STUDY OF CLINICAL PROFILE OF CEREBRAL VENOUS SINUS THROMBOSIS IN KARNATAKA INSTITUTE OF MEDICAL SCIENCES, HUBLI

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ABSTRACT

BACKGROUND

Patients with Cortical venous thrombosis present with varied clinical features and often missed in a plain axial CT Brain. Hence identifying risk factors is important in such patients so that appropriate imaging and early treatment can be initiated. The present study is directed in identifying most common risk factors in patients with CVT in a tertiary care centre.

Aim of Study- To study the clinical profile of patients with CVT in a tertiary care hospital in north Karnataka.

MATERIALS AND METHODS

78 patients with CVT diagnosed based on imaging aged more than 13 years were included in the study. Each patient underwent necessary investigations including imaging. Detail evaluation of risk factors was done based on history collected and lab parameters.

Sample Size- 78.

Type of Study- Single centre observational study.

RESULTS

Cerebral venous sinus thrombosis is most common in young population. Most common affected age group is 21-40 years with mean age of 32±11 years. Incidence of cerebral venous sinus thrombosis is more in males when compared to females. Most common mode of presentation was seizures followed by headache. Most common risk factor for cerebral venous sinus thrombosis is alcohol in males followed by dehydration, peripartum state in females, hyperhomocysteinaemia and tobacco use. Cerebral venous sinus thrombosis was more common following first pregnancy when compared to subsequent pregnancies. Cerebral venous sinus thrombosis in peripartum state was most commonly seen between 7-42 days of delivery. Superior sagittal sinus is the most common sinus involved in cerebral venous Thrombosis. Multiple sinus involvement is associated with greater case fatality rate. Coma at the time of presentation, cerebral venous sinus thrombosis with midline shift, deep cerebral venous sinus thrombosis are predictors of poor outcome in cerebral venous sinus thrombosis.

CONCLUSION

In our study CVT affected the most productive age group of patients and most common risk factor could be reduced by health education and primary prevention.

KEYWORDS

Cortical Venous Thrombosis; Risk Factors; Serum Homocysteine, Postpartum.

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BACKGROUND

Cerebral veno-sinus thrombosis involves the thrombosis of the cortical veins and the draining venous sinuses, either alone or in combination. Incidence is 3-4 cases per million. This distinct condition frequently affects young adults and children. Puerperal CVT has been reported to be 10-12 times more frequent in India than the West.[1]

The presenting features of CVT usually depend on the sinuses involved, place of occlusion, involvement of cortical veins and the presence of collaterals.

Mode of onset is acute, subacute or chronic. CVT has four patterns/syndromes - syndrome of acute motor deficit, syndrome of increased intracranial tension without motor weakness, syndrome of cavernous sinus thrombosis, syndrome of deep venous thrombosis.[2]

The common symptoms include headache, focal seizures, vomiting, focal deficits and fever. The most frequent symptom is headache in over 90% of patients. Seizures occur in about 40-70% of patients. Neurologic signs develop in half of patients with sinus thrombosis and include monoparesis, hemiparesis or paraparesis.

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The current study is undertaken to study the clinical profile of cerebral venous thrombosis in KIMS, a tertiary health care centre in Hubli.

MATERIALS AND METHODS

- Total of 78 patients were included in the study who were diagnosed with cerebral venous sinus thrombosis using appropriate imaging.
- The study period extended between December 2014 to November 2015.
- All patients with CVT during this period were included in the study.

Inclusion Criteria

- Patients aged more than 13 years with CVT.

Exclusion Criteria

- Ischemic or haemorrhagic stroke not because of CVT.
- Transient ischemic attack
- Extradural haemorrhage
- Subdural haemorrhage
- Aneurysmal bleed
- Subarachnoid haemorrhage.

Study Design

- Single centre, observation study.

Statistical Methods

The continuous variables will be summarized as mean [standard deviation]. Categorical variables will be summarized as proportions. The difference between categorical variables will be analysed using chi-square test and for continuous variables T- test will be used.

Investigations

Following investigations were done for each patient.
Haemoglobin, Total and differential count, ESR, Platelet count, Bleeding time, Clotting time, PT-INR, aPTT, Blood urea, Serum creatinine and electrolytes, Urine routine, ECG, 2D ECHO, Chest x ray, RBS, Lipid profiles, CT scan of Brain, MRI Brain with MR venogram LFT.

RESULTS

The study included a total of 78 patients with CVT. It was noted that the frequency was highest in the most productive age group that is patients between 20 to 30 years of age which included close to 45%.

