LONGTERM LAMOTRIGIN THERAPY AND BONE HEALTH

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Abstract

Previous study data reported that CYP450 inducing antiepileptic drugs alter the activity of the enzymes responsible for vitamin D metabolism, leading to reduced calcium absorption, increased bone resorption and accelerated bone mass loss. Nevertheless, data on non-enzyme inducing antiepileptics are insufficient and less is known about the possible mechanisms they can alter the bone metabolism.

Introduction

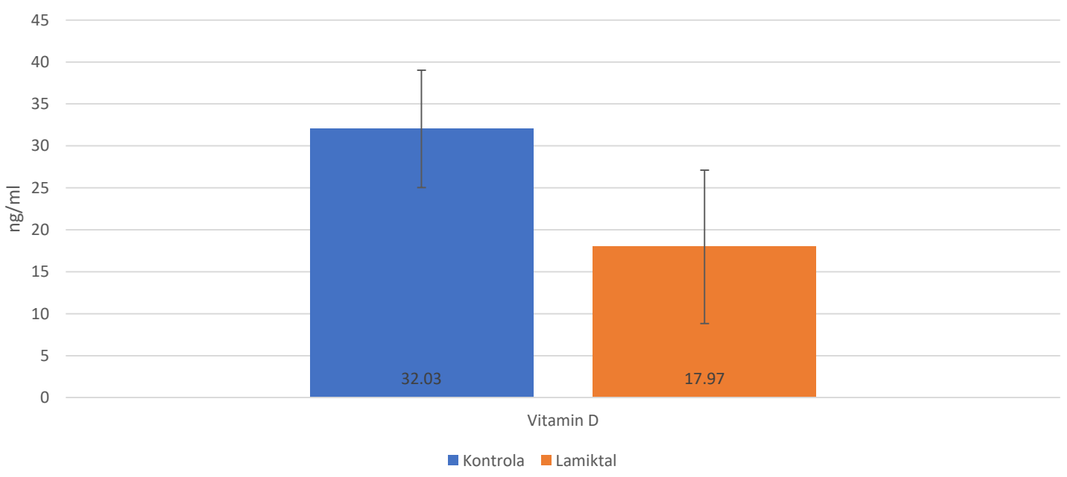
Therefore, we decided to measure serum levels of 25-OHD and osteocalcin (OCLN) in normal controls (n=30) and in epilepsy patients taking lamotrigin (LTG) (n = 50) in monotherapy for a period of at least twelve months. For each participant, mineral density (BMD) was evaluated by dual-energy X-ray absorptiometry method.

Methods and Materials

A cross-sectional study in patients under treatment with LTG monotherapy was carried out between the years 2016 to 2017, in Epilepsy Center at Neurology Clinic in Sarajevo. Only patients with LTG monotherapy for a period of at least twelve months were entered in this study. Patients who had any condition known to affect bone metabolism (e.g., renal disease, recent fracture, hyperparathyroidism, Paget disease, osteoporosis) or taking any drug known to cause or treat osteoporosis, were excluded. The results were compared with age-matched healthy controls, with no evidence of metabolic bone disease.
All participants were asked to complete a questionnaire including medical history, fractures, falls and injuries, and vitamin D or calcium supplements. Bone mineral density (BMD) was evaluated by dual-energy X-ray absorptiometry method called DXA technology.

