


Original Research Article

Clinical profile and predictors of outcome in CSVT patients with intracranial hemorrhage

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	International Archives of Integrated Medicine, Vol. 7, Issue 7, July, 2020.	
	Available online at http://iaimjournal.com/	
	ISSN: 2394-0026 (P)	ISSN: 2394-0034 (O)
	Received on: 17-02-2020	Accepted on: 09-07-2020
	Source of support: Nil	Conflict of interest: None declared.
How to cite this article: Veena Narisetty, Kamera Sateesh Kumar, K Kalyani. Clinical profile and predictors of outcome in CSVT patients with intracranial hemorrhage. IAIM, 2020; 7(7): 31-35.		

Abstract

Background: Cerebral venous thrombosis (CSVT) is an uncommon cause of stroke with the incidence of 0.5 % from all strokes. With the widespread use of MRI and CTV, many cases of CSVT are being diagnosed than before, therefore it is important to be aware of different clinical presentation and course of CSVT, as most of them had excellent prognosis if treated early.

Aim and objective: To study varied clinical presentations among patients of CSVT with ICH and to study the location of bleeds, sinus thrombosis and their outcome.

Materials and methods: Prospective observational study done in 67 patients admitted with hemorrhagic CSVT in Gandhi hospital. CSVT with ICH was diagnosed through imaging either by MRV/ CTV.

Results: Total of 67 patients were included of which males were around 55.3% (37) and females were 44.7% (30). Acute presentation was seen in around 37% and subacute in 63% and majority of patients had headache (91%), vomiting (76%), aphasia (64%), seizures (45%). 43% patients were either drowsy or comatose at presentation. Common risk factors were anemia in 22.3%, hyperhomocysteinemia (18%), alcoholism (26.8%) in general. Oral contraceptive pill intake was seen in 20%, postpartum state in 26.6% of females included in the study.

Conclusion: Headache, convulsion, decreased level of consciousness, seizures and aphasia were the most frequent clinical symptoms of patients with hemorrhagic CSVT. Pregnancy/ Puerperium, early and extended thrombosis of large sinus, multiple sinuses involvement are associated with hemorrhagic lesion and had an unfavorable outcome.

Key words

Cerebral venous thrombosis, CSVT, Intracranial hemorrhage, ICH, Magnetic Resonance Venography, MRV, CTV, Outcome.

Introduction

Cerebral venous thrombosis (CSVT) is an uncommon cause of stroke with the incidence of 0.5 % from all strokes [1]. With the widespread use of MRI and CTV, many cases of CSVT are being diagnosed than before, therefore it is important to be aware of different clinical presentation and course of CSVT, as most of them had excellent prognosis if treated early [2]. Following venous sinus thrombosis, venous congestion and hemorrhagic transformation arises within the brain secondary to reduced venous outflow which leads to cerebral edema with mass effect. Because of raised intracranial pressure and involvement of vascular supply, ischemia and hemorrhagic lesions may develop in CSVT [3].

Current literature states that CSVT without a lesion on computerized tomography (CT) or MRI, venous non-hemorrhagic infarct (NHI), hemorrhagic infarct (HI), and intracerebral hematoma represent continuum of parenchymal lesions reflecting successive grades of CSVT severity [4]. Among these spectrum, Intracerebral hemorrhage (ICH) occur in approximately one-third of patients with cerebral venous thrombosis (CVT), and are usually associated with a more severe clinical presentation at onset and a worse outcome [5]. However, there is a paucity of studies regarding predictors of outcome in patients of CSVT with hemorrhage so present study was done with aim of studying the clinical profile and predictors of outcome in patients of CSVT with hemorrhage.

Materials and methods

Present study was a prospective observational study. It was done in 67 patients of CSVT with intracranial hemorrhage who were included after confirmation by imaging either by MRV or CTV. Patients disability score was assessed using modified ranking scale either at follow up or by

telephonic interview after 2 months.

Inclusion criteria

- All patients presenting with CSVT and ICH at hospital admission were enrolled in study.
- Intracerebral hematoma (ICH) was considered if the patient had a confluent hemorrhagic lesion >1 cm on CT and MRI.