Age (in Years)	Frequency	Percentage
< =20	9	11.5
21-30	35	44.9
31-40	16	20.5
41-50	12	15.4
51-60	5	6.4
>=61	1	1.3
Total	**78**	**100.0**

Table 1. Age Distribution of Patients Admitted with Cerebral Venous Sinus Thrombosis

Out of 78 cases, 42 patients were male and 36 patients were female.

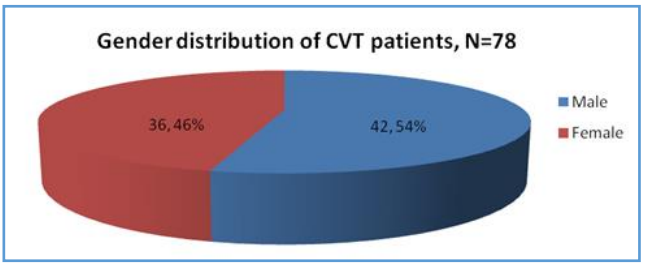

Figure 1. Pie Chart Depicting Gender Distribution of Patients Admitted with Cerebral Venous Sinus Thrombosis

It was noticed that more than half of patients were working in different social sectors of which majority were farmers in our study. The disease accounted for a significant loss of work hours in our patients.

Occupation	Frequency	Percentage
Student	1	1.3
Self-Occupation	17	21.8
Housewife	36	46.2
Agriculture	24	30.8
Total	**78**	**100.0**

Table 2. Occupation of Patients Admitted with Cerebral Venous Sinus Thrombosis

Symptom	Present, n (%)	Absent, n (%)	Total
Headache	43 (55.1)	35 (44.9)	78 (100)
Acute (<48 hours)	9 (11.5)	69 (35.9)	78 (100)
Subacute (48 hours to 7 days)	28 (35.9)	50 (64.1)	78 (100)
Chronic (>7 days)	5 (6.4)	73 (93.6)	78 (100)
Seizures	46 (59.0)	32 (41.0)	78 (100)
Focal Neurological Deficit	15 (19.2)	63 (80.8)	78 (100)
Altered Sensorium	8 (10.3)	70 (89.7)	78 (100)
Speech Deficits	2 (2.6)	76 (87.4)	78 (100)
Cranial nerve Deficits	4 (5.1)	74 (94.9)	78 (100)

Table 3. Symptoms of Presentation of Patients Admitted with Cerebral Venous Sinus Thrombosis

Seizure is the most common mode of presentation in cerebral venous sinus thrombosis followed by headache, focal neurologic deficits, altered sensorium, speech deficits, cranial nerve deficits. Among those who presented with headache, subacute headache is the most common.

Past History	Present, n (%)	Absent (%)	Total
Hypertension	3 (3.8)	75 (96.2)	**78 (100)**
Diabetes Mellitus	3 (3.8)	75 (96.2)	**78 (100)**
Thrombosis*	5 (6.4)	73 (93.6)	**78 (100)**

Table 4. Past History of Hypertension, Diabetes and Thrombosis among Patients Admitted with Cerebral Venous Sinus Thrombosis

* Deep Vein Thrombosis/ Cerebrovascular Thrombosis

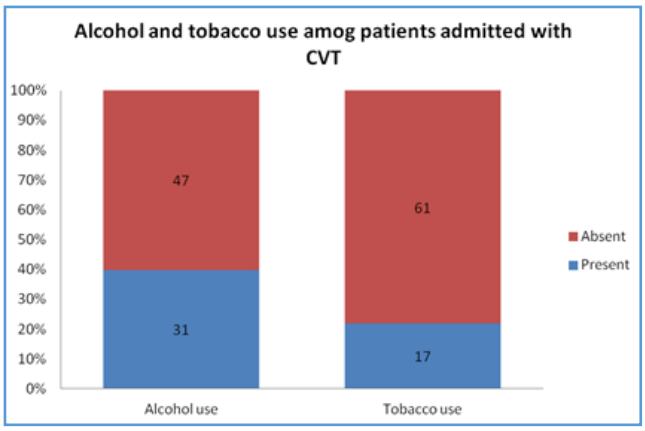

Figure 2. A Component Bar Chart Depicting Alcohol and Tobacco use Among Patients Admitted with Cerebral Venous Sinus Thrombosis

Out of 78 patients with cerebral venous sinus thrombosis, 31 (39.8%) patients were alcoholics and 17 (21.8%) patients had habit of tobacco use.