Results

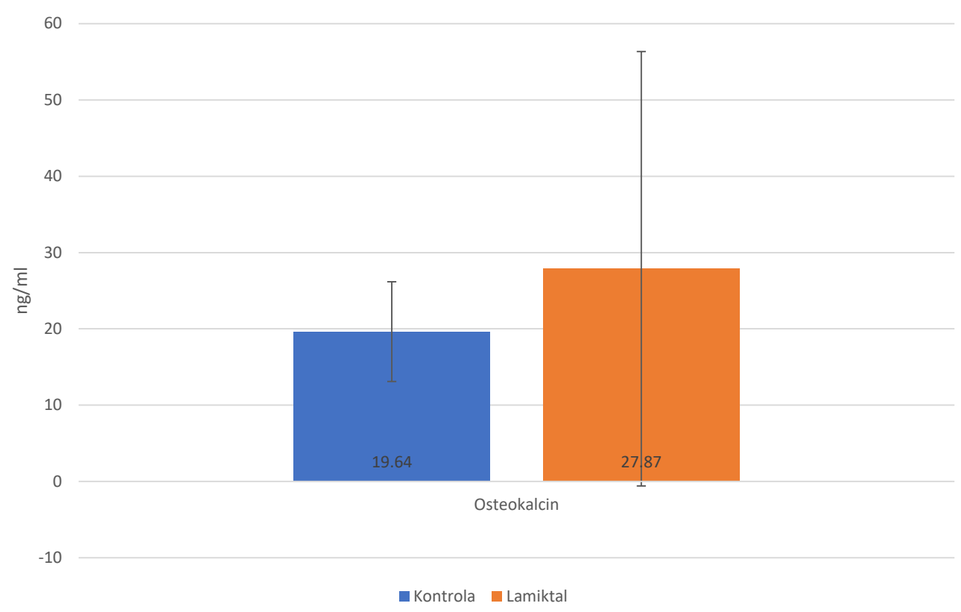
The average value of vitamin D in serum was significantly lower in LTG group than in control group (Vit D 17.97±9.15 vs. 32.03 ±6.99, p=0, 0001). The average value of osteocalcin in serum was higher in LTG group than in control group (27.87±28.45 vs. 19.64±6,54, p=0,004) but this difference was not statistically significant. BMD value in LTG group was lower than in control group (T. score LTG: 0.37± 1.02 vs. T. score control: 0.73± 1.13, p= 0.031; Z score LTG: 0,38±0,96 vs. Z. score control: 0.55 ±0.79, p=0,015) but this difference was not statistically significant.



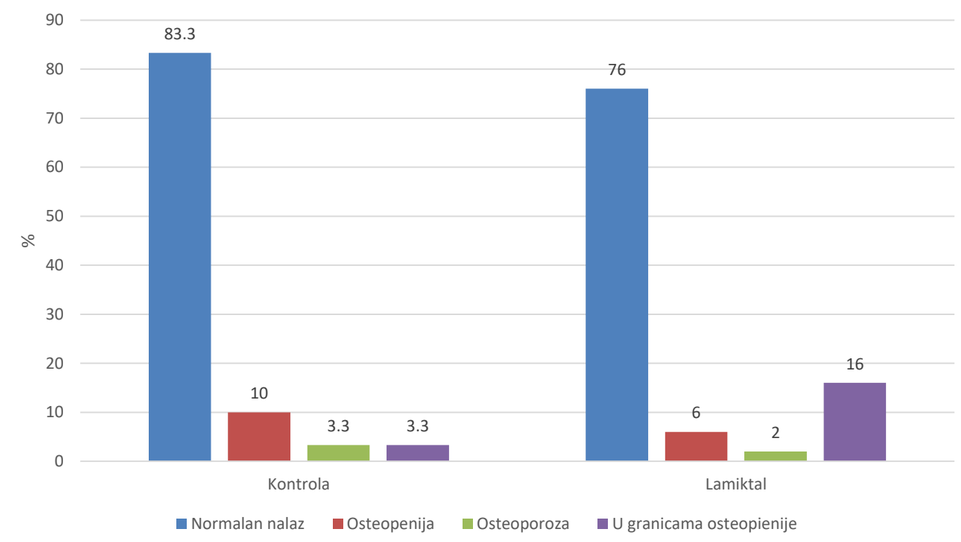
Graph 1. levels of vitamin D.

Discussion

Graph 2. levels of osteocalcin.



Graph 3. results of BMD



Conclusions

Patients on long-term therapy with non-enzyme-inducing antiepileptic agents could benefit of routine measurement of biochemical markers of bone turnover, and BMD measurement as part of osteoporosis investigation.

References

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Gallagher JC, Sai AJ. Vitamin D insufficiency, deficiency, and bone health. J Clin Endocrinol Metab 2010;95(6) :2630–2633.