



Pattern and localization of headache in cerebral venous sinus thrombosis (CVST).

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Abstract;

Introduction:

Cerebral Venous Sinus Thrombosis (CVST) is an underdiagnosed but not rare type of neurovascular disease. There is involvement of cerebral veins or dural sinuses instead of arteries. The vein or dural sinuses are blocked by thrombus resulting in increased pressure and leading to rupture of vessels and leakage of blood into the brain. Headache is the most frequent presenting symptom of CVST.

Methodology: This descriptive study was conducted at Sheikh Zayed Medical College and Hospital Rahim Yar Khan. All consecutive patients with confirmed diagnoses of CVST were included in the study. Diagnosis of CVST confirmed by MRI/MR Venogram. An informed consent was taken and the data was collected on a questionnaire. Ethical permission was taken from Institutional ethical review committee.

Results: Headache was present in 51 (81%) of 63 confirmed CVST patients. Data regarding characteristics of headache from 51 patients was analyzed. The headache was associated with photophobia (4%), phonophobia (6%), loss of vision(6%), nausea (9%) and vomiting (42%) .The headache was not related with infarct and hemorrhage on Computed Tomography scan and Magnetic Resonance Imaging. The site of headache was not linked with site of sinus thrombosis.

Conclusion: Headache is the common symptom in patients with CVST. Usually the headache in CVST is subacute, throbbing, unilateral or localized to some specific region i.e frontal, temporal and occipital. There is no relation between headache and site of sinus thrombosis. Also there is no link between headache and hemorrhage or infarct on Computed Tomography scan (CT) and Magnetic Resonance Imaging (MRI).

Key words: Cerebral Venous Sinus Thrombosis , Headache, MRI/MR Venogram.

Introduction:

CVST is an underdiagnosed but not rare type of neurovascular disease.¹ CVST may affects most commonly young women. It can also affect children and neonates.² There is involvement of cerebral veins or dural sinuses instead of arteries. The vein or dural sinuses are blocked by thrombus resulting in increased pressure and ultimately rupture of vessels and leakage of blood into the brain.³ There are multiple precipitating factors such as pregnancy and puerperium, smoking⁴, hypertension, lumbar puncture, medication, oral contraceptive pills, anemia, head and neck injury, meningi-

tis, ear infection, family history of thrombophilia, inflammatory bowel disease, SLE and cancers.⁵ It may present with a variety of symptoms that can vary from headache, mild seizures to cessation of activity of single cranial nerve or overt hemiplegia⁶, the outcome and management depends upon early diagnosis.⁷ Headache is one of the most frequent symptoms of CVST. About 70-90 % patients of CVST can present with headache.⁸ The onset of headache in CVST can be "acute, sub-acute or chronic". The headache in CVST can have the features of thunderclap headache⁹, migraine¹⁰, cluster headache¹¹ and orthostatic head-

ache.¹² Review of literature showed that there is a positive association between acute severe headache and CVST.¹³

Published literature does not explain the pattern and the localization of headache in relation to the site of sinus thrombosis. To fill this gap, we have planned this study.

Objective: The purpose of our study is to find out the "pattern and localization of headache" in relation to the site of cerebral vein or dural sinus involvement in patients with the diagnosis of CVST.

Methodology:

This descriptive study was conducted at Sheikh Zayed Medical College and Hospital, Rahim Yar Khan. 82 patients with suspected diagnosis of cerebral venous sinus thrombosis presented at Sheikh Zayed Hospital, Rahim Yar Khan were enrolled. Data was collected by using a questionnaire after taking informed written consent. After confirmation of diagnosis 63 out of 82 patients were included in our study. The diagnosis of cerebral venous sinus thrombosis (CVST) was confirmed by using modern diagnostic imaging modalities that include CT scan, CT Venogram, MRI, MRV and digital subtraction angiography (DSA). Magnetic Resonance Venogram (MRV) is considered as the technique of choice.¹⁴

The collected data was entered and analyzed by using statistical software (SPSS). The quantitative variables like age, characteristics of headache were presented as mean and standard deviation. All the qualitative variables were analyzed by descriptive statistics in the form of frequency tables. Also, the sinus involved were presented as frequencies and percentages.

Results:

Age range was 17 to 65 years (mean 28). 56(89%) patients out of 63 were women. Headache was a common symptom presented in 51 (81%) patients. The headache duration was from 1 day to 3 months (mean 6 days). Characteristics of headache are shown in table No. 1, 2 and 3.

Table No. 1: Location of headache

Location of Headache	Number of patients	Percentage
Frontal	10	19.6
Temporal	2	3.9
Occipital	7	13.7
Diffuse	15	29.4
Hemicrania	17	33.3

Table No 2: Onset of Headache

	Number of patients	Percentage
Acute (1-2 days)	11	21.5
Subacute (3-14 days)	35	68.6
Chronic > 14 days	5	9.8
	51	100

Table No 3: Character of Headache.

	Number of patients	Percentage
Throbbing	22	43.13
Band like	18	35.3
Thunderclap	3	5.8
Others	8	15.6
Total	51	100

All 63 patients underwent brain imaging including CT scan, MRI and MRV (except 1 patient who died before MRI and MRV was done). "Intracerebral hemorrhage" was present in 12 (19%) patients. 03 (5%) patients had sub-arachnoid hemorrhage. 18 (28%) patients had hemorrhagic infarcts. 25 (39%) patients had infarcts. Site of sinus thrombosis in this series of patients is shown in table 4.

Table 4: MRV results showing frequencies of sites of sinus thrombosis.

	Number of patients	Percentage
SSST	22	34.9
All Dural sinuses and internal jugular veins	1	1.6
Death before MRV	1	1.6
TST	7	11.1
Straight sinus thrombosis	3	4.8
Sigmoid sinus thrombosis	3	4.8
Multiple sinus thrombosis	26	41.2
Total	63	100.0

Headache in CVST was associated with photophobia (4%), phonophobia (6%), nausea (9%), vomiting (42%) and loss of vision (6%). Headache was not linked with the hemorrhage on CT and MRI. The localization and severity of headache was not related with the site of sinus thrombosis.

Discussion:

The headache in CVST has no specific, uniform and recognizable pattern. The headache in CVST is usually a non-specific, initially intermittent but the headache

become constant afterwards, most commonly “unilateral” or “localized” and mostly throbbing in nature.¹⁵ The common mechanisms that can cause variable pattern of headache in CVST patients are stretching or irritation of nerves in sinus walls¹⁶, subarachnoid hemorrhage, inflammation of sinus walls¹⁷ and raised ICP. The unilateral headache and localized headache is more common than diffuse headache but unilateral headache is not associated with site of thrombosis. The limitation of this study was as the data was collected during an interview of the patients and the relatives of the patients (if patients were unconscious) thus the parameters like onset of symptoms, duration of headache, severity and localization of headache depends on the memory and perception of the patient and knowledge of the relatives. Mostly, it is difficult to tell the exact date of onset of symptoms, which causes a problem describing association between CVST and headache. Another limitation was the lack of use of an authenticated headache questionnaire for headache types. The diagnosis of CVST is difficult in the presence of history of migraine and with normal neurological examination.

Conclusion:

Headache is the common presenting symptom in patients with CVST. Usually, the headache in CVST is subacute, throbbing, unilateral or localized. There is no link between headache and site of sinus thrombosis. Also, there is no relationship between headache and hemorrhage or infarct on computed tomography (CT) scan and magnetic resonance imaging (MRI).

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