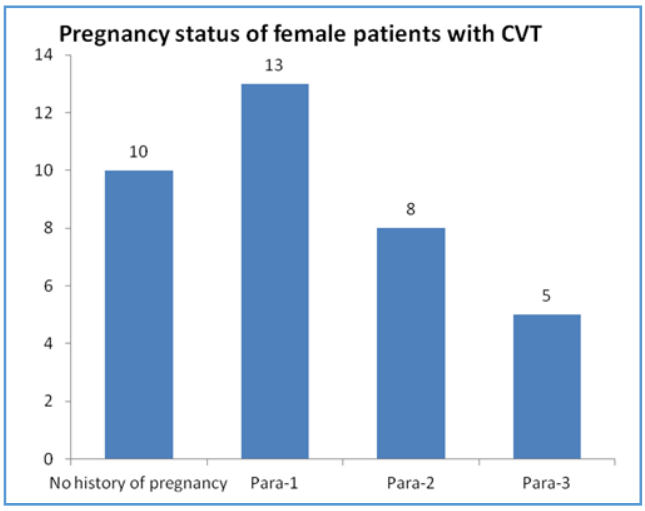

Figure 3. A Bar Chart Depicting Pregnancy Status of Female Patients Admitted with Cerebral Venous Sinus Thrombosis

Out of 36 female patients with cerebral venous sinus thrombosis 10 (27.8%) patients did not had history of pregnancy and 26 (72.2%) patients had history of pregnancy. Out of 26 (72.2%) female patients who had history of pregnancy with cerebral venous sinus thrombosis 13 (36.1%) patients were Para -1, 8 (22.2%) patients were Para-2 and 5 (13.9%) patients were Para-3. Thus, in our study it was observed that risk of CVT was highest in the perinatal period of first pregnancy.

Delivery status	Frequency	Percentage
No h/o pregnancy	10	27.8
1st trimester (12 weeks of gestation)	1	2.8
Postpartum		
< 7 days of delivery	5	13.9
7-42 days of delivery	18	50.0
> 42 days of delivery	2	5.6
Total	**36**	**100**

Table 5. Relation of Pregnancy with Time of CVT

Thus, in our study it was noted that the incidence of CVT was highest within 42 days after delivery.

Signs	Present, n (%)	Absent, n (%)	Total
Pallor	43 (55.1)	35 (44.9)	78 (100)
Dehydration	27 (34.6)	51 (65.4)	78 (100)
Papilloedema	13 (16.7)	65 (83.3)	78 (100)

Table 6. Signs at Presentation of Patients Admitted with Cerebral Venous Sinus Thrombosis

Out of 78 patients with cerebral venous sinus thrombosis 43 (55.1%) patients had pallor, 27 (34.6%) patients had signs of dehydration and 13 (16.7%) patients had papilledema on fundus examination.

Homocysteine Levels	Frequency	Percentage
Normal	18	23.1
Elevated	18	23.1
Not measured	42	53.8
Total	**78**	**100**

Table 7. Homocysteine Levels of Patients Admitted with Cerebral Venous Sinus Thrombosis

Among 36 (46.2%) patients in whom serum homocysteine levels were measured 18 (23.1%) patients were having normal serum homocysteine levels and 18 (23.1%) patients had increased serum homocysteine levels.

Sinuses	Present	Percentage
Superior Sagittal Sinus	62	79.4
Transverse Sinus	33	42.3
Sigmoid Sinus	33	42.3
Internal Jugular vein	13	16.66
Straight sinus	6	7.69
Deep Venous System	5	6.41
Cortical veins	2	2.56

Table 8. Pattern of Sinus Involvement in Patients with CVT

Few patients had multiple sinus involvement. Most common sinus involved is superior sagittal sinus followed by transverse sinus, sigmoid sinus, internal jugular vein, straight sinus, deep venous system and cortical veins in decreasing order of frequency.

Out of 78 patients with cerebral venous sinus thrombosis, 74 (94.9%) patients survived and 4 (5.1%) patients died. Out of that 4 patients who died all had multiple venous sinus thrombosis deep venous system was involved in 3 patients.

