



## Case Report

# A case report of cortical venous thrombosis complicating pregnancy

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### ABSTRACT

Cortical venous thrombosis is a rare complication of pregnancy resulting in stroke. The risk of stroke is higher in pregnancy than normal individuals because of high progesterone.

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## 1. Introduction

Thrombosis of the dural sinus and/or cerebral veins (CVT) is an uncommon form of stroke. CVT represents approximately 0.5-1% of all strokes.<sup>1</sup> Multiple factors have been associated with CVT, but only some of them are reversible. This is a case report of a parturient who had a history of stroke during the first trimester and was treated for it in her first pregnancy, now admitted at term for safe confinement for her second pregnancy. The patient was on Enoxaparin which was stopped 24 hours prior to surgery and patient was taken up for LSCS electively in view of cephalopelvic disproportion and delivered.

## 2. Case Report

32 year old G2P1L1 with previous 1 LSCS, booked and immunised with previous CVT complicating pregnancy was admitted at 38 weeks for safe confinement. Her previous menstrual cycles were normal.

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She was married for 9 years and it is a non-consanguineous marriage. During her first pregnancy, she was evaluated for severe headache associated with vomiting and weakness in the left upper limb, history of giddiness and diplopia was also present. MRI was done which revealed left superior frontal cortical venous thrombosis, thrombosis of superior sagittal sinus, straight sinus and both transverse sinuses, bilateral ethmoidal sinusitis, left lateral rectus palsy, the patient was started on Inj. Heparin 12500 S/C units BD till delivery, she successfully delivered by caesarean section and her intraoperative and postoperative period was uneventful. She was started on warfarin 5mg once daily post-partum.

Warfarin was stopped on confirmation of second pregnancy. During the second pregnancy, at 7-8 weeks of gestation, patient presented to OPD with complaints of headache. Hence she was started on Inj. Enoxaparin 40mg S/C OD, T. Ecosprin 75mg OD P/O. She was admitted at 38 weeks for safe confinement. Growth scan was done and was corresponding to the dates. She had a positive family history in first degree relative. On examination, she was well built

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and nourished and had B/L pitting pedal oedema. Her vitals were normal and cardiovascular, respiratory examination and Central Nervous System examination were normal. She was followed throughout pregnancy with Coagulation Profile which was within normal limits. The patient was planned for elective caesarean section. T. Ecospirin was stopped 7 days and LMWH was stopped 24 hours prior to surgery. She delivered a Boy child with birth weight of 3.384kg with 9/10 Apgar score. Intraoperative and postoperative period was uneventful. She was started on Enoxaparin and warfarin 2mg from second postoperative day and Enoxaparin was stopped on postoperative day 5. She was followed up with coagulation profile.

### 3. Discussion

Cerebral venous thrombosis (CVT) is any thrombosis occurring in intracranial veins and sinuses. The prevalence of CVT in Indian population is about 4.5/1000 obstetric admissions.<sup>2</sup> CVT associated with pregnancy and puerperium has a more acute onset and better prognosis than thrombosis due to other causes. Pregnancy by virtue of its hypercoagulable state is a known risk factor for CVT. Late pregnancy and puerperium are times of the greatest risk. Thrombosis of lateral or superior sagittal venous sinus usually occurs in puerperium and often in association with preeclampsia, sepsis thrombophilia. It is most common in inherited thrombophilia or antiphospholipid antibody syndrome. The diverse clinical presentation of CVT poses a diagnostic and therapeutic challenge to the treating obstetrician.

The intracranial venous system is divided into two groups

1. Dural venous sinuses.
2. Cerebral veins.

Cerebral veins are subdivided into three groups according to their anatomical location

1. Superficial venous system (external).
2. Deep venous system (internal).
3. Veins of the brain stem and posterior fossa.

Cerebral veins accompany arteries in the subarachnoid Space. As they do not have valves, bidirectional flow is possible. The hypercoagulability in pregnancy is due to as platelets (are increased slightly), fibrinogen (Factor I) is increased 2 times (2-4 g/L → 4-6 g/L), Proconvertin (Factor VII) increases by 25% to 75%, Stuart-Prower Factor (Factor X) also increases by 25% to 75%, Proaccelerin (factor V) increases 2 times,

Antithaemophilic Factor (Factor VIII) increases 2-4 times.<sup>3</sup> It increases further in labour, persists for 7-10 days after the delivery. Placenta is a rich source of Thromboplastin. Normally released during 3<sup>rd</sup> stage of labour after separation of placenta and also in abruptio

placenta, Plasminogen levels are increased considerably, Plasminogen activator inhibitor 1 and 2 is also increased thus plasmin activity usually decreases after delivery.<sup>4</sup>

Patients with CVT usually present with headache, vomiting, neurological deficits, 1/3<sup>rd</sup> of the patients will have convulsions and may mimic other neurological disorders and can be frequently misdiagnosed. Occlusion of cortical veins as in this patient can lead to motor or sensory deficits, seizures or both. Diagnosis can be made through MRI and D-dimer values. Unlike arterial thrombosis, venous thrombosis is caused by activation of coagulation cascade and anticoagulation is the corner stone of management of cerebral venous thrombosis.<sup>5</sup>

Management includes anticonvulsants for seizures. Heparinization is recommended by most but its efficacy is controversial. Fibrinolytic therapy is reserved for those women failing systemic anti coagulation.

Anticoagulation is done to recanalise the occluded sinus or vein, to prevent the extension of the thrombus, to treat the underlying prothrombotic state, to prevent venous thrombosis in other parts of body (deep vein thrombosis, pulmonary embolism) and to prevent recurrence. The dose is variable and adjusted to maintain the activated partial thromboplastin time (aPTT) at 1.5 to 2 times normal.<sup>6</sup>

Present patient was on warfarin 5mg after the first episode of stroke which helped to prevent further episodes. Once second pregnancy was confirmed, as warfarin is teratogenic and can cause warfarin induced embryopathy, patient was switched over to Enoxaparin and low dose aspirin. Prior to surgery, as per protocol, both anticoagulants were stopped and were restarted on postoperative day 2.

Acute prognosis of venous thrombosis is better than non-pregnant subjects and mortality rates are less than 10%.<sup>7</sup> In a study by MARTINELLI in 2016 of 52 women on prophylactic anticoagulation with prior cerebral venous thrombosis, there was no case of recurrent thrombosis or bleeding. However, 24 patients had late obstetric complications.<sup>8</sup>

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### 5. Conflict of Interest

None.

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