Neurological Case Reports

Case Report
Published: 10 Sep, 2024

Atypical Presentation of Venous Sinus Thrombosis with Seizure and Frontal Infarct

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Abstract

Venous Sinus Thrombosis (VST) presents diagnostic and management challenges due to its rarity and varied clinical manifestations, with only 0.5% to 2% of all cerebral strokes having the underlying etiology of VST. This case report details an 80-year-old female with sudden onset headache, lethargy, and unresponsiveness, ultimately diagnosed with Deep Venous Sinus Thrombosis (DVST) involving the right sigmoid sinus and superior sagittal sinus. Successful thrombectomy was performed, followed by Intensive Care Unit (ICU) monitoring and transition from heparin to Dabigatran. Post-procedure, she experienced a new-onset seizure with right-sided weakness. CT perfusion imaging suggested ischemic etiology due to venous thrombosis, and CT venography identified a venous infarct in the left frontoparietal region. MRV showed recanalization of the affected sinuses, with persistent thrombus in the left cortical vein. Treatment included enoxaparin, levetiracetam, and blood pressure control, transitioning to oral anticoagulants. This case underscores the complexities of DVST, emphasizing the importance of timely intervention, comprehensive neuroimaging, and individualized treatment strategies. Further research is essential to refine diagnostic algorithms and therapeutic interventions for this uncommon cerebrovascular condition.

Introduction

Venous Sinus Thrombosis (VST) presents unique diagnostic and management challenges due to its rare occurrence and diverse clinical manifestations [1]. In this case report we explore the complex clinical course of an 80-year-old female who presented with a stroke alert triggered by a headache, and ultimately diagnosed with Deep Venous Sinus Thrombosis (DVST) involving the right sigmoid sinus and superior sagittal sinus. The patient's journey highlighted the intricate interplay between DVST, ischemic events, and seizure activity, emphasizing the critical role of timely intervention and personalized therapeutic strategies.

Case Presentation

An 80-year-old female with no significant medical history presented with a sudden onset headache, extreme lethargy and unresponsiveness, prompting a stroke alert evaluation. Following the diagnostic workup, she was found to have DVST on CT Venogram involving the right sigmoid sinus and superior sagittal sinus. Thrombectomy was successfully performed with catheter guided venous clot removal, leading to admission to the Intensive Care Unit (ICU), as standard of care for 24 h. Post-procedure, the patient remained neurologically stable and underwent a 5-day course of heparin IV drip before transitioning to Dabigatran. Upon initial evaluation on admission, she exhibited an initial NIH score of 3, indicative of right arm and leg drift with ataxia. Notably, upon admission the patient experienced a new-onset seizure characterized by distinctive semiology, including fixed eyes, blinking, severe right upper extremity tensing, and vocalizations. These signs were followed by right greater than left full-body shaking, and subsequent right-sided weakness consistent with Todd's Paralysis post-seizure.

Diagnostic CT perfusion imaging upon admission revealed perfusion abnormalities in the superior left frontal lobe, suggestive of ischemic rather than post-ictal etiology attributed to venous thrombosis. CT Venography also identified a venous infarct in the left frontoparietal region with associated petechial hemorrhage. Subsequent Magnetic Resonance Venography (MRV) demonstrated recanalization of the superior sagittal sinus and right sigmoid/transverse sinuses, with persistent thrombus in the left cortical vein at the vertex. A follow-up Computed Tomography (CT) head showed no evidence of hemorrhage.

Directly upon admission, the patient was treated with a treatment regimen that included

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Received Date: *14 Aug 2024*
Accepted Date: *04 Sep 2024*
Published Date: *10 Sep 2024*

Citation:
Pirahanchi Y, Frei D, Atchie B, Kaminsky I. Atypical Presentation of Venous Sinus Thrombosis with Seizure and Frontal Infarct. Neurol Case Rep. 2024; 7(1): 1047.

enoxaparin 1 mg/kg (BID), levetiracetam 750 mg (BID, renally dosed), and blood pressure control. The patient's discharge plan involved transitioning to oral Direct Oral Anticoagulants (DOACs) after completing 4 to 5 days of enoxaparin. The etiology of DVST, possibly related to venous stenosis, resulted in a consequential left frontal infarct with associated right-sided weakness culminating in a seizure. The patient was discharged on levetiracetam with plans for outpatient neurological follow-up and a repeat MRV scheduled three months post-discharge. The patient rapidly improved back to her baseline and discharged the next day back home.

