



Diffuse cerebellar hypermetabolism: an early sign of leptomeningeal metastases

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A 20-year-old woman was referred to our center with a 3-month history of progressive nausea, headache, and meningismus. She had surgery followed by proton-therapy three years earlier for a right-sided parasagittal atypical meningioma. Extensive blood and CSF examinations were done, but cultures remained negative and no infectious agents or malignant cells were identified. An ¹⁸F-fluorodeoxyglucose (FDG)-PET/CT showed intense hypermetabolism, exclusively involving the cerebellum, but no other abnormalities (Figure: A/C axial (a) and coronal (c) plane of ¹⁸F-FDG-PET/CT showing isolated diffuse hypermetabolism of the cerebellum; B/D axial (b) and coronal (d) plane of ¹⁸F-FDG-PET fused with MR imaging, emphasizing the cortical location of the hypermetabolism). A repeated contrast-enhanced MRI showed new, intense leptomeningeal enhancement of the cerebellar

hemispheres, highly suspicious for leptomeningeal metastases. Leptomeningeal biopsy confirmed the diagnosis of leptomeningeal spread of the known meningioma, with rhabdoid transformation (WHO grade 3). Diffuse cerebellar cortical hypermetabolism on ¹⁸F-FDG-PET/CT is a rare phenomenon reported in a few cases with paraneoplastic cerebellar degeneration [1, 2]. But in this case, paraneoplastic cerebellar antibodies were all negative, in line with the lack of cerebellar signs on examination. Therefore, we postulate a differential diagnosis to this imaging sign, substantiated by pathological proof. Diffuse cerebellar cortical hypermetabolism on ¹⁸F-FDG-PET/CT can be an early imaging marker for leptomeningeal metastases in solid tumors, appearing even before contrast enhancement on MR imaging. Recognizing this phenomenon may prevent delayed diagnosis and treatment.

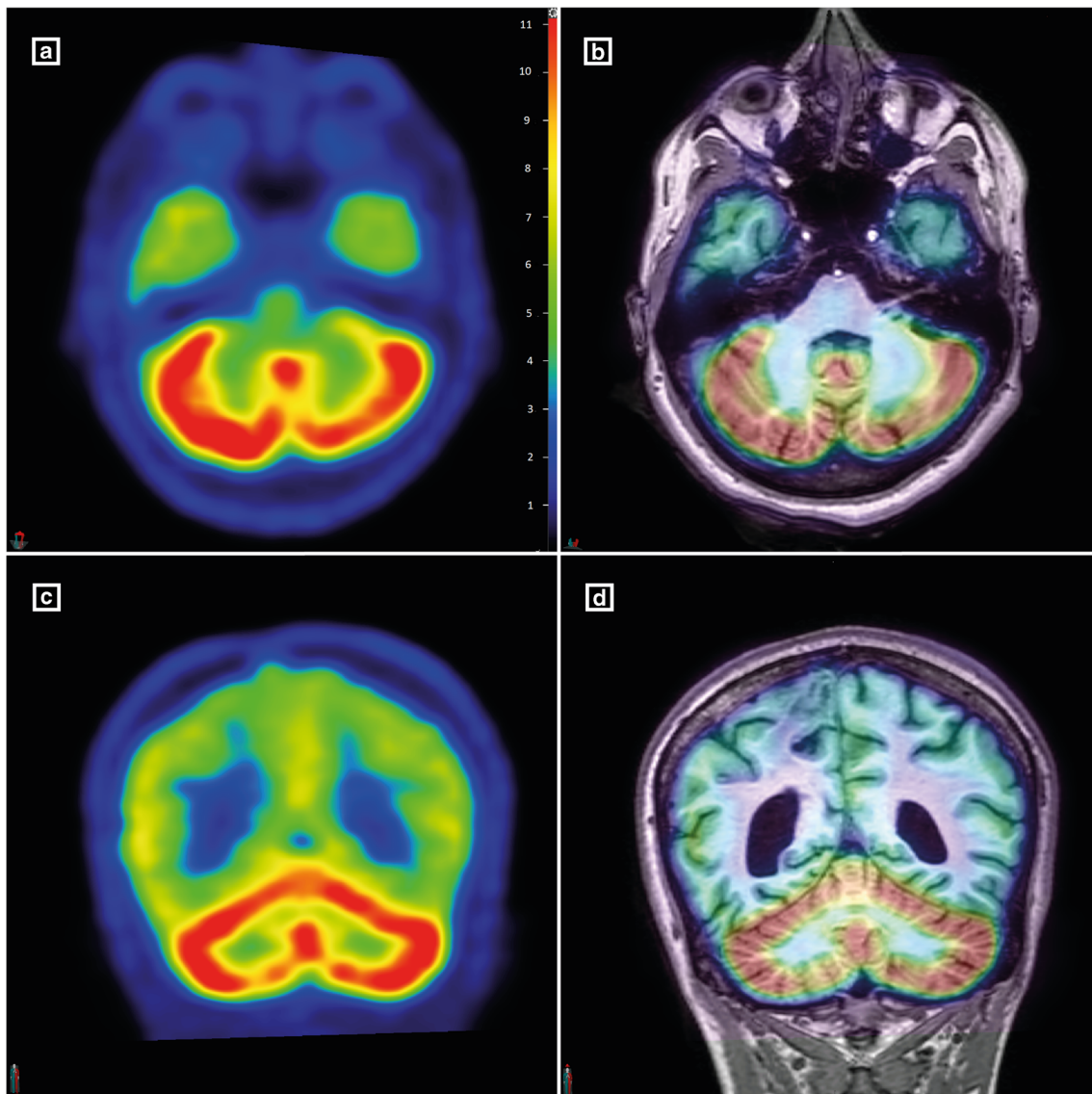
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Author contribution MB: data collection and analysis, first draft, figure editing. MA: data collection, reviewing draft. JP: data collection, verifying data analysis, reviewing draft, and figure editing.

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Declarations

Conflict of interest The authors declare no competing interests.

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