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Effect of levetiracetam monotherapy on cardiovascular risk factors in children with epilepsy: A prospective study

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Statement of the Problem: Long-term treatment with some older antiepileptic drugs, including sodium valproate and carbamazepine, may lead to hyperhomocysteinemia or dyslipidemia. Levetiracetam (LEV), a newer broad spectrum antiepileptic agent, appears to be well tolerated with mild adverse effects. However, in contrast with the older antiepileptic drugs, the effect of LEV on cardiovascular risk factors is not yet sufficiently investigated.

Purpose: The purpose of this study was to investigate prospectively the short and long-term effect of LEV monotherapy on serum lipid profile, thyroid hormones levels and homocysteine metabolism in children with epilepsy. The study population consisted of 32 children (18 females, 14 males, mean age 5, 94±4, 1 year, and range 1-15 years) that were treated for new-onset epilepsy with Lev monotherapy. Serum total cholesterol (TC), high-density lipoprotein cholesterol (HDL-C), low-density lipoprotein cholesterol (LDL-C), triglycerides (TGs), apolipoprotein A-I (apo A-I), apolipoprotein B (apo B), lipoprotein (a) [Lp(a)], free thyroxin (FT4), thyrotropin (TSH), folate (s-F), vitamin B-12 (s-B12) and plasma total homocysteine (p-tHcy), were evaluated before and at 2, 6 and 12 months of LEV monotherapy.

Findings: TGs were significantly decreased at 6 and 12 months of LEV treatment (p=0.030 and p=0.001, respectively). P-tHcy was significantly decreased at 2 months of treatment (p=0.031). There were no significant alterations in the other parameters during the study. Mean value of drug dosage (mg/Kg) was 18.1±7.1 at 2 months, 20.8±10.1 at 6 months and 19.8±11.2 at 12 months of LEV treatment.

Conclusion & Significance: In contrast with older antiepileptic drugs, long-term LEV monotherapy in children with epilepsy does not cause adverse alterations on serum lipids, homocysteine and thyroid hormones; therefore, LEV may be considered as a safer alternative drug for the prevention of cardiovascular complications in adult life.

Recent Publications

1. El-Farahaty RM, El-Mitwalli A, Azzam H, Wasel Y, Elrakhawy MM and Hasaneen BM (2015) Atherosclerotic effects of long-term old and new antiepileptic drugs monotherapy: a cross-sectional comparative study. *J Child Neurol* 30:451-7.
2. Kim DW, Lee SY, Shon YM and Kim JH (2013) Effects of new antiepileptic drugs on circulatory markers for vascular risk in patients with newly diagnosed epilepsy. *Epilepsia* 54:e146-9.
3. Belcastro V, Striano P, Gorgone G, Costa C, Ciampa C, Caccamo D, Pisani LR, Oteri G, Marciani MG, Aguglia U, Striano S, Ientile R, Calabresi P and Pisani F (2010) Hyperhomocysteinemia in epileptic patients on new antiepileptic drugs. *Epilepsia* 51:274-9.
4. Yılmaz U, Yılmaz TS, Akıncı G, Korkmaz HA and Tekgül H (2014) The effect of antiepileptic drugs on thyroid function in children. *Seizure* 23:29-35.
5. Shih FY, Chuang YC, Chuang MJ, Lu YT, Tsai WC, Fu TY and Tsai MH (2017) Effects of antiepileptic drugs on thyroid hormone function in epilepsy patients. *Seizure* 48:7-10.

Biography

Achilleas Attilakos is a Pediatrician. He works as an Assistant Professor of Pediatrics at "Attikon" Hospital-National and Kapodistrian University of Athens, Greece. He is a General Pediatrician, interested in childhood dyslipidemia, primary pediatric care and antiepileptic drug safety.

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