DISCUSSION

The incidence of CVT is much more than we anticipate. The reason for this being subtler manifestations of the disease in few cases and the increase in use of advanced imaging technique including MR venogram. CVT requires a high index of suspicion particularly in our country because of the higher

prevalence of risk factors in our population. The mean age of presentation in our study is comparable with several other studies conducted in different parts of our country.[3,4,5]

In present study the risk factors for CVT were alcohol 39.8%, tobacco use 21.8%, pregnancy and puerperium 33.33%, dehydration 34.6%, anaemia 68%, polycythaemia 7.7%, hyperhomocysteinaemia 23.1% which correlates with studies done by Zouhayr Souirti et al,[3] Mohammad Wasay et al,[6] Umesh G Rajoor et al,[7] Virendra C. Patil et al.[8] The differences in the incidence of risk factors in above studies and present study may be due to the study population, regional and cultural differences.

In our study it was found that superior sagittal sinus thrombosis was most commonly involved which was consistent with other studies.[9,10] The severity of clinical presentation does not depend on the burden of risk factor alone, it depends on factors such as extent of sinus thrombosis, presence of collaterals, rapidity of onset, and the time of presentation.

Although the advances in imaging modalities have made it possible for better diagnosis and treatment of CVT, there is no much data regarding subtle presentation of patients with risk factor for CVT. Most of the patients with either inherited hypercoagulable state or acquired disorders present with an acute stroke, providing no window for screening of these patients. The evaluation of each patient with CVT for inherited hypercoagulable state might not be possible in our setting because of lack of resources. Thus, it mandates us to look into the avoidable risk factors by primordial prevention and primary prevention in patients with risk factors such as anaemia, dehydration, puerperium and alcohol. This can reduce the overall burden of the disease and also reduce mortality.

Our study also has a few limitations as it is a single centre study. Also, being an apex institute catering large population it may project a higher incidence however the distribution of risk factors is consistent with several other studies.

CONCLUSION

Cerebral venous sinus thrombosis is most common in young population. Most common affected age group is 21-40 years with mean age of 32 ± 11 years.

Incidence of cerebral venous sinus thrombosis is more in males when compared to females.

Most common mode of presentation was seizures followed by headache.

Most common risk factor for cerebral venous sinus thrombosis is alcohol in males followed by dehydration, peripartum state in females, hyperhomocysteinaemia and tobacco use.

Cerebral venous sinus thrombosis was more common following first pregnancy when compared to subsequent pregnancies.

Cerebral venous sinus thrombosis in peripartum state was most commonly seen between 7-42 days of delivery.

Superior sagittal sinus is the most common sinus involved in cerebral venous Thrombosis.

Multiple sinus involvement is associated with greater case fatality rate. Coma at the time of presentation, cerebral venous sinus thrombosis with midline shift, deep cerebral venous sinus thrombosis are predictors of poor outcome in cerebral venous sinus thrombosis.

REFERENCES

[1] Nagaraja D. Cerebral veno-sinus thrombosis. In: Shah SN. Edr. API – Text Book of medicine. 8th edn. Mumbi: The Association of Physicians of India 2008:p.1165-1167.

[2] Nagaraja D. Veno-Occlusive disease of the brain. In: Garg RK. edr. Reviews in tropical neurology. 2002: p. 199-212.

[3] Souirti Z, Messouak O, Belahsen F. Cerebral venous thrombosis: a Moroccan retrospective study of 30 cases. Pan African Medical Journal 2014;17:281.

[4] Appenzeller S, Zeller CB, Annichino-Bizzachi JM, et al. Cerebral venous thrombosis: influence of risk factors and imaging findings on prognosis. Clin Neurol Neurosurg 2005;107(5):371-378.

[5] Mangshetty B, Reddy KN. Clinical and neuroimaging correlation in patients with cerebral sinus venous thrombosis. Al Ameen J Med Sci 2015;8(1):64-71.

[6] Wasay M, Bakshi R, Bobustuc G, et al. Cerebral venous thrombosis: analysis of a multicenter cohort from the United States. J Stroke Cerebrovasc Dis 2008;17(2):49-54.

[7] Rajoor UG, Seema BN. Cerebral venous thrombosis in women: a study from teaching hospital in North Karnataka. International Journal of Scientific Study 2015;3(5):179-182.

[8] Patil VC, Choraria K, Desai N, et al. Clinical profile and outcome of cerebral venous sinus thrombosis at tertiary care center. J Neurosci Rural Pract 2014;5(3):218-224.

[9] Nagarajan E, Shankar V. Characteristics of cerebral venous thrombosis in a South Indian Rural Hospital. Int J Med Health Sci 2013;2(3):298-304.

[10] Vishwanath K, Balaraj KP, Chavan BD. A study of the clinical profile of cerebral venous sinus thrombosis. IOSR Journal of Dental and Medical Sciences 2014;13(2):Ver. III. pp. 61-66.