Exclusion criteria

- Patients with venous hemorrhagic infarct, non-hemorrhagic infarct and non lesional CSVT were excluded from the study.
- Patients who did not give consent were excluded from the study.

Results

Total of 67 patients were included in the study with males around 55.2% (37) and females 44.7% (30). Among females 8(26.6%) were in postpartum period. Around 25 patients (37.3%) presented with acute onset of symptoms rest were subacute and none presented with chronic duration of symptoms (**Table – 1**).

Among the clinical presentation headache, vomiting were the most common symptoms found in around 91% (61 patients) and 76.1% (51 patients) respectively. This was followed by papilloedema found in 65.6%(44), diplopia and aphasia in around 64.1% (43). Seizures and hemiparesis was seen in around 44.7% (30), 40.2% (27) respectively. Around 43.2% (29 patients) were either drowsy and comatose at the time of inclusion in the study (**Graph – 1**).

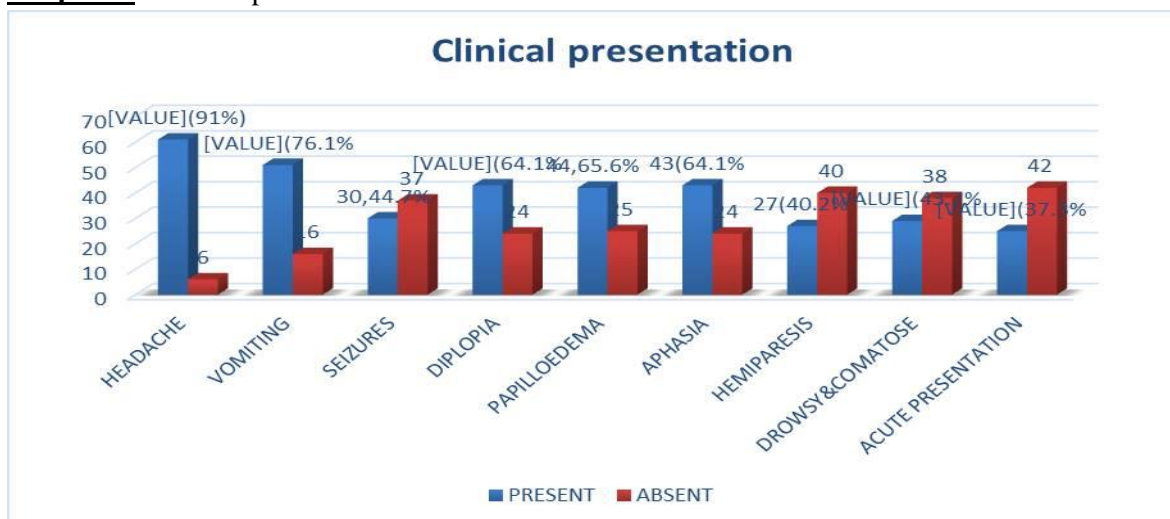
Risk factors commonly involved in the study were anemia 22.3%, alcohol in 26.8%, hyperhomocysteine in 17.9%. Polycythemia and

malignancy was in around 1 % and 2% Among females, around 26.6% were postpartum state and OCP intake was seen in around 20% respectively (**Graph – 2**).
 (b) Among males, around 26.6% were postpartum state and OCP intake was seen in around 20% respectively (**Graph – 3**).

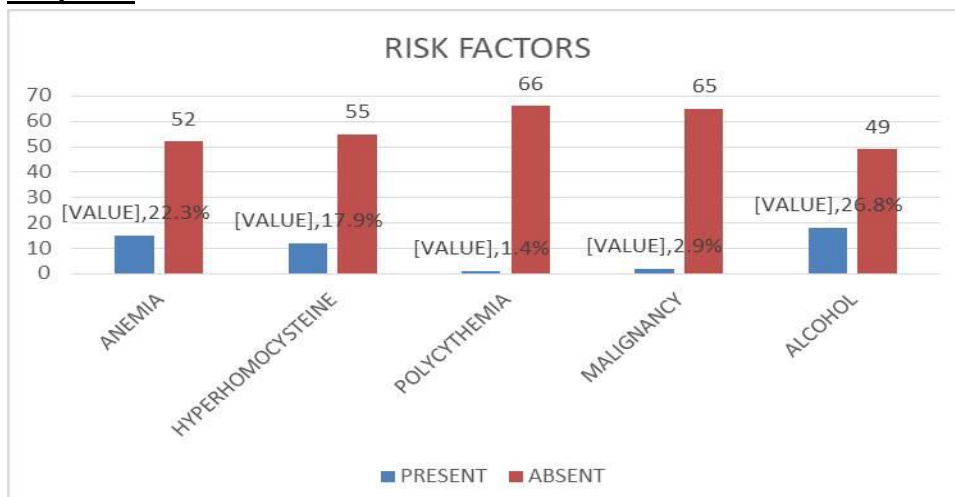
Table – 1: Good and poor outcome.

