



Pediatric Cerebral Sinovenous Thrombosis Secondary to Lyme Neuroborreliosis: A Rare Case Report

Elmar Bayraktarov

Department of Radiology, Diakonie Klinikum Kirchen, Kirchen, Germany

Citation: Elmar Bayraktarov (2026) Pediatric Cerebral Sinovenous Thrombosis Secondary to Lyme Neuroborreliosis: A Rare Case Report. *J. of Inn Clin Trail Case Reports* 2(5), 1-3. WMJ/JCTC-150

Abstract

Lyme neuroborreliosis (LNB) is the most common tick-borne neurological infection in Europe, typically presenting with facial nerve palsy or meningitis. Cerebral sinovenous thrombosis (CSV T) is an exceptionally rare manifestation, especially in children. We report a pediatric case of CSV T associated with Lyme neuroborreliosis. The patient presented with isolated left-sided peripheral facial palsy following a tick bite. Neuroimaging revealed sinus thrombosis. Early recognition and combined antibiotic and anticoagulant therapy resulted in a favorable outcome. This case emphasizes the importance of considering LNB in the differential diagnosis of CSV T in endemic areas.

***Corresponding author:** Elmar Bayraktarov, Department of Radiology, Diakonie Klinikum Kirchen, Kirchen, Germany.

Submitted: 07.09.2026

Accepted: 11.09.2026

Published: 21.09.2026

Keywords: Lyme Neuroborreliosis, Cerebral Sinovenous Thrombosis, Pediatrics, Facial Nerve Palsy, Tick-Borne Infection

Introduction

Lyme disease, caused by *Borrelia burgdorferi*, can involve multiple organ systems, including the central nervous system. Neurological manifestations, collectively known as Lyme neuroborreliosis (LNB), commonly present as meningitis, cranial nerve palsy, or radiculoneuritis. However, vascular complications such as cerebral sinovenous thrombosis (CSV T) are extremely rare, particularly in children. We present

a pediatric case of LNB complicated by CSV T, representing one of the few such reports in the literature.

Case Presentation

A 7-year-old previously healthy boy was admitted to the pediatric ward following referral from the emergency outpatient service due to acute onset of left-sided facial weakness. Three days prior to admission, he had experienced increasing pain in the left facial and auricular

region. Eleven days earlier, he had sustained an insect bite behind the left ear, which was followed by local pain and transient fever. His mother reported multiple tick bites during recent weeks.

On admission, the child was afebrile but appeared tired and weak. Physical examination revealed a well-nourished boy in stable condition. Neurological assessment showed a peripheral left facial nerve palsy characterized by incomplete eyelid closure, drooping of the mouth corner, and diminished forehead wrinkling. No other cranial nerve deficits were noted. Motor strength, tone, coordination, and gait were normal. There were no signs of meningismus, ataxia, or sensory deficits.

Cardiopulmonary and abdominal examinations were unremarkable. The tympanic membranes and oropharynx were normal, with mild left cervical lymphadenopathy. Laboratory results, including complete blood count and inflammatory markers, showed no significant abnormalities. Given the history of tick exposure and isolated peripheral facial palsy, neuroborreliosis was suspected, and the patient was admitted for lumbar puncture and neuroimaging. MRI and MRV demonstrated thrombosis of the transverse sinus, confirming cerebral sinovenous thrombosis associated with LNB.

Discussion

Lyme neuroborreliosis (LNB), caused by *Borrelia burgdorferi* infection, is the most common tick-borne neurological disorder in Europe. The clinical manifestations are variable and depend on the disease stage. While cranial nerve palsy, especially of the facial nerve, is the most frequent neurological presentation in children, cerebrovascular complications such as cerebral transverse sinus thrombosis (CVST) are exceedingly rare.