Discussion

DVST poses diagnostic and management complexities, as illustrated in this patient's case [2]. This is a rare pathology, with only 0.5% to 2% of all cerebral strokes having the underlying etiology of VST [3]. Her initial presentation with a headache and subsequent seizure underscored the diverse clinical spectrum of DVST [4]. The distinctive presentation including initial clinical manifestation as a seizure provided valuable insights into the neurological manifestations associated with venous sinus thrombosis. The diagnosis of DVST requires partial or complete venous sinus imaging on CTA or MRA, and can include history and clinical findings suggestive of DVST such as increased intracranial pressure that would be manifested as severe headache or changes in vision for example [2]. Diagnostic imaging including CT Venogram and MR Venogram played a crucial role in confirming the diagnosis, delineating the extent of thrombosis, and identifying associated ischemic events. Imaging is critical in the diagnosis of DVST, with MR Venography providing more detailed visualization than CT Venography [2].

The successful thrombectomy and subsequent recanalization observed in imaging highlight the evolving landscape of endovascular interventions in DVST management [5]. For example, a study by Nyberg et al. [6] showed that patients undergoing endovascular therapy had less slight disability than those with only anticoagulation, but there was not a significant difference at 90 days [6]. Moreover, the transition from heparin products to DOACs reflects contemporary practices in anticoagulation therapy for venous thromboembolism [7]. This allows for transition from IV to oral anticoagulation to allow for the patient to have appropriate treatment upon discharge. The comprehensive management approach, including neurological care, seizure precautions, and long-term follow-up plans emphasizes the importance of a multidisciplinary approach in optimizing patient outcomes.

Conclusion

In this case report, we revealed valuable insights into the complexities of DVST, emphasizing the significance of timely intervention, comprehensive neuroimaging, and individualized treatment strategies. The unique seizure semiology adds a distinctive element to the clinical presentation, enriching our understanding of neurological manifestations associated with venous sinus thrombosis. Further research and collaborative efforts are essential to refine diagnostic algorithms and therapeutic interventions for this uncommon yet complex cerebrovascular condition.

References

1. Bokhari R, You E, Bakhaidar M, Bajunaid K, Lasry O, Zeiler FA, et al. Dural venous sinus thrombosis in patients presenting with blunt traumatic brain injuries and skull fractures: A systematic review and meta-analysis. World Neurosurg. 2020;142:495-505.e3.
2. Ozturk K, Soylu E, Parlak M. Dural venous sinus thrombosis: The combination of noncontrast CT, MRI and PC-MR venography to enhance accuracy. Neuroradiol J. 2018;31(5):473-81.
3. Konakondla S, Schirmer CM, Li F, Geng X, Ding Y. New developments in the pathophysiology, workup, and diagnosis of Dural Venous Sinus Thrombosis (DVST) and a systematic review of endovascular treatments. Aging Dis. 2017;8(2):136-48.
4. Chaurasia D, Yadav B, Dhungana K. Dural venous sinus thrombosis: A case report. JNMA J Nepal Med Assoc. 2021;59(244):1316-9.
5. Jankowitz BT, Bodily LM, Jumaa M, Syed ZF, Jovin TG. Manual aspiration thrombectomy for cerebral venous sinus thrombosis. J Neurointerv Surg. 2013;5(6):534-8.
6. Nyberg EM, Case D, Nagae LM, Seinfeld J, Poisson S, Leppert MH, et al. The addition of endovascular intervention for dural venous sinus thrombosis: Single-center experience and review of literature. J Stroke Cerebrovasc Dis. 2017;26(10):2240-47.
7. Nimjee SM, Powers CJ, Kolls BJ, Smith T, Britz GW, Zomorodi AR. Endovascular treatment of venous sinus thrombosis: A case report and review of the literature. J Neurointerv Surg. 2011;3(1):30-3.