ABSTRACT

ANALYSIS OF SERUM RANKL LEVELS IN EPILEPSY PATIENTS ON LONG TERM VALPROATE OR NON-VALPROATE THERAPY

(Study at Ambulatory Care of Neurology Department, Haji General Hospital Surabaya)

**Background** : Patients with epilepsy have a 2–6 times greater risk of bone fractures compared with the general population and 15% of it associated with bone metabolic disorders. Valproate is antiepileptic drugs (AED) with broad spectrum and can be used in various types of seizures. Receptor activator of nuclear factor-kappa B ligands (RANkL), a bone resorption marker is secreted by osteoblasts and binds to the RANK receptor on osteoclast precursor and mature osteoclast cells. Valproate has been reported to improve osteoclastogenesis whereas the non-valproate group negatively correlated. Increased serum levels of RANkL signify increased differentiation and activation of bone resorption.

**Objective** : The aim of this prospective observational study is to analyze serum RANKL levels in epilepsy patients on long term valproate or non-valproate therapy and to analyze the effect of dosing and interval of valproate use on RANKL levels.

**Method** : The serum RANKL levels were measured on routine patient visits to ambulatory care of neurology department. Sampling in this study were collected by consecutive sampling in cross sectional study from July – September 2017. Protocol of this study had been reviewed by Ethical Committee Haji General Hospital Surabaya. Statistical analysis of data analyzed with one way ANOVA and Pearson correlation.

**Result** : 22 epilepsy patients were participated in this study. The measured serum RANKL levels in this study were 18.828 - 71.018 pg/ml with mean levels 40.45 ± 10.37 pg/ml. Statistical analysis showed no significant difference in serum RANKL levels between valproate and non-valproate groups (p=0.704). The significant differences between this two groups were in patients with duration of AED use more than 24 months (p=0.044). Different test analysis of RANKL level between the valproate group ER 1 x 1000 mg and valproate 3 x 250 mg did not give significant difference (p=0.747). This result suggests that dosage and interval of valproate use do not give any significant difference in effect on bone. RANKL levels were positively correlated with the duration of AED use and smoking.

**Conclusion** : Significant differences between the valproate and non-valproate groups were seen after the duration of AED use over 2 years. Duration of AED use and smoking have positif correlation with serum RANKL levels.

**Keyword** : Epilepsy, Antiepileptic drugs, Valproate, RANKL.