

Antenatal, Labor Management and Foeto-Maternal Outcome in A Comatose Patient

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Abstract

A pregnant woman suffered a massive cerebrovascular accident at 24 weeks' gestation. She became comatose, but she successfully carried the fetus till 33 weeks. The patient remained in a comatose state and required enteric feeding and skilled nursing care. Premature labor began at 33 weeks' gestation, and there was a vaginal delivery of a live 1.5 kg female. The puerperium was complicated by disseminated intravascular coagulation, and the mother died on postnatal day 6. The child is developing normally at 1 year. Generally these women do not carry up to term and deliver prematurely, though in some cases pregnancy can be successfully stretched until period of maturity despite severe maternal brain damage. The maternal and fetal prognosis along with the period of gestation should be taken into consideration before taking decisions. Only a few cases of coma and pregnancy have been reported in literature. The management requires multidisciplinary approach. Supportive nursing care is vital and most of these women deliver with assistance, though prematurely.

Keyword: Coma; Pregnancy; Cerebrovascular Accident; Preterm; Arteriovenous Malformation.

Introduction

Cerebrovascular accidents in pregnant women can cause serious consequences. Although rare, detailed evaluation and appropriate therapeutic

measures need to be taken in such patients. In literature, very few case reports of a woman being in a vegetative state and having positive vaginal delivery outcome; after undergoing neurosurgery with foetus in utero, are noted.

Pregnancy has various effects on cerebrovascular hemodynamic. There is an enhanced autoregulation that maintains the blood flow despite changes in the systemic blood pressure.¹ Abnormalities of the cerebrovascular circulation include strokes as well as anatomical anomalies. A cerebral stroke is a neurological emergency and is a major cause of disability and mortality for women. The term "stroke" indicates damage to the brain caused due to vascular etiology. There are three main types of stroke: Transient ischemic attack, ischemic stroke, and hemorrhagic stroke. Of strokes in pregnant women, roughly half are ischemic and the other half are hemorrhagic.² Hemorrhagic stroke occurs when a blood vessel ruptures and causes brain parenchymal damage due to blood accumulation. It produces symptoms by its mass effect, by toxic effects of blood, or by increasing the intracranial pressure. Factors contributing to hemorrhagic stroke include hypertension, aneurysms, and arterio-venous malformations. Increasing intracranial pressure due to edema and hemorrhage also contribute to tissue damage.

Arteriovenous malformations are estimated to

occur in 0.01 percent of the general population. This malformation is characterized by congenital lesions composed of a complex tangle of arteries and veins with multiple fistulous connections. The vascular conglomerate is called the nidus. The nidus has no capillary bed, and the feeding arteries drain directly into the draining veins. The risk of rupture of an AVM is 2.65% per pregnancy; although pregnancy per se does not increase the rate of rupture of an AVM.³

Referring hereby a case report of a pregnant woman who, in spite of having suffered an intracranial hemorrhage post head injury, underwent vaginal delivery in a comatose state. The pregnancy was managed and extended to achieve minimum period of viability and even beyond for a good neonatal outcome. The woman had a successful vaginal delivery in a deep comatose state. She died of disseminated intravascular coagulation two days after vaginal delivery, and

the child showed normal development.

Life support can be continued for several weeks in a modern intensive care unit after fatal insult to the brain even in a pregnant woman, with minimal effect on the growing fetus.

Case Report

The patient was a 21-year-old, gravida 2, para 1, living 1, with previous normal delivery. At 24 weeks gestation, she had a fall in the washroom, after which she had convulsions, followed by a state of unconsciousness. She was brought to a nearby hospital, and admitted in the ICU. Patient had a Glasgow coma score of 4, due to which she was intubated and later, tracheostomy was placed. A Foleys catheter and a nasogastric tube were inserted. CT imaging of brain showed a large intracranial hemorrhage is seen in left

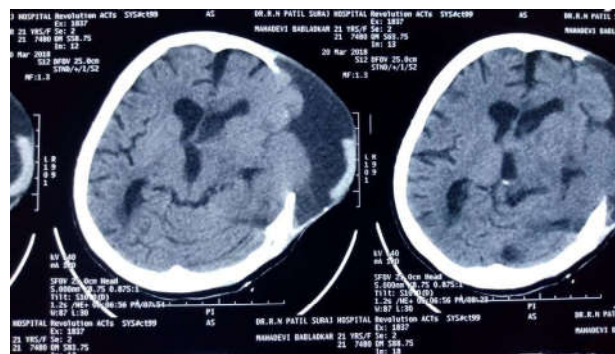


Fig. 1: Post surgery imaging showing craniotomy done with ventricular hemorrhage building inside.

gangliocapsular area. As seen in Fig. 1, the patient underwent emergency decompression craniotomy.

