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DOI: [10.1159/000346597](https://doi.org/10.1159/000346597)**Transient Ischaemic Attack in a 5-Year-Old Girl due to Focal Vasculitis in Neuroborreliosis**Malte Kohns^a, Michael Karenfort^a, Jörg Schaper^b, Hans-Jürgen Laws^c, Ertan Mayatepek^a, Felix Distelmaier^a^aDepartment of General Pediatrics, Neonatology and Pediatric Cardiology, University Children's Hospital, and Departments of ^bDiagnostic and Interventional Radiology and ^cPediatric Oncology, Hematology and Clinical Immunology, University Children's Hospital, Heinrich Heine University, Düsseldorf, Germany

Neuroborreliosis is a rare cause of stroke and stroke-like symptoms [1]. So far, there is no general consensus about the treatment of these patients.

Here, we report on a 5-year-old girl presenting with a history of transient focal neurological deficits which started about 5 h prior to admission. According to her parents, she suffered from a complete right-sided hemiparesis for a duration of approximately 20 min and an ongoing hyp- and paraesthesia in the right leg for the following hour. Moreover, she complained about recurrent short episodes of vertigo.

Upon neurological examination, clinical symptoms had subsided completely. Based on the above-mentioned history, a brain MRI was performed revealing several short stenoses at the branching site of the left middle cerebral artery (MCA) with circumscribed areas of malperfusion (fig. 1). We scanned the girl for different causes of arterial emboli in childhood (e.g. persisting foramen ovale, cardiac malformations, etc.); however, no cause was found although many investigations were carried out. To prevent further thromboembolic events, we initially started a therapy with enoxaparin (1 mg/kg body weight twice daily). This medication was chosen to avoid potential complications (e.g. Reye's syndrome) as long as a viral infection was not excluded. After viral test results were negative, enoxaparin was replaced by low-dose acetylsalicylate (3 mg/kg/day) [2].

During the work-up, we also performed a lumbar puncture, which showed an increased CSF cell count (25 lymphocytes/ μ l). CSF culture was negative. Serologic and PCR screening of CSF excluded different viral causes. However, immunoglobulin levels against *Borrelia burgdorferi* were highly elevated in blood [IgG >240 U/ml (control <15); IgM 26 U/ml (control <18); Western blot test positive] as well as CSF [IgG >240.0 U/ml (control <5.5); IgM 9.2 U/ml (control <4.5)].

History taking revealed that the girl had had two tick bites in the past (3 years and 6 months ago, respectively). Further anamnesis revealed neither common early manifestations of Lyme dis-

Fig. 1. Initial MRI (diffusion-weighted imaging) showed an altered signal in the posterior part of the left putamen (**a**; arrow) and in a left periventricular area (**b**; arrow). Time-of-flight angiography (maximum intensity projection) revealed several short stenoses at the branching site of the left MCA (**c**; arrow).

ease (e.g. erythema chronicum migrans) nor other manifestations of neuroborreliosis as described elsewhere [3]. Infection with *B. burgdorferi* spp. is a known cause of CNS vasculitis [4–6]. Based on our microbiological findings, we initiated an intravenous treatment with ceftriaxone.

While the initial symptoms did not re-occur under treatment, a follow-up MRI scan 12 days after onset of ceftriaxone showed a new stenosis in the left posterior cerebral artery, consistent with vasculitic inflammation. MCA lesions remained unchanged. To inhibit eventual progression of the vasculitic lesions, we administered methylprednisolone pulse therapy (20 mg/kg/day) for 3 days, which was suggested as a therapeutic option by others [6].

As further antibiotic treatment was proven to have no beneficial effect [7], we stopped intravenous ceftriaxone after 3 weeks but continued low-dose acetylsalicylate.

A follow-up MRI 3 months after discharge demonstrated disappearance of the posterior cerebral artery stenosis but persistence of the MCA lesions. Clinical examination of the girl at that time was completely normal.

In conclusion, our report demonstrates that neuroborreliosis constitutes an important differential diagnosis of paediatric stroke and CNS vasculitis. Treatment includes antibiotics as well as anti-coagulants. Moreover, corticosteroids might be required if initial therapy is not sufficient.

Disclosure Statement

The authors have no conflicts of interest to reveal.

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