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Teaching NeuroImages: White matter hypomyelination and progressive calcifications in cerebral folate deficiency

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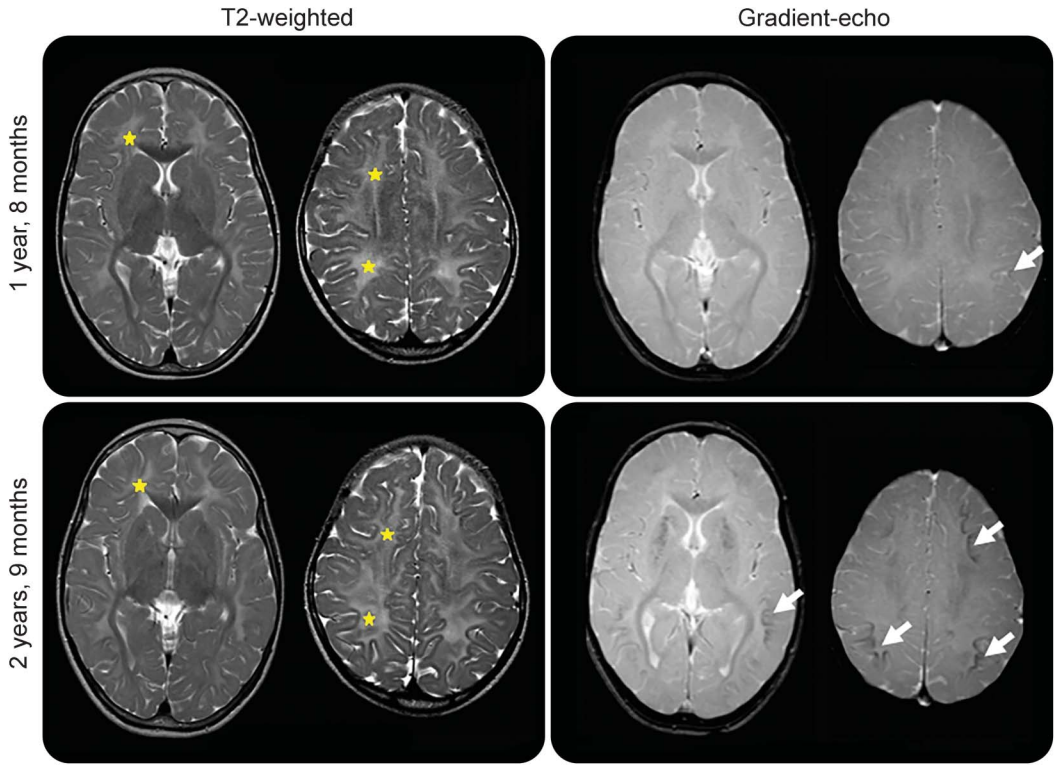
Figure MRI



MRI at age 1 year, 8 months (upper row) and at age 2 years, 9 months (lower row). White matter hyperintensity (*) at T2-weighted (left-sided) imaging is prominent but does not change evidently over time. An increase in the number of calcifications (arrows) at the gradient-echo images (right-sided) is mainly seen in the lentiform nuclei and peripheral white matter.

Cerebral folate transport deficiency is caused by homozygous or compound heterozygous mutations of the *FOLR1* gene.[1] Recently, we found a homozygous *FOLR1* mutation (NM_016725.2: c.562C>G p.[Leu188Val]) in a 2.5-year-old boy with febrile and nonfebrile status epilepticus, progressive ataxia, and progressive MRI abnormalities. Until the diagnosis was made, serial MRI had been performed (figure). CSF analysis (5-methyltetrahydrofolate <2 nmol/L, normal >40 nmol/L) and magnetic resonance spectroscopy showing a low choline peak validated the pathogenicity of our findings.[2]

Nonprogressive hypomyelination is considered part of *FOLR1*,[1,2] although no author has published serial MRI. Our data show that cerebral folate transport deficiency must be considered in hypomyelination and progressive calcifications.

AUTHOR CONTRIBUTIONS

Joost Nicolai: study concept and design, acquisition of data. Marjan J.A. van Kempen: analysis and interpretation of genetic data. Alida A. Postma: analysis and interpretation of MRI and MRS data.

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DISCLOSURE

The authors report no disclosures relevant to the manuscript. Go to Neurology.org for full disclosures.

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