

Abstract

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Magnesium VitB6 intake reduces central nervous system hyperexcitability in children.

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OBJECTIVE: Ionic magnesium (Mg(2+)) depletion has long been known to cause hyperexcitability with convulsive seizures in rodents, effects that have been reversed by treatment with magnesium (Mg). Metabolic disorders and genetic alterations are suspected in this pathology, in which Mg(2+) transport and intracellular distribution may be reduced without change in serum Mg(2+) concentrations. We evaluated the effects of Mg(2+)/vitamin B6 regimen on the behavior of 52 hyperexcitable children (under 15 years of age) and their families.

METHODS: To assess intracellular Mg(2+), we measured intra-erythrocyte Mg(2+) levels (ERC-Mg). Our reference values for normal subjects were 2.46 to 2.72 mmol/L. In 30 of the 52 hyperactive children, there were low ERC-Mg values: 2.041 +/- 0.279 mmol/L. Combined Mg(2+)/vitamin B6 intake (100 mg/day) for 3 to 24 weeks restored normal ERC-Mg values (2.329 +/- 0.386 mmol/L).

RESULTS: In all patients, symptoms of hyperexcitability (physical aggressivity, instability, scholar attention, hypertony, spasm, myoclony) were reduced after 1 to 6 months treatment. Other family members shared similar symptoms, had low ERC-Mg values, and also responded clinically to increased Mg(2+)/vitamin B6 intakes. Two typical families are described.

CONCLUSION: This open study indicates that hyperexcitable children have low ERC-Mg with normal serum Mg(2+) values, and that Mg(2+)/vitamin B6 supplementation can restore normal ERC-Mg levels and improve their abnormal behavior.

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