# Profile of Patients with Cerebral Venous Sinus Thrombosis with Cerebellar Involvement

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*Background:* Cerebral venous thrombosis (CVT) is a rare form stroke with diverse manifestations. There is very little information available regarding profile of patients with cerebellar involvement in CVT. We describe the clinical profile, investigations, and outcome of patients with cerebellar involvement with CVT. *Methods:* We prospectively studied 6 (male:female: 5:1, mean age 29.3 ± 10.3 years) patients of CVT with cerebellar involvement (2 isolated cerebellar and 4 associated deep or supratentorial structures) among 330 CVT patients (1.8%) admitted in our stroke unit during a period of 3 years. *Results:* The presenting features (mean duration 7.0 ± 4.7 days) were headache, vomiting, encephalopathy, ataxia, and papilledema. Initial diagnosis considered were neuroinfection in 2 patients, raised intracranial pressure in 2, subarachnoid hemorrhage in 1, and subacute ataxia in 1 patient. Computed tomography (CT) was diagnostic in 3 of 5 patients, whereas magnetic resonance imaging (MRI) and magnetic resonance venography were diagnostic in all; in addition, MRI was superior in detecting new lesions not visualized on CT, in better delineating hemorrhages and in predicting the age of thrombus. Patients were managed medically with anticoagulation, anti-edema, and anti-epileptics and supportive treatment. Two patients underwent posterior fossa decompression. Four patients made complete recovery at the time of discharge and 2 patients died (1 because of brain stem dysfunction and another because of postoperative pneumonia and septicemia). *Conclusions:* Cerebellar involvement in CVT is very rare, and high index of suspicion is required for diagnosis. Imaging with CT and MRI will help in confirming the diagnosis. Conventional anticoagulation is effective in treatment. Mortality was 33%, and there was no disability in survivors. **Key Words:** Cerebral venous thrombosis—cerebellar infarction—venous infarction—thrombosis.


## Introduction

Cerebral venous thrombosis (CVT) accounts for approximately 1% of all strokes. It presents with wide spectrum of clinical manifestations depending on the site, extent, and duration of the thrombosis. The 2 most frequent sites of thrombosis are the superior sagittal sinus and lateral sinus.[1] In contrast to acute symptoms of arterial stroke, patients with venous thrombosis usually present with features of raised intracranial tension (ICT), seizures, encephalopathy, and weakness of limbs. Advances in imaging with computed tomographic (CT) scan and magnetic resonance imaging (MRI) and/or magnetic resonance venography (MRV) has helped in early diagnosis and has provided insight into the varied or polymorphic clinical presentations of this entity. This has also led to a decreased mortality over years. However, a strong

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**Table 1.** *Demographic, clinical findings, investigations, treatment, and outcome of patients with CVT with cerebellar involvement*

| Features | Patient 1 | Patient 2 | Patient 3 | Patient 4 | Patient 5 | Patient6 |
|---|---|---|---|---|---|---|
| Age (y)/sex | 32/M | 23/F | 19/M | 48/M | 30/M | 24/M |
| Symptoms | | | | | | |
| Fever | − | − | + | + | − | − |
| Headache | + | + | + | + | + | + |
| Vomiting | − | + | + | − | − | + |
| Seizure | − | − | + | − | + | + |
| Motor weakness | − | − | − | + | − | − |
| Cerebellar symptoms | + | − | − | − | − | − |
| Altered sensorium | − | + | + | − | − | − |
| Examination | | | | | | |
| Encephalopathy | − | + | + | − | − | − |
| Cranial nerve palsy | − | − | − | − | + (Rt 6) | − |
| Papilledoema | + | + | − | + | + | + |
| Focal deficit | − | − | − | + | − | − |
| Cerebellar signs | + | CNBT | CNBT | CNBT | + | − |
| Neck stiffness | − | + | + | + | + | − |
| Duration of symptom (d) | 07 | 15 | 10 | 04 | 03 | 3 |
| Investigations | | | | | | |
| Hemoglobin (g/dL) | 15.9 | 10.9 | 13.1 | 6.9 | 17.50 | 10.1 |
| MCV (fL) | 85.2 | 66.2 | 82.6 | 78.2 | 90.2 | 69 |
| PCV (%) | 48.2 | 36.9 | 39 | 33.4 | 50.5 | 36 |
| Homocysteine (n < 15 μmol/L) | 10.3 | >50 | NA | 15.5 | 10.2 | >80 |
| Vitamin B12 (n 243-894 pg/mL) | 396 | NA | NA | >1200 | NA | 285 |
| Risk factors | Nil | Anemia, Hom, pregnancy | Right CSOM | Anemia | Alcohol, polycythemia | Anemia, Hom |
| Initial diagnosis | Subacute ataxia | Raised ICT | Neuroinfection | Neuroinfection | SAH | Raised ICT |
| Treatment and outcome | | | | | | |
| Treatment | | | | | | |
| Surgical/medical | Med | Med | Med | Med, DC | Med, VP, DC | Med |
| mRS | | | | | | |
| Admission | 03 | 05 | 02 | 05 | 02 | 01 |
| Discharge | 00 | 00 | 00 | 06 | 06 | 00 |
| Duration (stay/death) in days | 19 | 11 | 22 | 17 | 13 | 17 |

Abbreviations: CNBT, could not be tested; CSOM, chronic otitis media; DC, decompressive cranitomy; F, female; Hom, hyperhomocysteinemia; ICT, intracranial tension M, male; MCV, mean corpuscular volume; Med, medical; mRS, modified Rankin Scale; NA, not available; PCV, packed cell volume; Rt, right; SAH, subarachnoid hemorrhage; VP, ventriculoperitoneal shunt; +, present; −, absent.

clinical suspicion is still required. Though there is abounded literature available in supratentorial CVT, the literature on infratentorial (cerebellar and brain stem) involvement in this disease is sparse. The majority are case reports, and 1 study has described isolated posterior fossa involvement in 9 patients with CVT.[2-14]

In the earlier studies, CT brain was used for the diagnosis, and data regarding use of anticoagulation are sparse. Hence, the present study was undertaken to describe the single-center experience of clinical features, imaging utilities, and outcome of patients with CVT with cerebellar involvement treated with anticoagulation.

## Materials and Methods

These patients belonged to study of prospectively managed CVT patients seen at the stroke unit of our hospital. Ours being a tertiary care neurologic university teaching institute at South India caters to patients from entire state of Karnataka and adjoining states. These patients were initially evaluated in the emergency ward, which has an average daily intake of 65-70 acute neurologic cases with 3-4 CVT patients seen per week. Majority of these patients were admitted to the stroke unit for further management. Hospital ethical committee approved the study protocol.