	Good outcome (mRS<2)	Poor outcome (mRS>3)	P value
Mean age	34.1+/-8.3	41.3+/-11.6	0.009
Headache	44(72.1%)	17(28.9%)	0.55
Seizures	23(76.7%)	7(23.3%)	0.5
Comatose	8(42.1%)	11(57.9%)	0.001
Hemiparesis	11(44%)	14(56%)	0.005
Aphasia	15(62.5%)	9(32.5%)	0.14
Left hemisphere	27(65.9%)	14(34.1%)	0.05
1 or more lesion>5cm	4(20%)	16(80%)	0.000
Multiple sinuses	26(60.5%)	17(39.5%)	0.002
Deep sinus	2(33%)	4(67%)	0.005
Rt transverse sinus	13(56.5%)	10(43.5%)	0.027

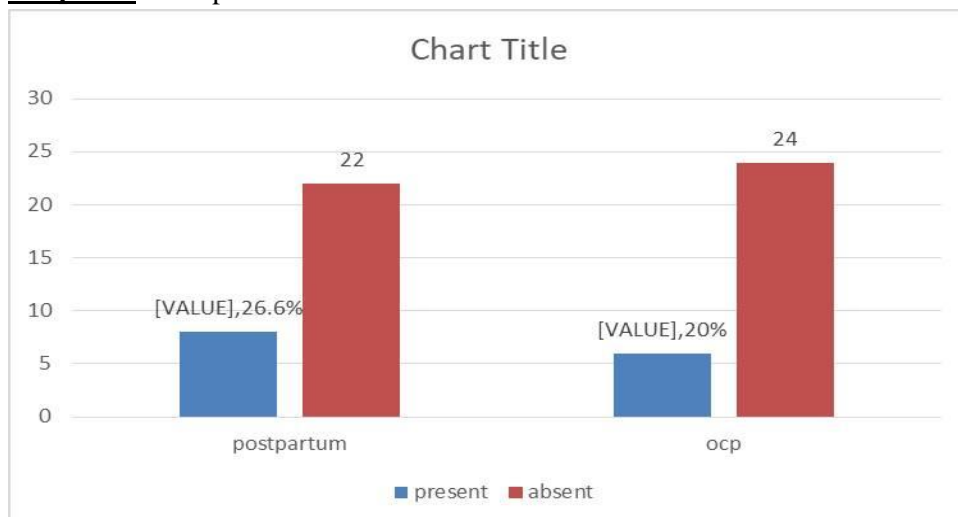
Graph – 1: Clinical presentation.



