

## Original Research Article

# A STUDY ON CLINICAL PROFILE OF PATIENTS WITH CEREBRAL VENOUS THROMBOSIS IN A TERTIARY CARE CENTRE OF SOUTH-INDIA

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## ABSTRACT

**Background:** Cerebral venous thrombosis is a life-threatening condition. It is the most common cause of stroke in women of reproductive age group. Pregnancy being a hypercoagulable state is associated with higher incidence of CVT during peripartum and postpartum period. Prompt identification is required using neuro-imaging modalities.

**Materials and Methods:** A total of 30 patients presenting to the department of Obstetrics, Kamineni institute of medical sciences, Narketpally, with CVT over a period of 1 year were included in the study.

**Results:** Most of the women were in age group of 21-30 years. Most of the patients were illiterate and from low socio-economic status. Headache was the commonest presentation, followed by altered sensorium. Hemorrhagic infarcts were the most common neuro-imaging findings. Superior sagittal sinus was the most common site of venous thrombosis. No mortalities were reported in present study.

**Conclusion:** Healthy delivery practices, basic education of women, improvement in healthcare in rural areas are the main areas of target to reduce the incidence of this condition. This can be achieved by planning strategic health programs and implementing them. The role of physician comes in educating the women regarding the malpractices, especially focusing on adequate hydration during delivery.

**Keywords:** Cerebral venous thrombosis, headache, postpartum period, stroke in young women.

## INTRODUCTION

Cerebral venous sinus thrombosis is one of the most common causes of stroke in young, accounting for approximately 10-20% of strokes in India. Two-thirds of these occur in the post-partum period. CVST could be due to a variety of reasons with the most common being secondary to dehydration, or clotting system disorders (protein C deficiency, Protein S deficiency, Factor V Leiden polymorphism), any autoimmune conditions such as (polyarteritis nodosa (PAN), systemic lupus, erythematosus (SLE)).<sup>[1-3]</sup> 75% of all cases of CVST occur in women, the etiology being predominantly by hormonal interplay.<sup>4</sup> The elevated risk of CSVT in the peripartum may be explained by variations in intracranial pressure during delivery and the

hypercoagulability condition of pregnancy brought on by increased coagulation factors and greater platelet adhesion.<sup>[5,6]</sup>

Thirty percent of CSVT cases have acute presentation, meaning symptoms start to show up in less than 48 hours. Up to 50% of patients had sub-acute presentations, with symptoms emerging between 48 hours and 30 days. Twenty percent of cases are in the chronic form, where symptoms appear over a period longer than thirty days and up to six months.<sup>[7]</sup>

This study was conducted with an aim to describe the clinico-etiological profile of patients presenting with post-partum CVT to the tertiary care center.

## MATERIAL AND METHODS

This prospective study was conducted from March 2023 to February 2024, over duration of one year, in the Department of Gynaecology and Obstetrics, Kamineni institute of medical sciences, Narketpally. 30 consecutive patients, who presented with CVT related to pregnancy and post-partum period, as determined by MRI, MR venography, or plain and contrast CT scan, were included in the study. A detailed history and clinical assessment was performed on all cases.

Routine investigations like complete blood picture, renal function tests, serum electrolytes, complete urine examination, ECG, chest X-ray was performed on all cases.

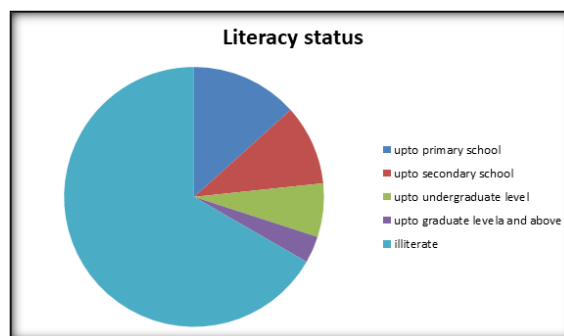
Radiological investigations included computed tomography scan (CT), magnetic resonance imaging (MRI) and magnetic resonance venogram (MRV).

Fundus examination was done prior to lumbar puncture to rule out papilledema and the cerebrospinal fluid was sent for analysis.

A written informed consent was taken from all patients before including them in the study. Ethical committee approval was taken prior to the study.

The results were analyzed using statistical software SPSS 23.0 version. Qualitative variables were represented as means and percentages.

## RESULTS



**Figure 1: Literacy status distribution**

Majority of the patients were illiterate (n = 20; 66.7%). Most of the patients belonged to lower socio-economic status. (n = 25; 83.3%).

