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Case report

TRANSVERSE SINUS THROMBOSIS PRESENTING WITH EARLY NEUROCOGNITIVE AND PSYCHIATRIC MANIFESTATIONS: A CASE REPORT

Kolari Fatjona[1], Jakupi Atifete[2], Bozhinovski Jovan[3,4], Mahmudi Erjon[1], Hasani Shpresa[3], ArsovskaAnita[3,4]

[1]Clinical Hospital, Tetovo, Republic of North Macedonia
[2]General Hospital "Ferid Murad", Gostivar, Republic of North Macedonia
[3]University Clinic for Neurology, Skopje, Republic of North Macedonia
[4]Faculty of Medicine, Ss. Cyril and Methodius University in Skopje, Republic of North Macedonia
e-mail: fatjona.58@hotmail.com

Abstract

Cerebral venous sinus thrombosis (CVST) is an uncommon but potentially life-threatening cerebrovascular disorder with a highly variable clinical presentation. Although headache is the most frequent presenting symptom, neurocognitive and psychiatric manifestations may occur and contribute to diagnostic delay.

We report the case of a 59-year-old woman who presented with severe intermittent headache predominantly in the right occipital region, accompanied by nausea, photophobia, phonophobia gait slowing, and early cognitive disturbances. During hospitalization, intermittent episodes of confusion and visual hallucinations were observed in the absence of focal neurological deficits. Laboratory investigations revealed elevated D-dimer levels. Brain computed tomography demonstrated thrombosis of the right transverse sinus without evidence of parenchymal hemorrhage, mass effect, or midline shift. Electroencephalography and extracranial Doppler ultrasonography were unremarkable. Neuropsychological assessment revealed global cognitive impairment, predominantly affecting attention, memory, visuospatial abilities, and language functions. A short-lasting psychotic episode with preserved insight was confirmed by psychiatric evaluation.

The patient was treated with anticoagulation and supportive therapy, resulting in gradual clinical improvement without the development of new neurological deficits. Follow-up imaging was planned to monitor recanalization.

This case highlights that CVST may present with early neurocognitive and psychiatric symptoms even in the absence of focal neurological signs. Awareness of these atypical manifestations is essential to ensure timely diagnosis and appropriate management.

Keywords: cerebral venous sinus thrombosis, transverse sinus, cognitive impairment, headache, psychiatric symptoms

Case report

A 59-year-old woman was admitted to the Neurology Department with a history of severe, intermittent headaches lasting several days. The headache was diffuse but predominantly localized to the right occipital region, throbbing in character, and associated with nausea, photophobia, phonophobia, and slowed gait. The patient was left-hand dominant, a non-smoker, and reported rare alcohol consumption. She had a known allergy to penicillin.

Her medical history was significant for arterial hypertension treated with enalapril 5 mg daily and chronic cardiomyopathy treated with metoprolol 50 mg once daily. Family history revealed a sister with ischemic stroke.

On admission, the patient was conscious, cooperative, and afebrile, with an obese constitution. Blood pressure was 145/85 mmHg, and pulse was irregular at 164 beats per minute. Neurological examination showed full orientation to person, place, and time. Cranial nerve function was intact, muscle tone and strength were normal, sensation was preserved, and deep tendon reflexes were symmetrical with bilateral flexor plantar responses. No focal neurological deficits were detected. Autonomic symptoms included nausea, photophobia, and phonophobia.

During hospitalization, intermittent episodes of confusion accompanied by visual hallucinations were observed. Insight was preserved, and there was no prior psychiatric history.

Laboratory investigations revealed normal complete blood count and routine biochemistry. D-dimer levels were elevated (868 ng/mL), and C-reactive protein was mildly increased. Urinalysis showed leukocyturia and bacteriuria.

Non-contrast brain computed tomography demonstrated thrombosis of the right transverse sinus, appearing as a hyperdense lesion measuring approximately 50 × 35 mm (Figure 1). No cerebral edema, mass effect, midline shift, or signs of brain herniation were observed. Electroencephalography showed no epileptiform discharges or pathological slowing. Doppler ultrasonography of the carotid and vertebral arteries revealed normal morphology and hemodynamic parameters.

