

Hypothyroidism Cases as Risk Factor to Csvt – A Retrospective Study In A Medical College Hospital In Telangana State

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Abstract: Sixteen cases of hypothyroidism (4 were male patients) cases found in our retrospective study of CSVT during 2013-2020. Headache, focal seizures, and paresis were the main symptoms observed. Multiple sinuses involvement was in this study. Only 2 patients had well controlled thyroid function. All the cases responded well to anticoagulation apart from thyroxine replacement. No mortality was seen in this sub-group.

Key words: CSVT, Hypothyroidism, Anti-coagulation.

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HYPOTHYROIDISM CASES AS RISK FACTOR TO CSVT – A RETROSPECTIVE STUDY IN A MEDICAL COLLEGE HOSPITAL IN TELANGANA STATE

I. Introduction:

Cerebral sinus and venous thrombosis (CSVT) is idiopathic in around 12.5% of patients¹. Of the multiple risk factors that have been identified, the most common are genetic or acquired thrombophilia and the use of oral contraceptives, while the less common include local infections and mechanical causes. However, 12.5% of all cases are idiopathic^{1,2}. Thyroid diseases have been described as rare risk factors for CVST (<2% of all cases), without exact knowledge of the underlying pathophysiology. Many case reports, some clinical trials and basic research studies generally suggest that thyroid diseases, especially hyperthyroidism, serve as a risk factor for CVST orthromboembolism.

Patients and Methods: Confirmed cases of CVST were (re-)evaluated in terms of thyroid disorders as risk factors. Patients admitted to SVS Medical college and hospital, Mahabubnagar between September 2013 to September 2020 with a confirmed diagnosis of cerebral venous thrombosis were taken up for the study. Apart from routine tests, thyroid function tests were done, and results were compared to previous data from the national and International Studies on CVST.

Results: A total cases of 16 were found to be hypothyroidism, of whom 12 were known cases on treatment. 4 were male patients. of the female cases two were in puerperium. Symptoms did not differ in any way with that of all causes of CSVT put together. Table 1 describes the presenting symptomatology.

Table 1: Common presenting symptom in present study

Symptoms	Total	Male (4)	Female (12)	Significance
Headache	15	4	11	0.643
Seizures	13	3	10	0.652
Fever	12	2	10	0.062
Paresis	11	2	9	0.052
Vomiting	10	2	8	0.058
Coma	7	1	6	0.625
Mental changes	4	1	3	0.078
Papilledema	2	0	02	0.043

Two female patients had well controlled thyroid function tests. Most of the cases of CSVT in this study had not been well controlled. The TSH levels and sinus involved are tabulated in table 2.

Table 2 TSH levels and the sinus involved in the cases recorded in this study.

	Age	Gender	TSH levels	Sinus thrombosis affected.
1	15	Female	4.4	SS
2	24	Female	16	SS + TS
3	32	Female	22	SSS
4	44	Male	12	SSS + SS
5	31	Female	18	SS + TS
6	26	Female #	46	SS + TS + SSS
7	36	Male	14	SSS + TS
8	32	Male	11	SSS + SS + TS
9	36	Female #	36	SSS + SS + TS
10	24	Female	15	SSS
11	31	Female *	44	SS
12	22	Male #	28	TS
13	28	Female *#	128	SSS + SS + TS
14	33	Female	28	SSS + TS
15	20	Female	12	TS + SS
16	27	Female	2.8	TS

#Fresh cases detected for first time * patients recently delivered. SSS – Superior Sagittal Sinus, SS – Sigmoid Sinus, TS – Transverse Sinus

