A Prospective Study of Clinical Features and Etiological Factors of Cerebral Venous Thrombosis in a Tertiary Care Hospital in Eastern India

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ABSTRACT

Background: Cerebral venous thrombosis (CVT) is an uncommon cause of stroke with extremely varied clinical presentations, predisposing factors, imaging findings, and outcomes. We conducted a prospective study of 50 patients of CVT admitted in our department for a period of 1 year.

Results: Headache was the most common presenting feature (80%) followed by seizures, altered sensorium, hemiparesis, cranial nerve deficits. The predisposing factors were predominantly non-infective and included inherited thrombophilias like protein C and S deficiencies, pregnancy, hyperhomocystinemia, malignancies.

Investigations: MR venography is the most definitive imaging modality and revealed lack of flow due to thrombosis in venous sinuses most notably in superior sagittal sinus. CT Scans revealed delta sign, cord signs in few cases.

Treatment: Anticoagulation is the cornerstone of treatment. LMW Heparin was given in all patients for 14 days and was followed by oral anticoagulant.

Outcome: Only 2 patients (4%) died within 7 days of the illness despite initiation of therapy. Out of the surviving 48 patients, 8 (12.5%) are recovering from residual disability and the rest are doing well.

Keywords: cerebral venous thrombosis; venography

INTRODUCTION

Cerebral venous sinus Thrombosis (CVT) has been recognized since the early 19th century but still remains a diagnostic and therapeutic challenge. The first description of CVT, appearing in the French literature in 1825, was by Ribes, in a 45-year old man who died after a 6-month history of severe headache, epilepsy, and delirium.[1]

Cerebral venous thrombosis (CVT) is an uncommon cause of stroke with extremely varied clinical presentations, predisposing factors, imaging findings, and outcomes. In 1957, Padmavati et al., for the first time from India, reported 15 cases of CVT in puerperium in an epidemiological study evaluating the causes of hemiplegia in 44 women.[2]

Aim & Objective:
This study was aimed to note the demographic profile of patients with CVT. It was also aimed to document common etiology and various clinical symptoms and signs of CVT.
Materials & methods:
This was a prospective study conducted in the department of Neuromedicine of Calcutta National Medical College, Kolkata for a period of 1 year from July 2017 to June 2018. We included 50 cerebral venous sinus thrombosis patients presenting within 48 hrs. of symptoms initiation. Radiological confirmation was considered for diagnosis of this condition. We excluded patients with arterial strokes, critically ill patients with other systemic diseases, end stage renal disease, advanced hepatic disease, psychiatric illness, recurrent stroke and transient ischemic attacks.

Statistical data analysis:
After collecting all the data, a grand chart was prepared using Microsoft Office Excel 2007 and statistical analysis was performed using SPSS-20 statistical software for analysis of data. P-value of <0.05 was taken as significant.

Results:
1. Demographic profile: Total 50 patients were included in this study. Out of them, 30 (60%) were male and 20 (40%) were female.

2. Clinical features: Cerebral venous thrombosis may present with various clinical features, ranging from mild headache to even death. Headache was present in 45 (90%) patients. Altered sensorium and seizures were present in 35 (75%) cases each. Papilledema was present in 42 (82%) cases, hemiparesis and sensory deficit were present in 20 (40%) and 10 (20%) cases, respectively. 2 persons succumbed to their illness.

3. Investigations: We did contrast enhanced magnetic resonance imaging and venography in all the cases. Among our cases, 26 (52%) patients had superior sagittal sinus thrombosis, 10 (20%) had transverse and sigmoid sinus thrombosis (Fig 1), 7 (14%) had both SSS and TS thrombosis (Fig 2). 7 (14%) patients had haemorrhagic infarction with cortical vein thrombosis. We checked the coagulation profile and thrombophilia profile (protein C, protein S, antithrombin III, homocysteine, factor V leiden mutation etc) in all patients. Genetic mutations in suitable cases as MTHFR in hyperhomocystenemia were checked.

4. Etiology: Most of the cases were of non-infective etiology, 45 (90%) cases. Among the non-infective etiology, hyperhomocystenemia was present in 21 (42%) cases. Out of them 10 (20%) cases were associated with MTHFR gene mutations. Other etiologies are Protein C deficiency in 5 (10%) cases, protein S deficiency in 6 (12%) cases, malignancy in 2 (4%) cases. Oral contraceptive pill use was associated with 5 (10%) cases. 3 (6%) cases were associated with SLE. Two patients developed CVT after acute gastroenteritis and one patient developed after lumbar puncture. Among the infective causes, 3 (6%) patients had acute bacterial meningitis.

5. Treatment: Anticoagulation was the cornerstone of treatment. LMW Heparin was given in all patients for 14 days and was overlapped by oral anticoagulant from day 5-7. We used warfarin in 39 patients and dabigatran in 11 cases who were deficient in
protein C and S. Appropriate antibiotics were used in 4 cases where infection was the etiology.

6. Outcome: 2 patients (4%) died within 7 days of the illness despite initiation of therapy. Out of the surviving 48 patients, 8 (12.5%) are recovering from residual disability and the rest are doing well (as assessed by modified Rankin scale and Barthel Index).

Discussion:

Our demographic study showed that CVT was slightly more common in males (3:2) and headache is the most consistent and earliest symptom (90%) which matched with that of NIVSR cohort (88.3%). [3] Seizures were far more common (70%) than in arterial strokes, more frequent in peripartum age group. Earlier Indian case series reported that 43-93% of patients had altered sensorium at presentation. Recent studies like ours show a similar proportion of patients (70%) depicting that it is still largely unrecognised at onset. The most common risk factor identified throughout the world is a prothrombotic condition [5]. In ISCVT cohort, prothrombotic condition was found in 34% of patients of which 22% were genetically predisposed. Our study also showed prothrombotic cause in 64% cases of which 22% were genetic (Protein C and S). Although infective causes of CVT were frequently reported in earlier series, they account for very small percentage of patients in recent studies possibly due to the availability of potent broad spectrum antibiotics nowadays [6]. In the NIVSR cohort, the in-hospital mortality was 7.7%. At 3 months follow-up, 52.8% patients had a mRS of 0–1, 10.9% of them became functionally independent and 25.7% remained dependent. In our study, in-hospital mortality was 4% [6].

Conclusion:

In contrast to arterial strokes, which can be easily diagnosed clinically in majority of cases, CVT has no single pattern of presentation, and it may be difficult to diagnose it on clinical grounds alone. Once diagnosed and the etiology found, proper treatment can offer excellent outcome.

References: