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Cerebral Venous Thrombosis Associated With Pregnancy: A Case Report

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Abstract
Introduction: *Cerebral venous thrombosis is a rare but potentially fatal complication of pregnancy and the postpartum period. Pregnancy related risk factors include delivery by caesarean section, pre-eclampsia and eclampsia. The presenting symptoms can mimic those of a post-dural puncture headache and are easily misdiagnosed, especially in a parturient who has undergone regional anaesthesia.*
Case Report: *A 45 year term parturient was presented to us at 3rd month with an acute onset superior saggital sinus thrombosis. She was started on low molecular weight heparin and tab. Acetazolamide. Patient underwent lumbar puncture several times to reduce ICT, but due to fetal distress, she was taken up for emergency cesarean section under general anaesthesia before the elective period. On post-op day 3, patient complained of breathlessness. Chest X-ray revealed bilateral haziness while 2-D echo was normal, so fluid was restricted while diuretics and nebulisations were started. Patient recovered well and was discharged on post-op day 8.*
Conclusion: *Timely recognition and early treatment of CVT in pregnancy result in better prognosis. General Anaesthesia appears to be safe alternative in patients with cortical venous thrombosis on anticoagulation and avoids morbidity due to regional anaesthesia.*
Keywords**:** Cerebral Venous Thrombosis, Caesarean Section, General Anaesthesia Pregnancy

I. Introduction

Cerebral venous thrombosis (CVT) is a rare but potentially fatal complication of pregnancy. Virchow described a triad of initiating factors for venous thrombosis, namely hypercoagulability, venous stasis and vascular damage, all of which occur during pregnancy[1]. During pregnancy there are increased levels of most of the circulating clotting factors in preparation for placental separation[2]. Venous stasis in the lower limbs is caused by increased vein distensibility and the gravid uterus acting as a mechanical impediment to venous return[3]. Pulmonary embolism is the leading cause of direct maternal deaths[4]. The incidence of venous thromboembolism during pregnancy and the puerperium has been estimated to be 5.5 – 6 times higher than in general female population of childbearing age [5,6].

Risk factors identified for venous thromboembolism include age over 40, obesity, smoking, a blood group other than O, congenital and acquired thrombophilias, immobility, congestive heart failure, malignancy and hypertension. Pregnancy related risk factors include delivery by caesarean section[7], pre-eclampsia and eclampsia[8]. The headache associated with this disorder often mimic those of post–dural puncture headache (PDPH)[9]. This often leads to misdiagnosis after regional anaesthesia performed for vaginal delivery or caesarean delivery and epidural blood patch (EBP) placement in the presence of intracranial pathology. Its management involves multi-disciplinary approach with need of anti-coagulants and measures to decrease Intra-cranial tension (ICT). Thromboembolic events are also a serious complication of assisted conception. Ovarian stimulation cycles accompanying high serum estradiol levels, haemoconcentration or Ovarian Hyperstimulation Syndrome (OHSS) are potential risk factors of thromboembolism[10]. We present here our anesthetic management of a 45 year term parturient (IVF conception) with an acute onset superior saggital sinus thrombosis.

II. Case Report

A 45 year term parturient was presented to us with an acute onset superior saggital sinus thrombosis. It was IVF conception pregnancy and patient was on inj. Progesterone. During 3rd gestational month, patient had complaints of diplopia, throbbing headache with cervical neck stiffness and projectile vomiting. Two days later she had giddiness and loss of consciousness. MRI-Venogram suggested Thrombosis of left transverse, left sigmoid sinuses and superior saggital sinus. CSF manometery revealed pressure of 28 cm of CSF, fundoscopy showed bilateral papilloedema.

She was started on low molecular weight heparin (LMWH) and tab. Acetazolamide. Patient underwent lumbar puncture several times to reduce intracranial tension. She was chronic hypertensive, controlled on Tab. amlodepine. Elective cesarean section was planned and Tab. phenobarbitone was started propylactically while

LMWH was stopped. But within 12 hours of above management, due to fetal distress, she was taken up for emergency cesarean section before the elective period.

After necessary investigations, coagulation profile (INR 1.1) reports & inj.vit K, she was given general anesthesia. Induction was done with rocoronium and after adequate use of muscle relaxants and proper hemodynamic monitoring she was successfully extubated. Procedure was uneventful and a male child was delivered with APGAR score of 9/10. Patient was shifted to ICU for observation and monitoring. After 36 hours of surgery she was restarted with LMWH. On post-op day 3, patient complained of breathlessness. Chest X-ray revealed bilateral haziness while 2-D echo was normal, so fluid was restricted while diuretics and nebulisations were started. Patient recovered well and was discharged on post-op day 8.

