

Case Report

Cerebral Venous Sinus Thrombosis Presenting as Bilateral Subdural Hematoma: A Case Report

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Received: 14 May 2022 / Accepted: 10 August 2022 / Published online: 21 December 2022

BACKGROUND: Cerebral venous sinus thrombosis (CVST) is a very uncommon type of venous thromboembolism. The diagnosis is complicated by variable symptoms and risk factors associated with it. Thus, a high index of suspicion is very important to diagnose and treat this disorder.

CASE PRESENTATION: We report a 42 year old male with CVST who presented with headache, without any localizing signs. Non contrast computerized tomography (NCCT) brain revealed bilateral chronic subdural hematoma (SDH) with magnetic resonance venography (MRV) showing filling defects in the superior sagittal, right transverse and sigmoid sinuses.

CONCLUSION: Our case report highlights the fact that a high degree of suspicion for CVST should always be kept in mind while dealing with a patient presenting with non-traumatic spontaneous SDH, particularly in the absence of common etiological factors.

KEYWORDS: Cerebral venous sinus thrombosis, Magnetic resonance venography, Subdural hematoma.

INTRODUCTION

Cerebral venous sinus thrombosis (CVST) is a very uncommon type of venous thromboembolism. It can manifest with variable symptoms in the form of headache, focal neurological deficit, benign intracranial hypertension, subarachnoid hemorrhage, seizures, unexplained altered sensorium, and meningoencephalitis. The diagnosis of CVST is complicated by the variable symptoms and risk factors associated with it. The diagnosis is commonly delayed and may vary from onset of symptoms to diagnosis, thus, a high index of suspicion is very important to diagnose and treat this disorder.¹

CASE PRESENTATION

A 42 year old male patient presented with a chief complaint of headache for the last two months. It was holocranial, increasing in severity in early morning and was not associated with vomiting, loss of consciousness or visual symptoms. There was no history of fever, trauma, anti-platelets use or any substance abuse. His previous medical history was unremarkable. On examination there were no meningeal or focal signs except bilateral papilledema.

The NCCT brain revealed bilateral thin chronic subdural hematoma over frontoparietal convexity (right > left) with

hyperdense superior sagittal sinus (SSS) (**Fig. 1**). His routine blood tests and coagulation profile were normal. MRV revealed poor visualization of flow signal in SSS, right transverse and sigmoid sinuses with bilateral subdural bleed (**Figs. 2,3**) consistent with CVST. Work up for prothrombotic profile including Protein C, Protein S, Lupus anticoagulant, anti-thrombin 3, anti-phospholipid antibodies and Homocysteine were negative.

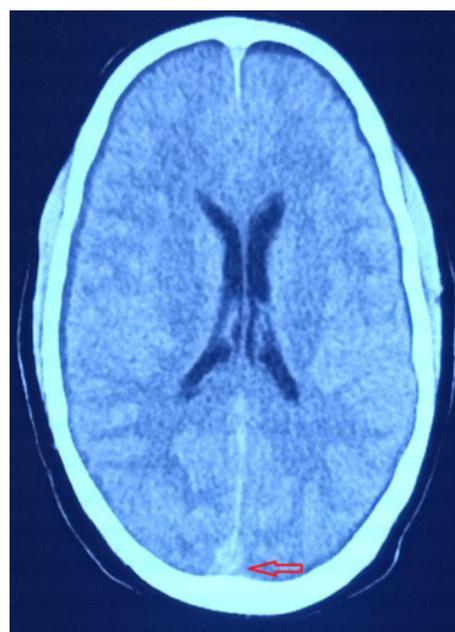


Fig 1: NCCT head with bilateral chronic subdural hematoma with hyper dense sinus sign (red arrow).

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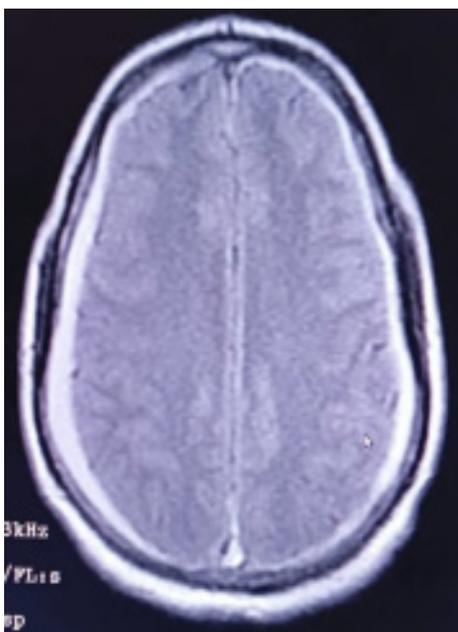


Fig 2: Magnetic resonance imaging (MRI) showing bilateral hyperintense bleed with effacement of sulci on fluid attenuated inversion recovery (FLAIR) sequence.

