation and cranial bone flap placement in the right thigh (Fig. 2). In the immediate postoperative period, the patient was electively ventilated for 48 hours. On a postoperative day (POD) 2, the patient extubated and further improved neurological status throughout the hospital stay. As for BP control, the patient continued on labetalol infusion until oral feeds could be resumed, and later, oral nifedipine retard 10 mg thrice daily was started.

Suture removal of cranial and thigh wounds was done on POD 10. Over the next 1 month, the patient underwent in-patient neurorehabilitation. At the time of discharge, the patient was conscious, obeying commands with improving Broca's dysphasia. The patient was ambulating with the support of two persons having power against gravity in all four limbs. She was discharged, emphasizing medication compliance as oral levetiracetam 750 mg and oral nifedipine retard 10 mg twice daily and returning after 1 month to replace bone flap from thigh back to the cranium (cranioplasty).

One month later, she could walk with minimal support and had a near everyday speech at the follow-up visit. The patient had BP normalized; hence, nifedipine stopped, and BP was followed up. She underwent reexploration of left frontotemporoparietal craniectomy with the replacement of the bone flap from the thigh. The postoperative period was quiet, and she was discharged with advice to continue oral levetiracetam. She reported for her 6-month follow-up fully recovered and is due for the next visit after 6 months. The patient is planned on tapering off oral levetiracetam.

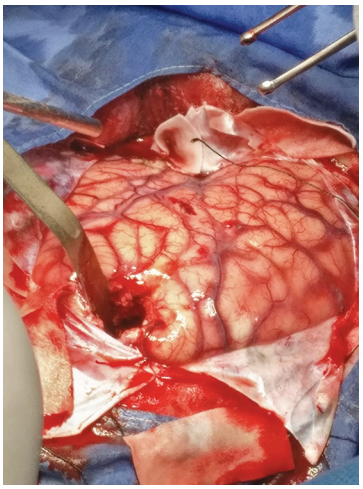

Fig. 2: Left frontotemporoparietal DeCra with ICH's evacuation

Discussion

Fortunately, the incidence of ICH and its devastating consequences during pregnancy is rare. A total of 9–26 per 100,000 pregnancies and deliveries were found to be complicated by stroke. About 1.97% of the maternal mortality was attributed to stroke as per a study done by Reena et al.[2] Stroke is to be understood as the death of brain tissue due to disturbance of blood supply. Stroke comprises both hemorrhagic and ischemic etiologies, with 38% of the cases were found to be of hemorrhagic, most commonly being secondary to aneurysm followed by the rupture of arteriovenous (AV) malformation.[3] Many population-based studies have shown an increased risk of hemorrhagic stroke in women with hypertension due to PE. Takahashi et al. noted that pregnancies with hypertensive disorders had a 12% incidence of hemorrhagic stroke. Furthermore, the incidence of stroke in these women had a tendency to occur in the late third trimester and the immediate postpartum period. Even more alarming is cases reported involving spontaneous ICH in young pregnant women with no previously discernible risk factors. Hypertension or not, there must be a timely diagnosis and effective intervention in a specialized center to reduce maternal mortality and morbidity. The CT of the brain is the modality of choice even in pregnancy as the dose of radiation is well below the established threshold for fetal affection. The CT scan findings in patients with eclampsia have found mainly transient cortical and subcortical white matter hypodensities which could be due to hypoxia or edema.[4] Furthermore, covering the belly of women with a lead apron takes care of stray radiation. The ICH management

is by the usual neurosurgical protocol with avoidance of fetotoxic medications, if any, in close consultation with obstetricians. The adage "time is brain" holds, and it is considered that the shorter the time between the onset of neurological deficits and decompression surgery, the better will be the neurological outcome. However, a surgical approach is not always the thumb rule. The indications for the surgical intervention being (1) worsening neurological status and (2) increasing mass effect and midline shift.[2] Our patient had worsening mass effect and midline shift on repeat imaging in the backdrop of low GCS. In the absence of surgical indication, a conservative approach with control of BP and cerebral decongestants has also shown to produce a satisfactory maternal outcome.

Conclusion

Acute cerebrovascular accidents are a challenge in both diagnosis and management when it involves a pregnant woman. Early diagnosis using CT and a multidisciplinary approach will help reduce maternal mortality and morbidity in cases where the stroke is suspected.

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