

Post-traumatic cerebral venous thrombosis: report of a case and review of the literature

Abstract

Background: Cerebral venous thrombosis (CVT) is an uncommon cerebral vascular event with diverse clinical presentations. Traumatic brain injury (TBI) is an infrequent but potentially serious cause of CVT. Post-traumatic Cerebral Venous Sinus Thrombosis (PTCVST) is a rare manifestation with life-threatening implications. We present a case report to shed light on the underdiagnosed entity of PTCVST and its clinical management.

Case Presentation: A 32-year-old male suffered head trauma. With no immediate neurological deficits. Subsequently, he developed persistent symptoms, including increasing headaches and dizziness worsened by physical activity or stress. Despite intensified treatment, symptoms persisted, prompting reevaluation.

Discussion: PTCVST due to TBI is a rare condition often underdiagnosed. Headache is a common presenting symptom. Focal neurological deficits are rare but notable. Our case aligns with the limited reports on PTCVST in medical literature. Diagnostic techniques such as venous tomography angiography and magnetic resonance angiography aid in identification, with the latter being sensitive to thrombus location. Anticoagulation, is the standard treatment, although factor Xa inhibitors like apixaban also demonstrate efficacy.

Conclusion: PTCVST remains an underdiagnosed entity despite its potential severity. This case underscores the importance of considering PTCVST as a differential diagnosis in TBI.

Keywords: thrombosis, headache, trauma

Volume 14 Issue 2 - 2024

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Received: March 07, 2024 | **Published:** April 04, 2024

Abbreviations: CVT, cerebral venous thrombosis; TBI, traumatic brain injury; PTCVST, post-traumatic cerebral venous sinus thrombosis

Introduction

Cerebral venous thrombosis (CVT), a rare form of cerebral vascular event, presents a complex diagnostic challenge due to its diverse array of clinical manifestations.¹ Risk factors contributing to its occurrence include a prothrombotic state, obesity, oral contraceptive use, pregnancy, malignancy, infections, and, in rarer instances, traumatic brain injury (TBI).² A particularly infrequent manifestation of CVT is Post-traumatic Cerebral Venous Sinus Thrombosis (PTCVST), a condition with potentially life-threatening implications.³ Headache stands as the foremost and most prevalent symptom, with an occurrence rate of up to 89% among patients (FALTA LA CITA). This symptom can manifest gradually, with sharp intensity, or even as a sudden thunderclap. Accompanying this, patients may exhibit focal neurological deficits, experience seizures, or display altered levels of alertness. It is important to note that CVT, despite its rarity, can emerge as a complication following head trauma, although documented instances remain scarce within the medical literature. This paper aims to shed light on the underdiagnosed and rare occurrence of Post-traumatic Cerebral Venous Sinus Thrombosis (PTCVST), emphasizing its potential for serious morbidity and mortality. Through the presentation of a specific case, we intend to contribute to a better understanding of this critical condition and its clinical management.

Case presentation

A 32-year-old Hispanic male presented with a history of head trauma to the left frontotemporal region, resulting from contact with a blunt object. Upon initial impact, there were no immediate signs of

altered alertness or other neurological deficits, leading to a decision to forego medical evaluation. However, in the days following the incident, he began experiencing persistent symptoms. Specifically, he reported an ongoing throbbing headache localized to the left temporal region, accompanied by episodes of dizziness that intensified during physical exertion or stressful situations. The patient had a pre-existing diagnosis of cyclothymic disorder and was undergoing management with a regimen consisting of bupropion, topiramate, and clonazepam. Seeking medical attention for his evolving symptoms, he underwent further evaluation. Given his medical history, the treatment plan was expanded to include ondansetron, desvenlafaxine, lamotrigine, and sumatriptan. These additional medications aimed to address both his cyclothymic disorder and the migraine-type headaches that had developed post-trauma. Despite the augmented treatment strategy, the patient's symptoms persisted, prompting a subsequent return for reevaluation.

Clinical findings: Patient is awake, alert, oriented in the 3 spheres (person, time, place), mental functions preserved, cranial nerves intact, strength Daniels 5/5, in 4 extremities, without sensory deficits, cerebellum without alterations, dizziness on standing, Romberg positive, rest normal. Complementary studies: Simple and contrast-enhanced magnetic resonance (MR) was performed, showing stasis and thrombus in the left sigmoid sinus, with no apparent parenchymal repercussions, shown in Figure 1.

