

Clinical profile and risk factors of cerebral venous sinus thrombosis

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Abstract

Background: Cerebral venous thrombosis (CVT) refers to the thrombosis of Dural venous sinuses or the cerebral veins.

Aim: Present study is done to study the demographic, clinical, etiological, radiological and prognostic characteristics of the disease in patients admitted with CVT in our hospital.

Methods: A 2-year cross-sectional study was conducted among patients admitted with CVT in ESIC medical college hospital. Results: A total of 73 patients were included in the study. CVT was most common among age group between 30-39 years; Majority subjects were Male patients; Most common mode of presentation was acute. Most common symptom was Headache followed by altered sensorium. Most Common clinical sign is papilledema Most common sinus involved is the sigmoid

sinus Most common radiographing abnormality was a hemorrhagic infarct.

Conclusion: Present study showed that majority of patients were of young age with males outnumbering females. CVT has a wide range of clinical manifestations. CVT should be suspected in patients with features of raised ICT, young stroke, hemorrhage in non-arterial territories. Diagnosis should be confirmed with MRI and MRV.

Introduction

Cerebral venous sinus thrombosis (CVST) is an uncommon condition, with extremely diverse clinical features, predisposing factors, brain imaging findings, and outcome [1]. It is frequently unrecognized type of stroke that affects approximately 5 people per million annually and accounts for 0.5% to 1% of all strokes [2]. It is one of the common causes of young stroke in India, [3] about 20% in people aged 40 years or less [4].

Depending on the site, size, duration, and rapidity of development of thrombus, it can be present as seizure, space occupying lesion, benign intracranial hypertension, subarachnoid haemorrhage, unexplained loss of consciousness, or meningoencephalitis [5].

The incidence of CVT is uncertain since it has a wide range of clinical manifestations [6]. Once considered a rare disease based on autopsy studies, CVT is now recognized with increasing frequency due to enhanced clinical awareness and improved noninvasive imaging modalities available now.

CVT has a specific geographic distribution, the incidence being higher in South Asia and the Middle east [7,8]. Most studies from India have reported a large number of cases; hence the incidence in India is not as rare as assumed earlier [8]. In India, CVT accounts for 10-20% of young strokes [8].

The risk factors for venous thrombosis, in general, are linked classically to the Virchow triad of stasis of the blood, changes in the vessel wall, and changes in the composition of blood. Hyper homocysteinaemia is an independent and strong risk factor for CVT that is present in 27-43% of patients and in 8-10% in the community [8,9]

These factors prompted us to study the clinical profile and to evaluate the demographic, clinical, etiological, radiological and prognostic characteristics of the disease among patients admitted with CVT in ESIC Medical College PGIMSR.

Materials and methods

- Study design: The hospital based prospective cross-sectional study.
- Study period: December 2020 to May 2022
- Place of study: Study was conducted in ESIC mc and MH Rajajinagar.

- Sample size: 73

Study procedure

Considering the inclusion and exclusion criteria, patient with new onset of seizures more than 18 years of age or older attending the outpatient / casualty of ESI-PGIMSR Bangalore constitute the study group.

A detailed assessment of patients was performed including history, clinical examination of all systems including Central Nervous System (CNS) and baseline routine blood investigations including serum electrolytes, serum calcium, blood glucose levels. Vitamin B12 levels and neuro-imaging modalities CT Brain / MRI Brain with MR venogram.

Statistical analysis

Data collected were analyzed in computer by using the Statistical Package for Social Sciences (SPSS) program version 10. Data analysis was done by using descriptive and inferential statistical methods: frequency, Percentage, means.

Results

CVT was most common among age group between 30-39 years (32.9%) followed by 40-49 years (28.8%) 38 (52.1%) subjects were Male patients and 35 (47.9%). About 72.6 % of patients had acute onset of symptoms that is 63 of total patients.

The most common presenting symptom was headache in 64 % followed by papilledema in 38%, visual symptoms 30%, seizure in 30% and 20% with altered sensorium. Most common etiological factor noted in our study was hyper homocysteinaemia, in 45% followed by protein C and protein S deficiency in 14% and anti-thrombin deficiency in 15.1% of patients. In our study about 60% of patients have underlying risk factors, most common risk factor was dehydration and drug intake in 18%.

39% of our patients had a normal CT brain, hemorrhagic infarct a characteristic venous infarct occurred in 32.9 % of patients.

MRI with MRV showed that among individual sinuses, sigmoid sinus was the most common sinus involved in 57.5 % of patients, followed by transverse sinus.

5 patients died during the in hospital stay. 25 patients had residual neurological deficit at the time of discharge. Hence the mortality rate in our study was 6.8 % and morbidity rate was 34%.

Discussion

The epidemiological factors, clinical presentation, etiological factors of CVT are highly variable. It is a disease of children and young adults [33].

In the largest clinical series, the International Study on Cerebral vein and Dural sinus thrombosis (ISCVT), the median age of patients with CVT was 37 years [10] median age in our study of 39 years. The mean age in our study was 29 years, in our study, males formed the majority (52.1%) of the total 74 patients similar to Narayan et al [11] who observed a male predominance (53.7%). The onset of symptoms was analysed as Acute (<7 day), Subacute (7 to 15days) or Chronic (>30 days). According to literature, in $\geq 50\%$ of the patients, the onset is subacute [12]. In our study, 72.6 % of patients manifested acutely.

The median duration of presenting illness was 3 days in our study, lower than the observation of 7 days very much closer to the observation of 4 days by ISCVT3.[13]

In our study headache was the most common symptom (87.7%) similar to the observations of most other studies. Papilloedema occurs in about 52.1% of patients with CVT. Most common clinical finding observed in our study was papilledema similar to other studies.

Hyper homo cystenemia is a known risk factor for venous thrombosis. In our study just 45.2 % of patients had hyper homocystenemia. Hyper homocystenemia was reported in 18.2% of cases by Narayan et al.18 as opposed to 4.5% by ISCVT 3. Imaging with CT is the most frequently done initial investigation in the diagnosis of CVT. Haemorrhagic infarct was the most common finding being noted in 32.9% of patients similar to the observations of most of the studies. Most common sinus involved in our study was sigmoid (75.56%) in concordance with most of the studies in literature.

In our study morbidity rate was 34.2%, lower than that reported in most other studies. Predictors of in hospital mortality in our study were age ≥ 35 years ($p=0.0471$), coma at the time of admission ($p=0.0007$) and GCS < 9 ($p= 0.0038$) and predictors of poor outcome (defined as mRS scale score of > 2) in our study were coma at the time of admission ($p=0.0116$) and motor deficit ($p= 0.0001$) similar to observations made by Ashjazadeh et al

Conclusion

Present study showed that majority of patients were of young age with males outnumbering females. CVT has a wide range of clinical manifestations. CVT should be suspected in patients with features of raised ICT, young stroke, hemorrhage in non-arterial territories. Diagnosis should be confirmed with MRI and MRV.

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