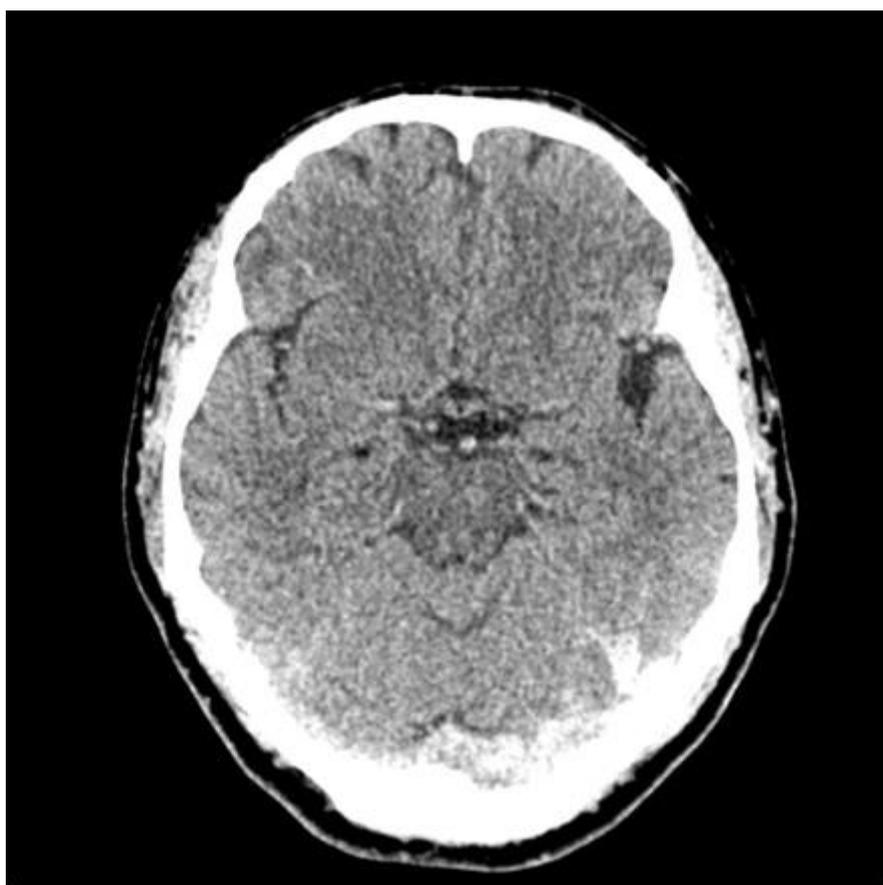


Fig 1 Axial non-contrast CT scan showing cord sign, an indication of cerebral sinus and venous thrombosis.

