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Original Research Paper

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STUDY OF CLINICAL PROFILE OF CEREBRAL VENOUS SINUS THROMBOSIS

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ABSTRACT **Background:** Cerebral sinus venous thrombosis (CSVT) is a relatively rare, potentially fatal neurological condition that can be frequently overlooked due to the vague nature of its clinical and radiological presentation. Objectives: To study the various etiology, clinical presentation, different diagnostic enteritis and treatment protocols in cases of cerebral venous sinus thrombosis. **Methods:** The present Prospective study was an analytical study conducted at tertiary care centre, on 50 Patients as per study protocol. **Results:** CVST is a disease of young adults, Majority of patients were in the age group of 18-40 years. CVST is more common in females in postpartum period especially in 2nd week (8-14 days) after Delivery. Initiation of heparin therapy followed by oral anticoagulants favours early recovery of neurological deficit and prevents further complications. **Conclusion:** CVST is an important cause of stroke especially in the peripartum settings and stroke in young. The mode of onset of CVST is variable and clinical presentations were extremely wide, hence diagnosis of CVST needs high index of suspicion for demonstration underlying etiology. The most sensitive diagnostic modality of choice is MRI with MR venography. For CVST usage of anticoagulants was appropriate and hence the prognosis will be generally favorable.

KEYWORDS : cerebral venous sinus thrombosis (cvst), puerperium, anticoagulation,

INTRODUCTION:

Cerebral veins contain about 70% of the total cerebral blood volume, but cerebral venous sinus thrombosis (CVST) occurs less often than arterial stroke. Arterial and venous stroke cause different neurological deficits and occur in people of different ages. About half of the patients with an arterial stroke are older than 75 years, whereas CVST most often affects young adults and children. It is associated with a prothrombotic state due to (inherited or acquired) thrombophilia, other blood disorders, dehydration, infectious diseases, cancer, or more rare causes.

The annual incidence is currently estimated to be 3–4 cases per million people. 3 out of 4 people with CVST are women. 1 out of 8 patients will die or remain handicapped as a result of CVST. CVST constitutes about 10-15% of young strokes. During the past decade, modern neuroimaging techniques have improved the diagnostic process and together with the increased awareness this will probably result in increased recognition in the future. CVST has received far less attention in clinical research than arterial stroke. The small number of patients with CVST limits the performance of large epidemiological studies and clinical trials on a scale comparable to arterial stroke.

Thrombosis of the cerebral veins may cause focal deficits due to local effects of venous obstruction, but also more generalized effects as a result of increased cerebrospinal fluid pressure caused by blocking of the major sinuses. In the majority of patients, these two processes occur simultaneously. The course and clinical features of CVST are highly variable.

Consequently, the diagnosis may be difficult. The average delay from the onset of symptoms to the diagnosis is 7 days. Patients may present to an ear, nose and throat surgeon with recurrent ear infections and headache, to a pediatrician with headache and vomiting, to an obstetrician because of a complicated pregnancy or puerperium, to an ophthalmologist because of blurred vision, to an internist because of vague symptoms in the context of a systemic disease, to a neurologist because of epileptic seizures, or to a neurosurgeon because of chronic intracranial hypertension.

METHOD:

50 patients admitted to the Medical Ward, clinically suspected of CVST, were subjected to neuroimaging techniques at Civil Hospital, Asarwa, Ahmedabad, Gujarat, fulfilling the study criteria were recruited by simple random sampling, followed until discharge or death from hospital and at the end of three months.

Inclusion Criteria:

Patients presenting with history suggestive of CVST and CT scan showing direct or indirect signs which is confirmed by MRI or MR Venography of brain.

Exclusion Criteria:

CT scan inconclusive of CVT, Hypertensive hemorrhage, Arterial stroke, Metabolic encephalopathy or Space occupying lesions.

Recorded information entered in Microsoft excels worksheet. Data was analysed and compared by using appropriate statistical test. All the patients fullling selection criteria were explained about the purpose of study and a written informed consent was obtained to participate in the study before enrolment. According to pretested Proforma, each patient underwent detailed Generalized and Systemic examination. Hematological, Bio-chemical and Radiological investigations were carried out as per study protocol.

