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Body weight, body composition, and serum ghrelin in epileptic children receiving Levetiracetam monotherapy

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Background: Many types of endocrine and metabolic abnormalities are associated with epilepsy and its medications. We aimed to examine the effect of levetiracetam (LEV) monotherapy on body weight, body composition, and serum ghrelin level in prepubertal children with idiopathic focal epilepsy.

Methods: The study enrolled twenty drug-naïve children with newly diagnosed idiopathic focal epilepsy (aged 6-10 years; 8 male/12 female) and 22 healthy controls matched for age and sex. Patients were treated with LEV monotherapy with mean dosage of 30 mg/kg/day. The following parameters were evaluated at baseline and after six months of LEV monotherapy; body weight, body mass index, and body composition using bioelectric impedance analysis technique. Fasting blood samples were collected for estimation of fasting blood glucose, insulin, and ghrelin levels. Insulin resistance was assessed by Homeostasis Model Assessment method.

Results: No significant difference was observed between patients and controls at baseline evaluation. After 6 months; LEV monotherapy was associated with significant weight loss with significant increase in trunk: leg ratio fat mass ($p<0.001$). There were significant increases in free fat mass (FFM) both total ($p=0.002$) and segmental [trunk ($p<0.001$) and legs ($p=0.005$)]. A non-significant decrease in serum ghrelin was observed in patients compared to controls at baseline and non-significant increase was detected in patients after six months treatment. No significant changes detected in fasting levels of blood glucose and insulin after six months treatment.

Conclusion: LEV associated weight loss is evident among prepubertal children with focal epilepsy that was mainly related to decrease in body fat mass. However, the exact mechanism of weight loss is not clear and cannot be explained by changes in ghrelin level.

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