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Effects of carbamazepine on serum levels of folic acid and homocysteine

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Epilepsy is resistant to drug treatment in about one third of cases, but the mechanisms underlying this drug resistance are not understood. The aim of this study is to assess of carbamazepine (CBZ) effect on homocysteine and folic acid occurrence in patients with epilepsy. A total of 45 epileptic outpatients treated by carbamazepine and 28 sex and age matched healthy controls. The mean of homocysteine, and folic acid in epileptic patients were significantly higher 16.46±1.79 umol/L; 8.46±0.35 ng/ml compared with healthy controls 8.54±0.64; 10.61±0.63 (p=0.0001; p= 0.006, respectively). Epileptic patients were divided into two groups, therapy-response, and therapy-resistant. Homocysteine serum concentration was significantly higher in the first group of patients (therapy-resistant) compared with healthy controlled group 19.77±2.96 versus 8.54±0.64 (p=0.0001) respectively. However, folic acid concentration was significantly lower in the first group of patients (therapy-resistant) compared with healthy controlled group 7.58±0.3 versus 10.61±0.63 (p=0.001) respectively. In therapy-response group, homocysteine serum concentration was significantly difference compared with healthy controlled group (12.3±1.11 versus 8.54±0.64), but it remain within the normal value. It was no significantly difference in levels of folic acid between the therapy-response group and healthy controlled group 9.55±0.61 versus 10.61±0.63 (p=0.21). This study demonstrates that epileptic patients taking antiepileptic drug (carbamazepine) have increased serum levels of homocysteine. Serum homocysteine levels in patients treating with carbamazepine were higher to 50% .The elevated levels of homocysteine may occur due to deficiency of folic acid that is necessary for homocysteine metabolism.

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