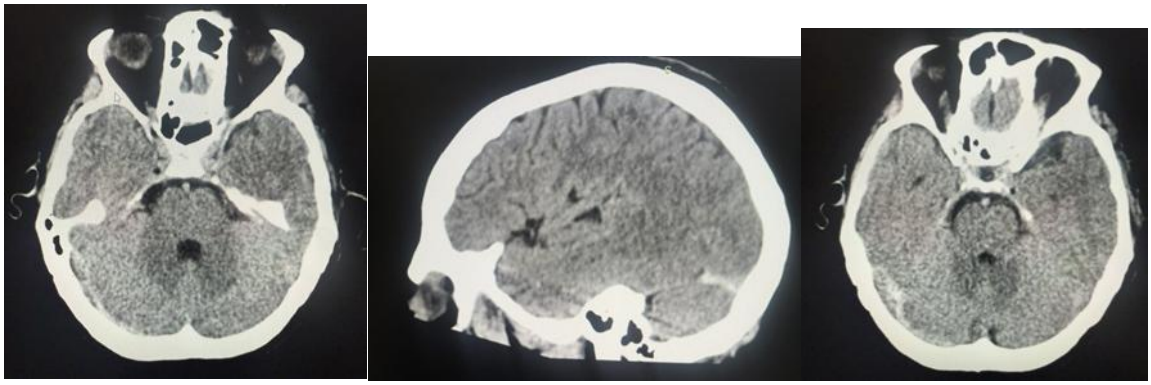

Fig. 1. CT scan showing thrombosis of the right transverse sinus

Neuropsychological assessment revealed global cognitive impairment, with predominant involvement of attention, memory, visuospatial abilities, and language functions, consistent with an early neurocognitive disorder. Psychiatric consultation confirmed a short-lasting episode of visual hallucinations, and low-dose risperidone (1 mg daily) was initiated.

The patient received anticoagulant therapy along with anti-edematous, antihypertensive, analgesic, and antiemetic treatment. Gradual improvement of headache and neuropsychiatric symptoms was observed during hospitalization, without the appearance of new neurological deficits. Follow-up neuroimaging was scheduled at six-month intervals to monitor disease evolution, and lifestyle modifications were recommended.

Discussion

Cerebral venous sinus thrombosis (CVST) is an uncommon cerebrovascular disorder characterized by a wide spectrum of clinical manifestations, often resulting in diagnostic delay. Headache remains the most frequent presenting symptom and may precede focal neurological deficits, seizures, or neuropsychiatric manifestations by several days. Cognitive and behavioral

disturbances, although less common, are increasingly recognized as early features of CVST, particularly in cases involving the transverse or sagittal sinuses.

In the International Study on Cerebral Vein and Dural Sinus Thrombosis (ISCVT), Ferro *et al.* reported headache as the initial symptom in more than 90% of patients, with transverse sinus involvement among the most frequently affected sites. Neuropsychiatric symptoms, including confusion and altered mental status, were observed in a substantial proportion of cases, especially in patients with venous infarction or hemorrhage, highlighting the heterogeneous clinical spectrum of the disease[1].

Previous reports have described similar atypical presentations. Saposnik *et al.* reported a middle-aged woman with transverse sinus thrombosis presenting with severe headache and transient visual hallucinations in the absence of focal neurological deficits. Neuroimaging demonstrated venous thrombosis with hemorrhagic changes, and the patient achieved favorable recovery following anticoagulation therapy, closely paralleling the clinical course observed in our patient[2]. Stam also emphasized that CVST may present predominantly with headache and subtle cognitive changes and that a normal neurological examination does not exclude the diagnosis. Early recognition and timely initiation of treatment were shown to significantly improve prognosis[3].

Wasay *et al.* described patients with CVST in whom neuropsychiatric symptoms, including hallucinations and acute confusional states, occurred in the absence of seizures or focal neurological deficits. These symptoms resolved following anticoagulation, suggesting a reversible pathophysiological mechanism related to venous hypertension[4].

Long-term outcome studies indicate that although most patients with CVST achieve good functional recovery, mild cognitive impairment may persist in a proportion of cases, particularly in those with delayed diagnosis or extensive sinus involvement. Koopman *et al.* reported persistent cognitive deficits despite favorable functional outcomes, underscoring the importance of early diagnosis and structured follow-up[5]. In a contemporary review, Silvis *et al.* emphasized that cognitive dysfunction and behavioral changes remain underrecognized manifestations of CVST and stressed the need to consider this diagnosis in patients presenting with atypical headache and early cognitive impairment[6].

Anticoagulation remains the cornerstone of treatment for CVST, even in the presence of intracranial hemorrhage. Early diagnosis and prompt initiation of therapy are associated with favorable outcomes in the majority of patients. This case further supports existing evidence that CVST may initially manifest with subtle neurocognitive and psychiatric symptoms and should be considered in the differential diagnosis of persistent or atypical headache accompanied by cognitive changes.

Conclusion

This case highlights the diverse clinical presentation of cerebral venous sinus thrombosis, which may include headache, neuropsychiatric symptoms, and cognitive impairment even in the absence of focal neurological deficits. Prompt neuroimaging and multidisciplinary management are crucial for early diagnosis and favorable clinical outcomes.

Conflict of interest statement. None declared.

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