Repeat imaging after 20 days showed increased ventricular hemorrhage. Figure 2 shows CT angiography of brain which suggested an AV malformation with communicating arterial supply

from posterior choroidal artery along with venous drainage into straight sinus and vein of Galen. Subsequently, a burr hole surgery with extra ventricular drainage was done. The drain was removed after 1 week, and patient referred to a high-risk obstetrics centre. She was weaned off

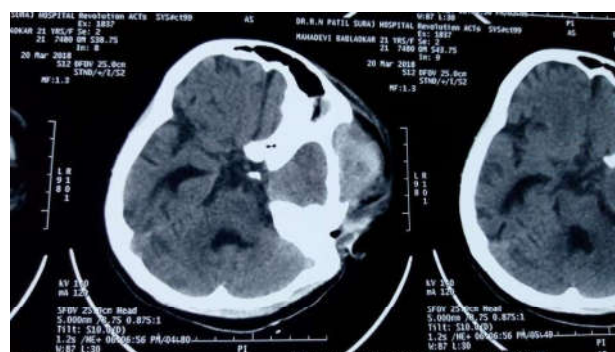


Fig. 2: CT imaging showing AV malformation.



Fig. 3: Prenatal clinical monitoring of fetal growth as per period of gestation.

from ventilator support, and shifted to the ward (Fig. 3).

The patient was kept on conservative treatment and supportive nursing care. At 33 weeks of gestation, she went into imminent disseminated intravascular coagulation and developed premature rupture of membranes with preterm labor. Patient delivered a live female baby of 1.5 kg vaginally. Apgar score at 1 minute and 5 minutes was 7 and above. Postdelivery multiple units of platelets and other blood products were given.

The baby was kept in NICU in view of VLBW and respiratory distress. The baby recovered and was discharged in stable condition. Patient died on postnatal day 6 due to DIC. As of age 1 year, the growth of the child is normal.

Discussion

Cerebrovascular accidents are relatively uncommon in pregnant women, occurring in 10 to 40 per 100,000 births.⁴ Hemorrhagic stroke accounts for approximately half of the strokes in pregnant women.² AVM accounts for approximately 17% of hemorrhagic stroke.⁴ Haemorrhage upon presentation is associated with a poor maternal outcome.⁵

As seen in our case, patients in a deep comatose state lack cerebral function, but have sufficiently preserved hypothalamic and brainstem autonomic functions to survive. They have no purposeful interaction, although they could appear to be awake; they could have normal respiratory control and sleep-awake cycles. At a Glasgow coma score of 4 as seen in our case, the patient is unable to comprehend language, follow commands or even perceive the Labor pains.

The pain of Labor has two components: visceral and somatic. With each uterine contraction, pressure is transmitted to the cervix causing stretching and distension and activating excitatory nociceptive afferents, which innervate the endocervix and lower segment from T10, L1; causing visceral pain. Visceral pain is transmitted by small unmyelinated 'C' fibers. Chemical mediators involved include bradykinin, leukotrienes, prostaglandins, serotonin, substance P and lactic acid. The pain of early Labor is referred to T10–T12 dermatomes such that pain is felt in the lower abdomen, sacrum and back. Somatic pain arises due to afferents that innervate the vaginal surface of the cervix, perineum and vagina as a result of stretching, distension, ischemia and injury of the pelvic floor, perineum and vagina. Somatic pain is transmitted by fine, myelinated rapidly transmitting 'A delta' fibres. Transmission occurs via the pudendal nerves and perineal branches of the posterior cutaneous nerve of the thigh to S2–S4 nerve roots. All resulting nerve impulses (visceral and somatic) pass to dorsal horn cells where they are processed and transmitted to the brain via the spino-thalamic tract. Transmission to the hypothalamic and limbic systems accounts for the emotional and autonomic responses associated with pain.⁶

Our patient had intracranial bleeding due to trauma, which led to increased intracranial pressure and a deep coma. She underwent various neurosurgeries to tackle her intracranial bleed, and despite being in a comatose state, vaginal delivery at a sustainable gestational age was achieved. Our patient's gestational age was 33 weeks at the time of delivery. Advanced critical care support is crucial to reach the gestational ages whereby favorable neonatal outcome can be obtained, in spite of the mother having sustained severe neurologic injuries. Management of the obstetric patient in a coma

requires attention to both mother and fetus, and a multidisciplinary approach on the part of different health care professionals including intensivist, neurosurgeon, neurophysician, obstetrician, and also family support.

Generally these women do not carry up to term and deliver prematurely, though in some cases pregnancy can be successfully stretched until period of maturity despite severe maternal brain damage. Fetal Growth restriction and anemia is common. One very important aspect is the vulnerability of these women to sexual assault and rape.

When a patient is unconscious and unable to push, delivery is very difficult. In most cases oxytocics may be required to allow the contractions to be strong enough to help the patient to push. Assistance in second stage by forceps or a vacuum is mostly needed. Caesarian section is generally avoided because of the associated risk of anesthesia, but may be necessitated due to various obstetric indications like foetal distress, antepartum hemorrhage and perimortem cesarean section.

Various medical complications, ethical issues, and legal situations can arise when caring for a pregnant woman in a comatose state. In addition, the emotional stress on the family and caregivers can be irrefutable. The maternal and fetal prognosis along with the period of gestation should be taken into consideration before taking decisions. The family must be well informed to arrive at appropriate decisions.

In conclusion, only a few cases of coma and pregnancy have been reported in literature. The management requires multidisciplinary approach. Supportive nursing care is vital and most of these women deliver with assistance, though prematurely. According to our reports,

only a couple of dozen babies in the past several decades have been born after maternal somatic support following brain death, and vaginal birth in a comatose state is a rarity in itself. One cannot actively 'help' a woman to give birth naturally. The goal is to avoid disturbing her unnecessarily.

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