OBSERVATION AND RESULTS:

Age Wise Distribution:

Majority of them were in the age group 18-40 years contributing to 86%.The youngest age being 20 and highest is 57 years. The mean age of the patients in the present study was 31.02 ± 8.49 years. Out of them 32 (64%) were male and 18 (36%) were female.

Out of 18 female patients, 16 (88.88%) were puerperal and 2 (11.12%) were non-puerperal CVST.

Table 1: Duration From Delivery To Onset Of Sypmtoms:

DAYS FROM DELIVERY	NO OF FEMALE PATIENTS (n=16)
1-7	2 (12.5%)
8-14	8 (50%)
15-21	5 (31.25%)
22-28	0
29-35	1 (6.25%)
36-42	0

In the present study, out of 16 puerperal patients, 50% of the cases (8 patients) of CVST occurred during 2nd week postpartum.

Table 2: Mode Of Onset:

Mode of onset	Number of cases
Acute	14 (28%)
Sub acute	33 (66%)
Chronic	3 (6%)
Total	50 (100%)

Those who presented within 48 hours were considered to have acute onset, with onset longer than 48 hours but less than 1 month were considered subacute, and with onset more than 1 month as chronic. On the baseline of the present study, 33 cases (66%) of CVT had sub acute presentation followed by 14 cases (28%) with acute presentation and 3 (6%) cases had chronic presentation.

Table 3: Clinical Signs And Symptoms:

Symptoms	Number of cases
Headache	44 (88%)
Convulsions	40 (80%)
Altered Sensorium	33 (66%)
Focal deficits	30 (60%)
Fever	23 (46%)

In the present study, most common symptom was headache contributing to 88% (44 cases) followed by convulsions in 80% (40 cases).In addition, 66% of patients presented with altered Sensorium, 60% patients with focal deficits and 46% of patients with fever. Two of them had vomiting and another with ear discharge.

Neurological signs: In the present study, hemiplegia was present in 60%, cranial nerve involvement in 36% and Papilledema in 18% of patients.

Table 4: Etiology And Risk Factors Identified In Males:

RISK FACTORS	NO OF PATIENTS (n=32 male patients)	PERCENTAGE (%)
Hyperhomocysteinemia	19	59.37
Anemia	4	12.5
Polycythemia	2	6.25
HIV	2	6.25
APLA syndrome	1	3.12
Protein C deficiency	1	3.12
Protein S deficiency	1	3.12
Malignancy	1	3.12
No cause found	9	28.12

Hyperhomocytienemia was the most common risk factor identified in 59.37% of male patients, followed by anemia in 12.5% of male patients. No cause could be identified in 28.12% of male patient.

Table 5: Etiology And Risk Factors Identified In Females:

RISK FACTORS	NO OF PATIENTS (n=18 female patients)	PERCENTAGE (%)
Puerperium	16	88.88
Anemia	14	77.77
OC pills/ HRT	5	27.77
APLA syndrome	2	11.11
Hyperhomocystienemia	2	11.11
Protein C deficiency	2	11.11
Anti thrombin III deficiency	1	5.5
No cause found	1	5.5

Puerperium was most common risk factor identified in 88% of the female patients followed by anemia in 77%. No cause could be identified in 5.5% of female patients.

CT Scan Findings: In this study patients were distributed on the bases of CT scan findings of Direct signs like cord sign, empty delta sign, dense triangle sign and Indirect signs of hemorrhagic or non hemorrhagic infarct with or without midline shift. In the present study, Hemorrhagic infarct comprises 29 cases with 58% followed by edema in 18%. Out of 50 patients 18% had normal CT picture.

Table 6: Sinus Involved In Mri+Mrv:

Sinus involved	Number of cases (n=50)
Superior sagittal sinus	29 (58%)
Transverse sinus	22 (44%)
Straight sinus	5 (10%)
Sigmoid sinus	2 (4%)
Cavernous sinus	3 (6%)
Cortical vein	2 (4%)
Internal jugular vein	1 (2%)
Deep cerebral vein	0

In the present study, the most common sinus involved was superior sagittal Sinus in 29 patients accounting to 58% followed by transverse sinus in 22 Patients 44%.