Therapeutic management: Anticoagulant management was started with apixaban 5mg. each 12 hours for 4 months.

Discussion and conclusion

This report shows that CVT, despite being rare, can arrive to the office, and should be ruled out in patients with TBI, since it is a fatal complication. "Cerebral venous thrombosis (CVT) as a consequence

of traumatic brain injury (TBI) represents a rare condition, often leading to its underdiagnosis. This particular form of CVT accounts for 0.5-1% of all CVT cases.¹ Among the predominant clinical manifestations, headache emerges as the most common, presenting in 70-90% of cases;¹ Gameiro et al.⁴ This phenomenon arises from compromised venous drainage, leading to intracranial hypertension due to the hindrance of cerebrospinal fluid reabsorption. While focalization is infrequently observed, it can still manifest as a symptom.⁵ Interestingly, a recent study involving 237 patients with brain trauma identified that 10 individuals (4.2%) developed Post-traumatic Cerebral Venous Sinus Thrombosis (PTCVST). This incidence significantly surpasses estimates from existing literature, thereby reinforcing the notion of PTCVST as an often underdiagnosed entity.¹ The diagnostic process often involves venous tomography angiography, while magnetic resonance angiography offers enhanced sensitivity for diagnosis, particularly depending on the thrombus's location. In the case of the presented patient, given the thrombus's size, both diagnostic methods could have been employed without significant inconvenience.⁵ Standard treatment for this condition parallels that of deep vein thrombosis, is anticoagulants, frequently employing low molecular weight heparins.⁶ In the patient's case, the factor Xa inhibitor apixaban was administered, a choice that aligns with its demonstrated effectiveness in this context, obtaining favorable outcomes. Post-traumatic CVT is an infrequent entity with very few reports in the medical literature, however, it is important not to rule it out as a differential diagnosis of the patient.⁷

Statement of ethics

Consent to publish statement: Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

Conflicts of interest statement

The authors have no conflicts of interest to declare.

Funding sources

The authors have not declared a specific grant for this case report from any funding agency in the public, commercial or not-for-profit sectors.

Author contributions

Dr. Moisés Misael Rubio attended to the patient in his office, requested studies, arrived at the diagnosis, and successfully treated the patient. Luis Felipe Gutiérrez was responsible for the writing and publication of the case report.

Data availability statement

All data generated or analyzed during this study are included in this article. Further enquiries can be directed to the corresponding author.

Acknowledgments

None.

References

1. Brunori M, Lazzari I, Recinella G, et al. Persistent headache: a case of post-traumatic cerebral venous thrombosis. *Br J Hosp Med.* 2019;80(8):478–479.
2. Ferro J M, Canhão P, Kasner S E, et al. Cerebral venous thrombosis: etiology, clinical features, and diagnosis. *Waltham: UpToDate.* 2019.
3. Chatara K, Bradai S, Baccouche N. Post-traumatic cerebral venous sinus thrombosis in an intensive care unit: A case series of ten patients. *J Med Vasc.* 2023;48(2):62–68.
4. Gameiro J, Ferro JM, Canhao P, et al. Prognosis of cerebral vein thrombosis presenting as isolated headache: early vs. late diagnosis. *Cephalalgia.* 2012;32(5):407–412.
5. Weimar C. Diagnosis and treatment of cerebral venous and sinus thrombosis. *Curr Neurol Neurosci Rep.* 2014;14(1):417.
6. Einhäupl K, Stam J, Boussier MG, et al. EFNS guideline on the treatment of cerebral venous and sinus thrombosis in adult patients. European Federation of Neurological Societies. EFNS guideline on the treatment of cerebral venous and sinus thrombosis in adult patients. *Eur J Neurol.* 2010;17(10):1229–1235.
7. de Bruijn SFTM, Stam J. Randomized, placebocontrolled trial of anticoagulant treatment with low-molecular-weight heparin for cerebral sinus thrombosis. *Stroke.* 1999;30(3):484–488.
8. Gagnier JJ, Kienle G, Altman DG, et al. CARE Group. The care guidelines: consensus-based clinical case reporting guideline development. *Glob Adv Health Med.* 2013;2(5):38–43.