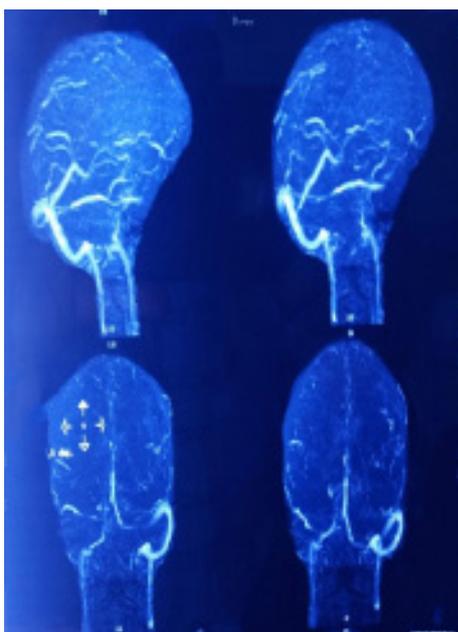


Fig 3: MRV Venogram showing poor flow in superior sagittal sinus, right transverse and sigmoid sinus.

Due to the presence of bleeding, he was not administered anticoagulant because of risk of expansion of subdural hematoma and was managed conservatively with antiepileptics, anti edema measures and close follow up. Patient improved clinically. Oral anticoagulation was started later when follow up scans revealed complete resolution of bilateral bleed.

DISCUSSION

The CVST has a varied presentations including headache,

seizures, stroke, altered sensorium, blurring of vision and behavioral abnormality, due to either parenchymal venous infarct or raised intracranial pressure without venous infarct. CVST presenting as spontaneous bilateral SDH without venous infarct is rare and only few case reports are available.²⁻⁴

The subdural hematoma formation may be due to the rupture of bridging veins secondary to increased back pressure changes in the venous system proximal to the thrombosed venous sinuses. In our case, long standing low flow bleed from bridging veins may be the cause for bilateral chronic SDH due to obstruction in the sinus.⁵

The clinical presentation of CVST can vary being acute, sub-acute or chronic presentation. There is no clear cut correlation between disease severity on imaging and clinical outcome.¹

Common causes of cerebral venous sinus thrombosis include use of oral contraceptives, prothrombotic conditions, pregnancy, infections, trauma, inflammatory diseases, malignancy, dehydration and substance abuse.

The radiological signs of acute cerebral venous sinus thrombosis on NCCT brain are hyperdensity of a cortical vein or dural venous sinus but it is seen in only 30% of cases. Indirect clues on NCCT brain are diffuse brain edema, hypodensity of the cortex (seen in 20–50% of cases) or decreased ventricular size.⁶

Findings in our case showed hyperdense sinus with mild effacement of sulci with thin bilateral chronic subdural bleed without infarct and later confirmed by MRI brain with venography.

Despite advances in the diagnosis of CVST in recent years, the diagnosis of cerebral venous sinus thrombosis is still often missed or delayed due to diverse underlying risk factors, varied clinical features and often subacute onset.

CONCLUSION

A high degree of suspicion for CVST should always be kept in mind in nontraumatic spontaneous SDH especially with history of disproportionate headache. Subtle signs and symptoms pointing towards CVST should not be overlooked and apply a low threshold for obtaining a venogram. Management is complicated as there are no clear guidelines for the use of anticoagulation in this subset of patients presenting with symptomatic subdural hematoma fearing expansion of hematoma.

List of abbreviations

CVST: Cerebral venous sinus thrombosis.
 FLAIR: Fluid attenuated inversion recovery.
 MRI: Magnetic resonance imaging.
 MRV: Magnetic resonance venography.
 NCCT: Non contrast computerized tomography.
 SDH: Subdural hematoma.
 SSS: Superior sagittal sinus.

Disclosure

The authors report no conflict of interest in the materials or methods used in this study or the findings specified in this paper

Funding

The authors received no financial support for the research, authorship, and/or publication of this paper.

REFERENCES

1. Allroggen H, Abbott RJ. Cerebral venous sinus thrombosis. *Postgrad Med J*. 2000;76(891):12-15.
2. Phuapradit W, Chaturachinda K, Phuapradit P. Postpartum intracranial cortical venous thrombosis complicated by intracerebral and subdural hemorrhage. *J Med Assoc Thai*. 1981;64(10):527-530.
3. Lim EYT, Pai V, Sitoh YY, Purohit B. Acute subdural hemorrhage complicating cerebral venous thrombosis in a patient with protein C deficiency. *BMJ Case Rep*. 2020;13(11):e236745.
4. Takahashi S, Shinoda J, Hayashi T. Cerebral venous sinus thrombosis in an adult patient presenting as headache and acute subdural hematoma. *J Stroke Cerebrovasc Dis*. 2012;21(4):338-340.
5. Bansal H, Chaudhary A, Mahajan A, Paul B. Acute subdural hematoma secondary to cerebral venous sinus thrombosis: Case report and review of literature. *Asian J Neurosurg*. 2016;11(2):177.
6. Poon CS, Chang JK, Swarnkar A, Johnson MH, Wasenko J. Radiologic diagnosis of cerebral venous thrombosis: Pictorial review. *AJR Am J Roentgenol*. 2007;189(6 Suppl):S64-75.