In this case, the patient presented with isolated peripheral facial nerve palsy following a recent tick bite, without signs of meningeal irritation or systemic infection. The subsequent neuroimaging revealed sinus thrombosis (Figure:1), suggesting a possible inflammatory or immune-mediated vascular involvement secondary to LNB. The pathophysiological mechanism is not yet fully understood, but proposed explanations include local vasculitis, endothelial activation, and a hypercoagulable state induced by infection-related inflammation.

Previous reports have described only a handful of pediatric CVST cases associated with Lyme disease, most often involving the transverse or sigmoid sinuses [1]. Early recognition is crucial, as delayed diagnosis may lead to severe neurological sequelae. The combination of antibiotic therapy targeting *Borrelia burgdorferi* (e.g., intravenous ceftriaxone) and anticoagulation for CVST has been shown to result in favorable outcomes in most cases.

This case highlights the importance of considering Lyme neuroborreliosis in the differential diagnosis of cerebral venous thrombosis (Figure: 2), particularly in endemic regions and in children presenting with cranial nerve deficits following tick exposure. Clinicians should maintain a high index of suspicion and initiate prompt diagnostic workup, including cerebrospinal fluid analysis and MRI/MRV, to prevent long-term complications.

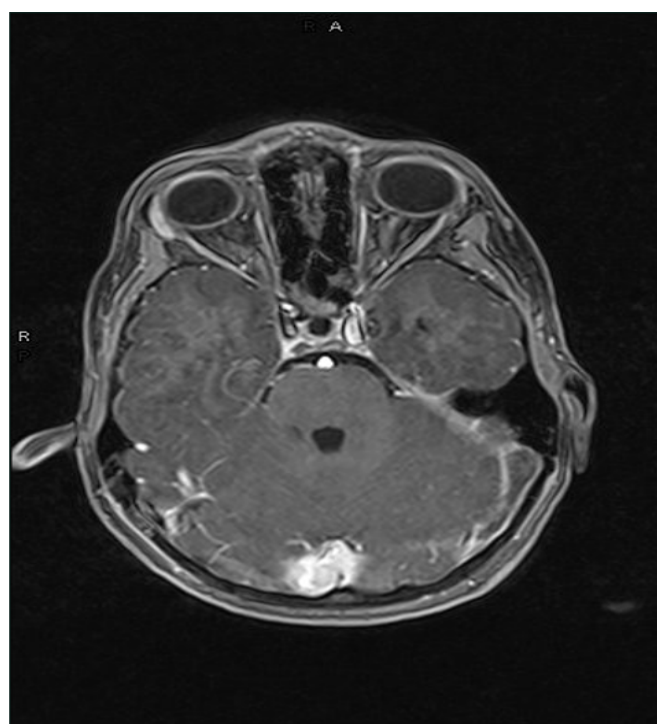


Figure 1: Left Transverse Sinus Thrombosis



Figure 2: Left Transverse Sinus Thrombosis (empty delta sign)

Conclusion

This case highlights the importance of recognizing Lyme neuroborreliosis as a potential, though rare, cause of cerebral sinovenous thrombosis in children [2]. Early clinical suspicion following tick exposure and appropriate diagnostic evaluation are essential to avoid neurological complications [3]. Prompt initiation of targeted antibiotic therapy combined with anticoagulation can lead to favorable outcomes. Clinicians should remain vigilant in endemic regions, as timely diagnosis and management are key to preventing irreversible sequelae.

References

1. Henningsson AJ, Tjernberg I, Malmvall BE, Forsberg P (2010) Lyme neuroborreliosis presenting with cerebral venous thrombosis: a case report and literature review. *BMC Infect Dis* 10: 91.
2. Bechtold KT, Mehndiratta P, Cieslak TJ (2014) Cerebral venous sinus thrombosis associated with Lyme neuroborreliosis: a pediatric case report and review of the literature. *J Child Neurol* 29: NP176-NP179.
3. Koedel U, Fingerle V, Pfister HW (2015) Lyme neuroborreliosis—epidemiology, diagnosis and management. *Nat Rev Neurol* 11: 446-456.