Treatment:

All the 50 patients were given anticoagulation, initially with subcutaneous LMWH in 43 cases (86%) and intravenous unfractionated heparin infusion in 7 cases (14%), later on changed over to oral anticoagulants like warfarin. No patients were subjected to mechanical thrombectomy. 5 patients(10%) required decompressive craniotomy, out of which 4 patients died. Additional treatments were given on the bases of symptoms, including antiepileptics in 35 patients (70%) for prevention of convulsions and various form of hyperosmolar solution like mannitol, 3% NACL in 40 patients (80%) of raised ICT in form of midline shift and mass effect on CT Scan. Mean hospital stay was 14.7 days in the present study.

Prognosis:

Mean hospital stay was 14.7 days in the present study (range 4 - 43). Modified Rankin Scale score at discharge was: 0 (in fourteen patients), 1 (eleven), 2 (seven), 3 (four), 4 (two) and 5 (three). Nine patients died during hospitalization (six due to raised intracranial tension and one due to pregnancy related complication). Out of the 41 survived patients, 25 (60.97%) had complete recovery, while 10 patients had residual hemiparesis, 1 had diplopia and 1 had persistant headache at the time of discharge. During the follow up period 3 patients had seizure recurrence while no one had recurrent CVST or thrombosis at other sites. 8 patients were lost to follow-up after 3 months.

Summary

CVST is more commonly seen as stroke of young, about (86%) of patients were in the age group of 18-40 years. 64% of them were males and 36% were females. Mean age of affected patients was 31.02 years. CVST is more common in females in postpartum period especially in 2nd week due to pregnancy induced thrombophilic state. Puerperium was the most common risk factor associated with CVST contributing to 90% followed by anemia in 78 % of females. In males, hyperhomocysteinemia (60%) was found to be most commonly associated with CVST. CVST has to be suspected in any patient with symptoms such as headache, seizures,

altered Sensorium and focal neurological deficit as they are the most common clinical feature. CVST can also present only with isolated intracranial hypertension. CT Brain reports were normal in 10% of patients. Most common CT finding was hemorrhagic infarct seen in 58% of patients. Normal CT Brain does not rule out CVST. So to confirm the diagnosis of CVST, MRI has to be done in all suspected cases. Among the sinuses Superior Saggital Sinus is most commonly involved. Initiation of heparin therapy followed by oral anticoagulants favours early recovery of neurological deficit and prevents further complications. LMWH was given in 86% cases and intravenous unfractionated heparin infusion in 14% whereas 10% of the patients required decompressive craniotomy. Mean hospital stay is 14.7 days for the present study. Overall outcome is good with 60.97% of the patients having complete recovery at the time of discharge and a mortality rate of 18%.

REFERENCES:

1. Bousser MG, Chiras J, Bones J, Castaigne p. Cerebral venous thrombosis. A review of 38 cases. Stroke 1995; 16:199-213.
2. Alam I, Razaullah, Haider I, Humayun M, Taqweem MA, Nisar M. Spectrum of precipitating factors of hepatic encephalopathy in liver cirrhosis. Pakistan J. Med. Res. 2005;44(2):96-100. Ribes F. Des rechereches faites Sur la phebite. Rev. Medi (Paris) 2005; 3:5- 41.
3. Sutton D., Stevens J.: Vascular Imaging in Neuroradiology in Textbook of radiology and Imaging, volume 2 by Churchill Livingstone New York 2003, pp1682-87.
4. Kido DK, Baker RA, Rumbaugh Calvin L. Normal Cerebral VascularAnatomy. In: Abrams Angiography, Vascular and Interventional Radiology by Abrams HL, Third Edition. Little, Brown and Company, Boston. USA. 2013 pp 257-68.
5. Meder JF, Chiras J. Roland J, Guinet P, Bracard S, Bargy F. Venous territories of the brain. J Neuroradiol 2014; 21:118 - 33.
6. Einhaupl KM, Masuhr F.Cerebral Venous and Sinus thrombosis - an update Eur J Neurol 2002; 1: 109 - 26.
7. Huang, Y.P., and Wolf, B.S. Angiographic features of fourth ventricle tumors with special reference to the posterior inferior cerebellar artery. Am J Radiol. 2009; 107:543.
8. Hacker H: Normal Supratentorial veins and dural sinuses. In: Newton TH, Potts DG, eds: Radiology of Skull and Brain. Angiography. Book 3. St Louis: Mosby; 2014;2:1851-77.