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The Safety and Efficacy of Administration of Folic Acid and Vitamin B Combination to Reduce Homocysteine levels in Chronic Kidney Disease Patients

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Objectives: The AIm was to identify the safety and efficacy of administration of folic acid and intravenous vitamin B combination to reducing elevated homocysteine levels in Chronic Kidney Disease(CKD) patients.

Methods: This study was an observational non-control study of 105 CKD patients for 4 weeks with routine hemodialysis 2 times/week in Bethesda Hospital Yogyakarta. Every subject has a routine administration of folic acid and intravenous vitamin B combination (consist of 100 mg vitamin B1, 100 mg vitamin B6, and 5000 mcg vitamin B12), after each hemodialysis. Hyperhomocysteinemia was defined as plasma homocysteine level > 15.39 µmol/L. The shifting of homocysteine level was measured in the first week, second week and the fourth week. Frequency distributions, Chi-square statistics, and Wilcoxon tests were used to analyze the data.

Results: There were 105 subjects with a mean age of the patients was 51.3 ± 1.19 years. Subjects were dominated by males and < 60 years old. The homocysteine level was measured at baseline, second, and fourth weeks. The Prevalence of hyperhomocysteinemia and the median of homocysteine levels were decreasing from baseline [84.3%;23.04 (6-47) µmol/L] to the last visit [17.6%;12.07 (3-25) µmol/L]. Wilcoxon test showed statistically significant reductions in Δ homocysteine 1-2 (p:0.001) and Δ homocysteine 1-4 (p:0.001). There were three subjects with an adverse event during this study in the second and third weeks. However, the adverse events concluded to be uncorrelated to the administration of folic acid and intravenous vitamin B combination.

Conclusions: The prevalence of Hyperhomocysteinemia in CKD patients is high. Folic acid and intravenous vitamin B combination can be considered safety and efficacy in reducing homocysteine levels in CKD patients.