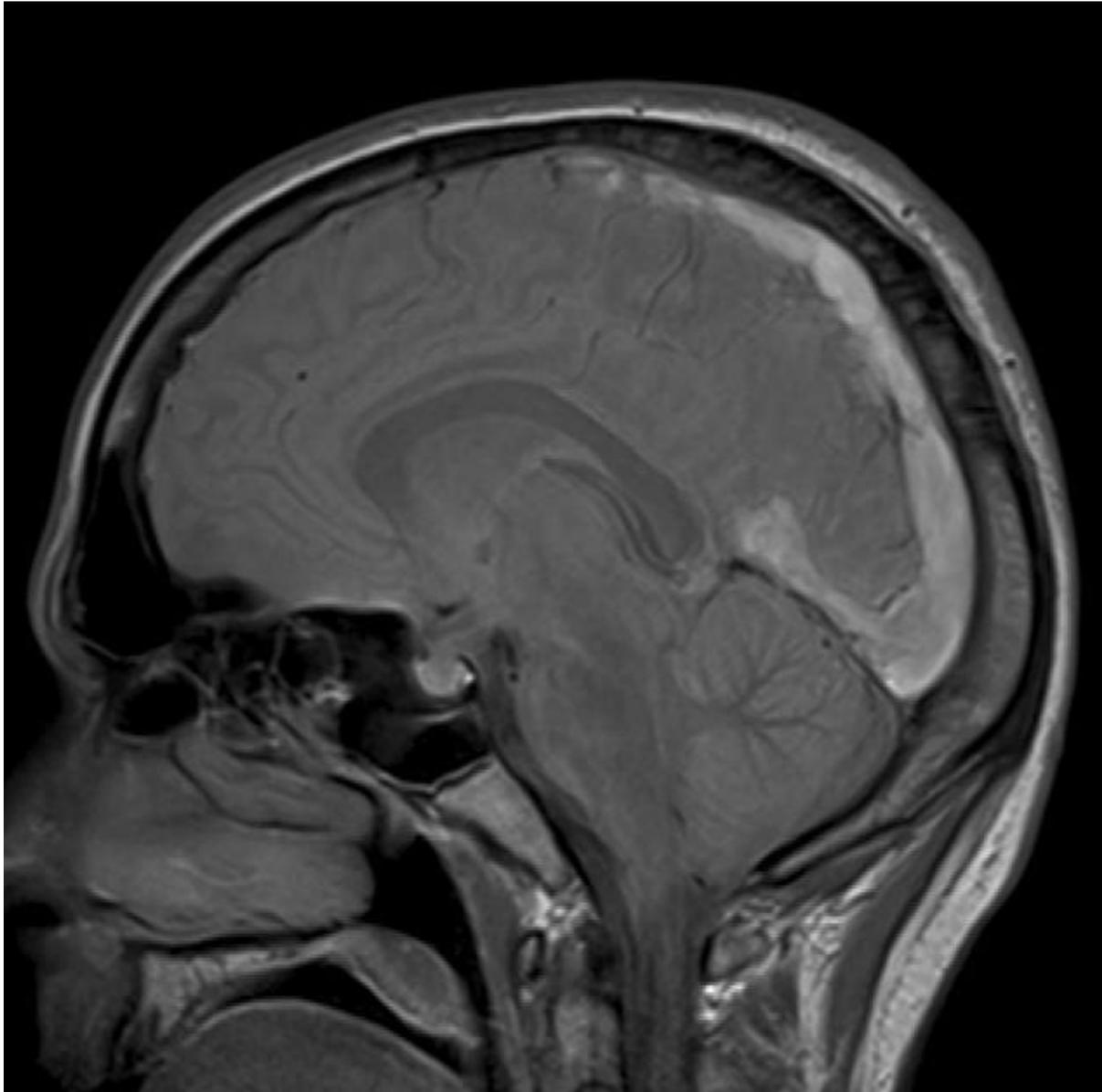


Fig 2: MRI of the brain showing signal hyperintensity of superior longitudinal sinus, straight sinus, and transverse sinus.

II. Discussion:

This retrospective single-center analysis of all documented cases of CVST (2013–2020) revealed 16 cases with hypo-thyroidism as one of the factors for CSVT. Cerebral sinus and venous thrombosis [CSVT] is a very uncommon disease with an estimated incidence of 4 per 1 000 000 per year and with mortality rates between 5% and 30%¹. Kaliebedescribed an association of CSVT and thyrotoxicosis in way back 1913 and Doyle in 1927⁶. Verberne et al⁷ opined that thyrotoxicosis might not be mere coincidental. There had been many case reports from all over world⁸⁻¹². Thyroid diseases were present in 20.9% of CVST patients; this included patients with previous (9.9%) and current thyroid dysfunction (11%)⁸. The data so far indicate a possible association between hyperthyroidism and moderate hypothyroidism with a state of hypercoagulability^{3, 4}. Only few studies were in the literature about the hypothyroidism associated with CSVT^{13, 14, 15}. Some studies suggested hypercoagulable state in hypothyroidism⁵. Hypothyroidism favours a procoagulant by decreasing fibrinolysis¹⁶, inducing hyperhomocysteinemia, and high C-reactive protein (CRP). Decreased fibrinolytic capacity, high CRP levels, and coagulation factors abnormalities can occur even in subclinical hypothyroidism⁵. Increased levels of plasma thrombin-activatable fibrinolysis inhibitor levels were observed in patients with mild and overt hypothyroidism, and levothyroxine treatment was effective in reducing these levels¹⁷. Endothelial dysfunction was found in the microvasculature of patients with overt and subclinical hypothyroidism¹⁸.

III. Conclusion:

A retrospective analysis of CSVT cases that occurred during 2013-2020. Our study found 16 cases were hypothyroidism cases. No hyperthyroidism case was noted. Literature was searched to find out the pathogenesis of CSVT in hypothyroid status. It is necessary to stress that hemodynamic factors, dehydration, and stasis of venous blood flow attributable to goiter may also contribute to the multifactorial pathogenesis of CSVT. Severe unexplained headache or focal neurologic deficits in any thyroid illness should make clinician to think about CSVT, and similarly thyroid function tests to be thought in CSVT when Etiology is not exactly understood.

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