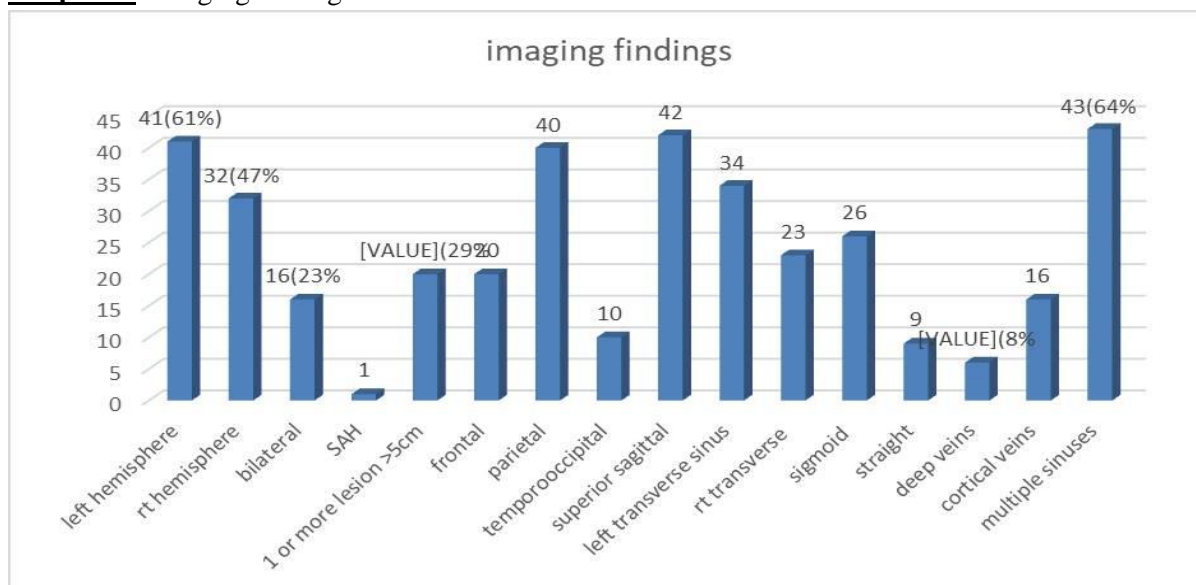
Graph – 2: Risk factors.



Graph – 3: Post-partum and OCP intake.



Graph – 4: Imaging findings.



Patients included in the study had left hemisphere involvement in 67% (41 patients), right hemisphere in 47% (32 patients) and bilateral in 23% (16 patients). Among sinuses involved superior sagittal sinus was most commonly involved which was seen in 42 patients (62.8%) followed by left transverse sinus, sigmoid, right transverse sinus in around 34 patients (50.7%), 26 patients (38.8%) and 23 patients (34.3%) respectively. Straight sinus and deep sinuses were involved in 9 patients (13.4%), 6 patients (8.9%) each. Multiple sinuses were involved in around 43 patients (64%). Lobes involved commonly were parietal followed by frontal and temporo-occipital was seen in 40

patients, 20 patients and 10 patients each. One patient had SAH in the study group (**Graph – 4**).

Discussion

In the present study of 67 patients, males were around 55% unlike the results found in ISCVT trail [5], Kumar, et al. [3] study and other earlier studies [1] which showed female preponderance especially females in postpartum were more in the above mentioned studies. However, results were in line with Narayan, et al. [2] study done in India.

High frequency of CSVT in males might be due to increasing intake of alcohol and also improved

obstetric care led to decreased incidence in females along with wide spread availability of imaging techniques in tertiary hospitals.

Headache, vomiting, aphasia followed by seizures, hemiparesis were commonly observed in the present study unlike Narayan, et al. [2] study were in aphasia, hemiparesis was seen only in 25%. Above might be due to including only patients with hemorrhagic CSVT in the present study. Above results were in line with Kumar, et al. [3] study.

Multiple sinus involvement was most common followed by superior sagittal sinus and left transverse sinus however in Kumar, et al. [3] study it was multiple sinus involvement followed by sigmoid sinus but it was correlating with the Narayan, et al. [2] study.

Parietal lobe was most commonly involved one followed by frontal, temporo-occipital lobe similar to Kumar, et al. [3] study.

Patients who were comatose at presentation with hemiparesis and lesion size >5 cm had poor prognosis with mRS [6] greater than or equal to 3 with p value being significant.

Similarly those who had left hemisphere involvement, with multiple sinuses being involved or had deep venous system involvement had poor prognosis compared to others, however, the presence of headache and seizures did not have any effect on outcome and p value was not significant and contradicted the Narayan, et al. [2] study where it was significant but results were in line with ISCVT trail.

Conclusion

In the present study, those who were elderly, comatose and had hemiparesis at presentation had poor prognosis. Patients who had lesions in

left hemisphere or lesion size more than 5 cm with multiple sinuses/ deep sinus involvement had poor prognosis when compared to others. Presence of headache, seizures did not have any effect on the outcome.

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