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Antiepileptic drugs interact with folate and vitamin B12 serum levels.

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Abstract

OBJECTIVE: Antiepileptic drugs (AEDs) are important for the treatment of epilepsy, psychiatric diseases, and pain syndromes. Small studies have suggested that AED treatment reduces serum levels of folate and vitamin B12.

METHODS: This prospective monocenter study aimed at testing the hypothesis that AED treatment is associated with folate and vitamin B12 serum levels in a large population. A total of 2730 AED-treated and 170 untreated patients with epilepsy and 200 healthy individuals were enrolled.

RESULTS: Treatment with carbamazepine, gabapentin, oxcarbazepine, phenytoin, primidone, or valproate was associated with lower mean serum folate levels or with a higher frequency of folate levels below the reference range in comparison with the entire group of patients, untreated patients, or controls. Treatment with phenobarbital, pregabalin, primidone, or topiramate was associated with lower vitamin B12 levels compared with the entire group of patients. Vitamin B12 serum levels were higher in patients treated with valproate compared with the entire group of patients, untreated patients, and healthy controls. Folate or vitamin B12 levels below the reference range were associated with higher mean corpuscular volume (MCV) and higher homocysteine plasma levels. Vitamin substitution for 3 months in 141 patients with folate or vitamin B12 levels below the reference range yielded normal vitamin levels in 95% of the supplemented patients and reduced MCV and homocysteine plasma levels.

INTERPRETATION: Treatment with most of the commonly used AEDs is associated with reduced folate or vitamin B12 serum levels and is a risk factor for hyperhomocysteinemia. Oral substitution is effective to restore vitamin, MCV, and homocysteine levels.

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Epilepsy: antiepileptic drugs reduce vitamin B(12) and folate levels. [Nat Rev Neurol. 2011]

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