

Determinan Variabilitas Hemoglobin pada Pasien Penyakit Ginjal Kronik yang Menjalani Hemodialisis Rutin = The Determinant of Hemoglobin Variability in Chronic Kidney Disease Patients on Hemodialysis

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Abstrak

Latar Belakang: Variabilitas hemoglobin (var-Hb) merupakan suatu fenomena fluktuasi kadar Hb dalam satuan waktu tertentu yang dialami oleh pasien penyakit ginjal kronik yang menjalani hemodialisis rutin (PGK-HD). Var-Hb telah diketahui sebagai prediktor independen luaran klinis buruk. Namun, faktor-faktor yang mempengaruhinya belum banyak diketahui. Tujuan: Mengetahui besaran proporsi var-Hb pada pasien PGK-HD di Indonesia dan faktor-faktor yang mempengaruhinya. Metode: Penelitian ini merupakan studi kohort prospektif yang melibatkan pasien GKG-HD berusia 18 tahun di Unit Hemodialisis RSCM. Faktor-faktor yang dinilai saat awal ialah kadar Hb, reticulocyte-hemoglobin equivalent (RET-He), albumin, fosfatase alkali, dan C-reactive protein (CRP) serum, serta adekuasi dialisis (Kt/V). Adanya perdarahan saluran cerna (termasuk darah samar feses), dosis erythropoietin-stimulating agent (ESA) dan zat besi, serta kejadian transfusi darah akan dicatat. Kadar Hb kemudian diperiksa setiap 4 minggu hingga 24 minggu pengamatan. Var-Hb dinilai dengan standar deviasi residual dan nilai 1,0 dianggap sebagai var-Hb tinggi. Uji hipotesis dilakukan dengan uji bivariat sesuai jenis data, dilanjutkan dengan analisis multivariat menggunakan uji regresi logistik multipel. Hasil: Sejumlah 127 subyek (rerata [SD] usia 49,06 [15,1], perempuan 52%, rerata [SD] kadar Hb 9,75 [1,00] g/dL) diikutsertakan dalam analisis. Proporsi subyek dengan var-Hb tinggi ialah 47,24%. Berdasarkan analisis bivariat dan multivariat, faktor yang mempengaruhi var-Hb adalah kadar RET-He ($p=0,004$), dosis ESA ($p=0,032$), dan kejadian transfusi darah (adjusted OR 6,967, IK95% 2,74-17,71; $p<0,001$). Kesimpulan: Proporsi pasien PGK-HD di Indonesia yang memiliki var-Hb tinggi ialah 47,24% (IK95% 38,3-56,3%). Faktor-faktor yang mempengaruhi var-Hb ialah kadar RET-He, dosis ESA, dan kejadian transfusi darah.

.....Background: Hemoglobin variability (Hb-var) is a phenomenon of Hb fluctuation during a course of time that is frequently observed in chronic kidney disease on hemodialysis (CKD-HD) patients. Hb-var is now recognized as a predictor of poor clinical outcomes. However, factors that influence the Hb-var are not well understood. Objectives: This study was aimed to measure the proportion of Hb-var in CKD-HD patients in Indonesia and identify factors associated. Methods: This was a prospective cohort study involving CKD-HD patients aged 18 years old in Hemodialysis Unit in RSCM. Factors identified at baseline were serum levels of Hb, reticulocyte-hemoglobin equivalent (RET-He), albumin, alkaline phosphatase, C-reactive protein (CRP), and dialysis adequacy (Kt/V). Hb level was measured every 4 weeks until 24 weeks of follow up. Any evidence of gastrointestinal bleeding (including occult blood feces), erythropoietin-stimulating agent (ESA) dosage, and blood transfusion were also noted. Hb-var was calculated as the residual standard deviation, and value 1.0 was considered as high. Hypothesis testing was performed by bivariate analysis, then continued with multivariate analysis using multiple regression logistic test. Results: As 127 subjects (mean [SD] of age 49.06 [15.1], female 52%, mean [SD] of Hb 9.75 [1.00] g/dL) were included in the analysis. The proportion of subjects with high Hb-var were 47.24%. According to bivariate and multivariate

analysis, factors that determined Hb-var were RET-He levels ($p=0.004$), ESA dosage ($p=0.032$), and blood transfusion (adjusted OR 6.967, 95% CI 2.74-17.71, $p<0.001$). Conclusion: The proportion of CKD-HD patients in Indonesia with high Hb-var was 47.24% (95% CI 38.3-56.3%). Factors that determined Hb-var were RET-He levels, ESA dosage, and blood transfusion.