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Lyme Neuroborreliosis with Long Meningeal Enhancement and Ischemic Stroke

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A 61-year-old man with a 2-year history of prostate cancer presented with a slight hemiparesis on the left side that existed since 2 weeks. Additionally, the patient suffered from mild headache and decreased clinical condition. Neither fever nor signs of meningitis were observed in the clinical examination. Brain MRI revealed a corresponding restricted diffusion in the right internal capsule (Fig. 1a) and, accidentally, leptomeningeal enhancement after the injection of gadolinium at the level of the brainstem (Fig. 1b, c). Spinal MRI revealed similar meningeal enhancement over the whole spinal cord (Fig. 1d). The diagnosis was potentially leptomeningeal carcinomatosis, although it is of rare occurrence in patients with prostate cancer [1], but cytological analysis of the CSF showed predominant lymphocytic pleocytosis without malignant cells (178 cells/μL, protein 2.6 g/L, and lactate 4.2 mmol/L). In the CSF, CXCL13 was distinctly elevated (>500 pg/mL) [2, 3] and local antibody response to *Borrelia burgdorferi* was detected (IgG antibody index >17). Lyme neuroborreliosis with distinct meningeal enhancement was concluded as the most likely diagnosis. Nerve-root or meningeal enhancement can rarely be observed in neuro-Lyme disease [4, 5]. Slight neuroborreliosis-associated cerebral vasculitis was considered to be the reason for the ischemic lesion [3, 6]. The hemiparesis of the patient subsequently improved, probably spontaneously. A treatment with ceftriaxone of 3 weeks' duration noticeably improved the clinical condition of the man and CSF findings. The case features two relatively rare clinical findings in neuroborreliosis: meningeal enhancement and ischemic stroke.

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Statement of Ethics

The study was approved by the Ethics Committee of Asklepios clinics. Written informed consent was obtained from the patient for publication of the case including images.

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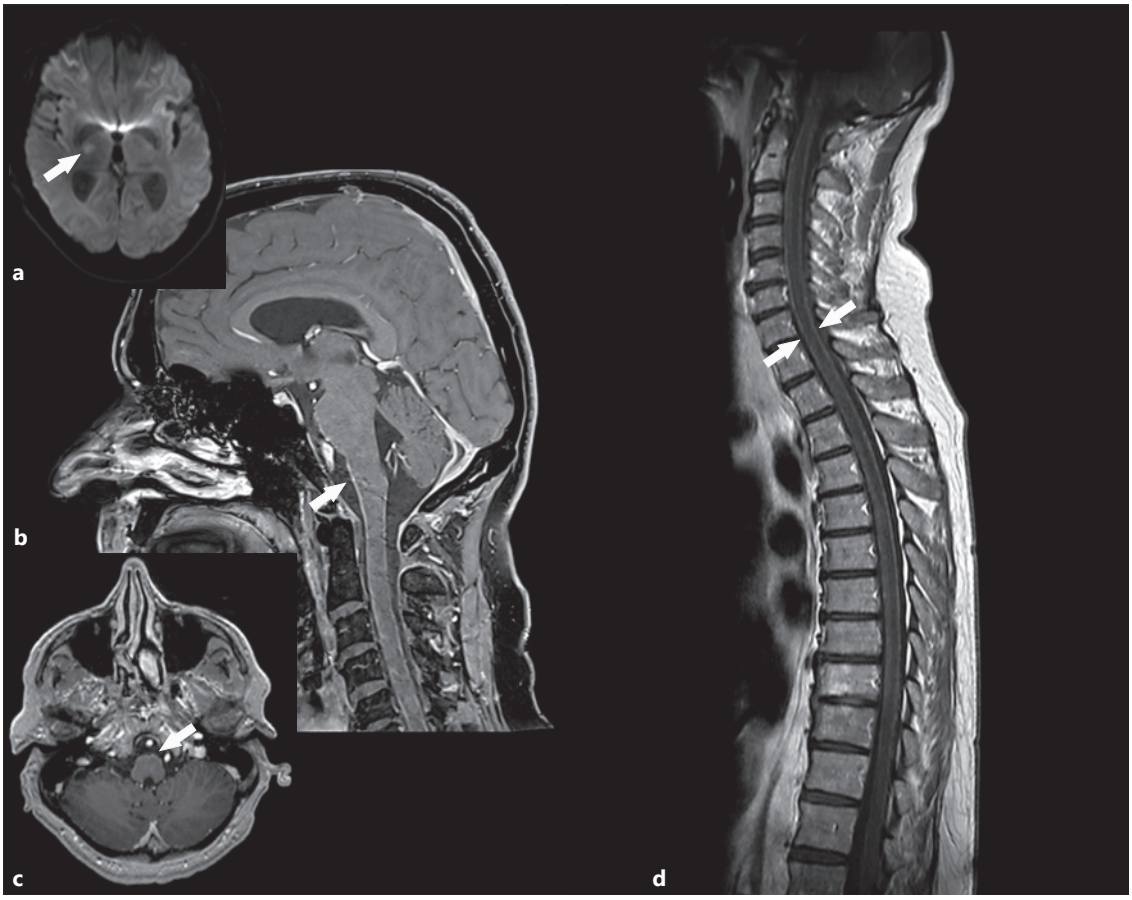

Fig. 1. Diffusion-weighted imaging shows restricted diffusion in the right internal capsule (**a**), meningeal enhancement at the level of the brainstem (marked by an arrow) in the T1-weighted imaging after injection of gadolinium (**b**), axial plane at the level of the brainstem showing the leptomeningeal enhancement (arrow) (**c**), meningeal enhancement over the whole spinal cord (indicated between the two arrows) (**d**). Further imaging of the brain did not show signs of vasculitis or macroangiopathy.

Conflict of Interest Statement

There are no potential conflicts of interest with respect to the research, publication of this article, and/or financial completion.

Author Contributions

P.D.: study concept and design, acquisition of data, analysis and interpretation, and writing of the manuscript; M.S.: analysis and interpretation, and critical revision of the manuscript; and R.K.: acquisition of data, analysis and interpretation, and critical revision of the manuscript.

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