III. Discussion

It is widely accepted that the rate of CVT in parturients is higher than in the general population and accounts for 34% of cases of all CVTs in data reported from individual medical centers[5,6]. Intracranial venous congestion and damage to vessel endothelium, thought to occur secondary to labor and maternal expulsive efforts in combination with the increased hypercoagulability that occurs postpartum,[11] may contribute to the increased risk after delivery. Thrombophilias such as protein C and S deficiency/ resistance and MTHFR/C677T variants, as well as oral contraceptive and hormone use, are other risk factors for CVT.[12]

There were approximately twice as many postnatal as antenatal events identified, due to the increased rate of deep vein thrombosis postpartum. Method of delivery was a significant factor with caesarean sections being associated with an adjusted odds ratio of 2.0, compared with spontaneous vaginal delivery[13].

Our case was unusual primarily because of the CVT with raised ICT was diagnosed in antenatal period with need of anticoagulant therapy throughout pregnancy, requiring emergency cesarean delivery. Probable etiologies could be hypercoagulable state of pregnancy, use of progesterone during assisted pregnancy or treatment for ovarian hyper-stimulation. Secondly, the choice of the anesthetic technique was challenging. Anticoagulation was a relative contraindication to regional anesthesia, which is the 1st choice technique for a vast majority of elective indications of cesarean delivery. Additionally, another element entering the decision was that spinal anesthesia might lead to cerebrospinal fluid (CSF) leakage, leading to headaches. Subsequent low CSF pressure might worsen CVT, if any, by favoring venous stasis. CSF leakage may cause a deterioration of neurological symptoms, as a consequence of a sudden change in intracranial pressure[14]. Epidural anesthesia is also frequently unsuitable for emergency conditions. So, LSCS was conducted under general anesthesia in order to avoid potential increased risk of morbidity after regional anesthesia.

IV. Conclusion

Timely recognition and treatment of CVT in pregnancy result in better prognosis. General Anaesthesia appears to be safe alternative in patients with cortical venous thrombosis on anticoagulation and avoids morbidity due to regional anaesthesia.

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Figure 1. MRI Venogram showed thrombosis of left transverse, left sigmoid and superior saggital sinuses

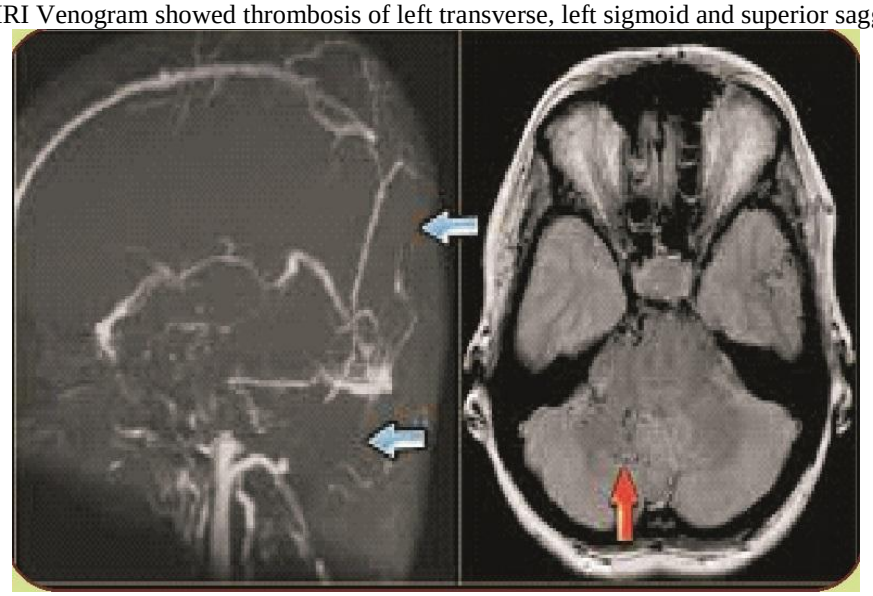

Figure 2. MRI at 8th month of pregnancy revealed complete recanalization of superior saggital sinus, left transverse and sigmoid sinus with mild residual wall thickness ad irregularity