

Cerebral Venous Thrombosis : What the Obstetrician Must Know

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- **Pregnancy is a hypercoagulable state**
- **Association of cerebral venous thrombosis with oral contraceptive pill and during puerperium is known**
- **Incidence 400 - 500 per 100,000 in India**

Bradley : Neurology in Clinical Practice, 5th ed

Aetiology

- **Acquired prothrombotic state**
 - **Pregnancy**
 - **Puerperium**
 - **Antiphospholipid antibodies**
 - **Elevation of Factor VIII levels**
 - **Nephrotic syndrome**
 - **Dehydration**

Didier Leys Cerebral venous thrombosis: Update on clinical manifestations, diagnosis and management –
Ann Indian Acad Neurol 2008;11s79-s87

Aetiology

- **Genetic prothrombotic conditions**
 - **Antithrombin deficiency**
 - **Protein C and S deficiency**
 - **Factor V Leiden mutation**
 - **Prothrombin mutation**
 - **Hyperhomocysteinemia**

Cerebral venous thrombosis: Update on clinical manifestations, diagnosis and management – Didier Leys – Ann Indian Acad Neurol 2008;11s79-s87

Aetiology

- **Drugs : oral contraceptives**
- **Haematological conditions**
 - **Sickle cell disease**
 - **Paroxysmal nocturnal hemoglobinuria**
- **Inflammatory Disease**
 - **Systemic Lupus Erythematosis**

Leys D, Cordonnier C, Cerebral venous thrombosis :
Update on clinical manifestations, diagnosis and
management. Ann Indian Acad Neurol 2008;11:79-87.

Pathogenesis

- Hypercoagulable postpartum state
 - Possible trauma to the endothelial lining of cerebral sinuses and veins during labor
 - Puerperal infection
 - Dehydration
 - Thrombophilias
- } developing countries

Risk Factors

- Hypertension
- Advanced maternal age
- Cesarean delivery
- Associated infections and excess vomiting

Lanska DJ, et al. Risk factors for peripartum and postpartum stroke and intracranial venous thrombosis. Stroke 2000;31:1274-82

Clinical Presentation

Depends on which vein is
occluded and how fast the clot
propagates

Clinical Features

- Headache (95%) peak 7 - 14 days postpartum

**Postpartum headache deserves
prompt and focused evaluation**

de Bruijn S et al. Clinical features and prognostic factors of CVST in a prospective series of 59 patients. J Neurol Neurosurg Psychiatr 2001;70:105-8.

Clinical Features

Seizures	47%
Paresis (uni or bilateral)	43%
Papilloedema	41%
Coma	15%
Impaired consciousness	39%
Fever, leucocytosis	

de Bruijn S et al. Clinical features and prognostic factors of CVST in a prospective series of 59 patients. J Neurol Neurosurg Psychiatr 2001;70:105-8.

Clinical Features

- Isolated intracranial hypertension (20%)
 - Headache
 - Visual disturbance
 - Papilloedema

de Bruijn S et al. Clinical features and prognostic factors of CVST in a prospective series of 59 patients. J Neurol Neurosurg Psychiatr 2001;70:105-8.

Differential Diagnosis

- Eclampsia
 - Headache
 - Visual disturbances
 - Hyperreflexia
 - Proteinuria

Differential Diagnosis

- Sub arachnoid hemorrhage
- Encephalitis
- Cerebral mass
- Meningitis

Diagnosis

- High degree of suspicion

Investigations

- Gold standard is the combination of MRI / MRV
- Thrombophilia screening is mandatory

Investigations

D-dimer - a rapid latex agglutination slide test using monoclonal antibodies

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graph TD; A[D-dimer - a rapid latex agglutination slide test using monoclonal antibodies] --> B[Negative]; A --> C[Positive]; B --> D["* Cannot rule out CVT"]; C --> E["* Urgent referral for MRI / MRV"];
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Negative

* Cannot rule out CVT

Positive

* Urgent referral for MRI / MRV

Cannot be recommended as a screening test

Management

Aim of heparin therapy in CVT

- To prevent the extension of the thrombus
- To treat the underlying prothrombotic state
- To prevent venous thrombosis in other parts of the body / pulmonary embolism
- To prevent the recurrence of CVT

Stam J. Thrombosis of the cerebral veins and sinuses. N Engl J Med 2005;352:1791-8.

Management

- Heparin - UFH or LMWH during the acute phase
- Oral anticoagulants for 12 months
- Target INR (2.0 - 3.0)

Management

- **Anti epileptic drugs for those who develop seizures**
 - **Optimal duration of treatment is unknown**
- **Antibiotics if septic thrombophlebitis is suspected**
- **Hydration**

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Update on clinical manifestations, diagnosis and
management. Ann Indian Acad Neurol 2008;11:79-87.

Prognosis

- Mortality 28% - 33%
- Early diagnosis and treatment (heparin / hydration / antiepileptics) decreased mortality to 20%
- Quality of survival is good

Srinivas K. Cerebral venous and arterial thrombosis in pregnancy and puerperium : A study of 135 patients. Angiology, Vol. 34, No. 11, 731-746

Future Pregnancies

- **Not a contraindication for future pregnancies**

Mehraein S. et al. Risk of recurrence of cerebral venous and sinus thrombosis during subsequent pregnancy and puerperium. J Neurol Neurosurg Psychiatry 2003;74:814-6

- **Antithrombotic prophylaxis after delivery is recommended**

No evidence data

Confidential Review of Maternal Deaths

Kerala 2004 - 2005

- 18 maternal deaths due to venous thromboembolism
- 3 were assigned to cerebral venous thrombosis

Confidential Review of Maternal Deaths

Kerala 2004 - 2005

- Key recommendations
 - New onset headache in a postpartum patient should not be ignored
 - Identification of risk factors and recommendations for thromboprophylaxis should be incorporated into our day to day practice

CRMD Recommendations

- Early ambulation
- Early and adequate fluid intake
- Use of elastic compression stockings
- Change in the concept about BED REST

CRMD Recommendations

Thromboprophylaxis if more than
3 risk factors exist (moderate risk)

CRMD Recommendations

- Risk factors
 - Obesity (BMI > 30%)
 - Age > 35
 - Multiple pregnancy
 - Extensive varicose veins

CRMD Recommendations

- Risk factors
 - Air travel
 - Cesarean or cesarean hysterectomy
 - Sickle cell anemia
 - Enforced bed rest > 4 days

Treatment

- LMWH 5000 units OR UFH 5000 units twice daily to be started 4 - 6 hrs after vaginal delivery and 8 hrs after Cesarean section
- Continue for 3 - 5 days or till fully ambulant

CRMD Recommendations

- High risk group
 - APLA syndrome
 - Thrombophilia
- Antepartum and postpartum heparin for 6 wks

Take Home Messages

- Postpartum headache of new onset needs evaluation
- Anticoagulation - heparin to be started when there is a high index of suspicion
- Referral to tertiary care centre for MRI / MRV is necessary

Take Home Messages

- Thrombophilia screening is mandatory
- Antepartum assessment of risk factors and plan appropriate thromboprophylaxis
- Hydration / early ambulation to be encouraged
- No risk of recurrence in future pregnancies