A total of 30 patients with postpartum CVT were included in the study. The patients aged between 19 - 38 years. Mean age of the study population was 26.3 years. Majority of the patients belonged to 21-30 years of age. [Table 1]

Most of the patients were primiparous (60%). Most of the deliveries were done at home by untrained dais. [Table 3]

Most common symptom was headache, followed by altered sensorium and seizures. Majority of the patients had hemorrhagic infarct on neuro-imaging. There were no deaths reported in present study and all 30 patients survived, some had residual neurological deficits. [Table 5]

Sagittal venous sinus was the most commonly involved sinus in present study. [Table 6]

**Table 1: age distribution**

Age	No. of patients
< 20 years	3 (10%)
21-30 years	19 (63.3%)
31-40 years	8 (26.7%)
Total	30

**Table 2: Distribution of patients according to socio-economic status**

Socio-economic status	No. of patients
Low	25 ( 83.3%)
Middle	5 (16.7%)
High	0

**Table 3: Obstetric history**

Obstetric history	No. of patients.
Primigravida	18 (60%)
2nd gravid	9 (30%)
3rd and above gravid	3 (10%)

**Table 4: Antepartum and Peripartum characteristics**

Variables		No. of patients
Prenatal care	Booked	10 (33.3%)
	Unbooked	20 (66.7%)
Mode of delivery	Vaginal delivery	21 (70%)
	Caesarean section	9 (30%)
Place of delivery	Home	24 (80%)
	Institution	6 (20%)

**Table 5: Clinico-radiological profile of patients**

Symptoms	No. of patients. (%)	
	Headache	29
Seizure	25	(83.3%)
Altered sensorium	26	(86.6%)
Vomiting	24	(80%)
Focal deficits	18	(60%)
Fever	22	(73.3%)
Neuro-imaging findings	Hemorrhagic infarct	27 (90%)
	Non-hemorrhagic infarct	3 (10%)

**Table 6: Site of thrombosis**

Venous sinus	No. of patients
Sagittal sinus	20 (66.6%)
Sigmoid and or transverse sinuses	5 (16.7%)
Cavernous sinus	5 (16.7%)

## DISCUSSION

It is generally known that pregnancy and puberty are risk factors for venous thromboembolism (VTE), which can include cerebral venous thrombosis. The coagulation system experiences several physiological changes throughout pregnancy and puberty, which cause prothrombotic conditions. This study was undertaken to evaluate the clinico-demographic profile of patients presenting with CVT to the tertiary care hospital.

In present study, majority of the patients were aged between 21-30 years. Most of the patients were illiterates and belonging to low socio-economic status. This can be the result of unsanitary healthcare practices such as deliveries at home, customary water restriction during the postpartum phase etc. that are more prevalent among the illiterate population. In their research, M. Alexander et al,<sup>[8]</sup> believed that this

practice of fluid restriction may have contributed to the development of CVT. They also observed that, despite the fact that this custom is adhered to even during the sweltering summer months; the incidence of CVT did not rise during this time.

Headache was the most common symptom noted in present study (96.6%) followed by altered sensorium. Similarly in a study conducted by Azin et al,<sup>[9]</sup> headache was reported as the most common complaint (91.8%). They observed the most common risk factor for CVT to be usage of oral contraceptive pills. In present study and studies done by Azin et al,<sup>[9]</sup> and Virender et al,<sup>[3]</sup> superior sagittal sinus was the most common sinus to be involved.

Hemorrhagic infarct was the most common neuro-imaging finding in present study. however in study conducted by Nagaraja et al,<sup>[12]</sup> non-hemorrhagic infarcts were most common. In present study, no mortalities were reported, indicating a good prognosis. [Table 7]

**Table 7: Comparison of symptomatology in different studies**

Present study (n = 30)	Pai et al <sup>10</sup> (n = 612)	Appenzeller et al <sup>11</sup> (n = 24)
Headache (96.6%)	Headache (62%)	Headache (75%)
Seizure (83.3%)	Hemiparesis (48%)	Vomitings (33%)
Altered sensorium (86.6%)	Seizures (31%)	
Vomiting (80%)	Cranial nerve palsy (7%)	
Focal deficits (60%)		
Fever (73.3%)		

## CONCLUSION

Cerebral venous thrombosis is a serious condition. Educating the women and spreading awareness regarding this condition in economically poor areas will prevent majority of the cases. Obligatory antenatal health check-ups and institutional deliveries can reduce the incidence of this condition. Prompt identification and treatment of cerebral venous thrombosis has a favorable outcome.

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**Conflicts of Interest:** NIL.

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