

INTISARI

Latar belakang: Hemoglobinopati (khususnya *beta thalassemia trait* atau BTT dan hemoglobin E atau HbE) dan defisiensi besi (DB) memiliki kesamaan kelainan eritrosit mikrositik hipokromik yang sulit dibedakan, tetapi kondisi-kondisi tersebut penting untuk dibedakan karena penyebab, penatalaksanaan dan prognosisnya berbeda. Identifikasi dini dan klasifikasi yang benar memiliki implikasi penting untuk pengobatan dan konseling genetik yang tepat. Penelitian terdahulu telah banyak menggambarkan profil parameter hematologi pada hemoglobinopati dan defisiensi besi, namun belum banyak ditemukan publikasi ilmiah di Indonesia, terutama Yogyakarta.

Tujuan: Tujuan dari penelitian ini adalah untuk menggambarkan profil parameter hematologi pada BTT, HbE, dan defisiensi besi.

Metode: Penelitian ini merupakan studi deskriptif dengan desain potong lintang. Subjek penelitian merupakan peserta pemeriksaan kesehatan di Departemen Patologi Klinik dan Kedokteran Laboratorium FK-KMK UGM tahun 2018-2021. Kriteria inklusi yaitu usia ≥ 12 tahun, nilai MCV < 80 fL dan/atau MCH < 26 pg, Hb 9-16 g/dL dan bersedia mengikuti penelitian. Subjek penelitian dibedakan menjadi BTT, HbE, dan DB berdasarkan algoritma pemeriksaan meliputi pemeriksaan feritin, CRP, dan analisis Hb. Profil parameter hematologi setiap kelompok ditampilkan dalam tabel dan grafik. Analisis statistik uji beda data numerik parametrik menggunakan uji *One Way ANOVA* dan non parametrik menggunakan uji *Kruskal-Wallis*; $p < 0,05$ dinyatakan bermakna secara statistik.

Hasil: Sejumlah 266 subjek, yang memenuhi kriteria inklusi dan eksklusi, dimasukkan dalam penelitian ini. Subjek penelitian sebagian besar memiliki jenis kelamin perempuan dengan median usia 20 tahun, yang terdiri dari subjek dengan BTT 35 orang, HbE 54 orang, dan defisiensi besi 177 orang. Pada BTT, nilai RBC dan %Micro paling tinggi sedangkan nilai MCV dan MCH paling rendah. Pada HbE, kadar Hb, hematokrit, MCH, dan MCHC didapatkan paling tinggi sedangkan nilai RDW, %Micro, dan %Hypo paling rendah. Pada DB, RDW dan %Hypo paling tinggi sedangkan nilai RBC, Hb, hematokrit dan MCHC didapatkan paling rendah. Uji beda rerata atau median dari parameter hematologi yang diteliti pada BTT, HbE, dan DB didapatkan perbedaan bermakna secara statistik. Pada analisis *post hoc*, nilai RBC, MCHC, RDW, %Micro, dan %Hypo didapatkan perbedaan bermakna secara statistik antara BTT dengan HbE, BTT dengan DB, dan HbE dengan DB. Nilai hematokrit dan MCH didapatkan perbedaan bermakna secara statistik antara BTT dengan DB, dan HbE dengan DB. Nilai MCV didapatkan perbedaan bermakna secara statistik antara BTT dengan HbE dan BTT dengan DB.

Simpulan: Parameter hematologi RBC dan %Micro pada BTT; kadar Hb, hematokrit, MCV, MCH, dan MCHC pada HbE; RDW dan %Hypo pada DB didapatkan paling tinggi nilainya. Profil parameter hematologi pada BTT, HbE, dan DB didapatkan perbedaan bermakna secara statistik.

Kata kunci: parameter hematologi, mikrositik, hipokromik, *beta thalassemia trait*, hemoglobin E, defisiensi besi.

ABSTRACT

Background: Hemoglobinopathies (mainly beta thalassemia trait or BTT and Hemoglobin E or HbE) and iron deficiency (ID) share the indistinguishable hypochromic microcytic erythrocyte disorder in common, but these conditions are important to distinguish because of their different causes, management and prognosis. Early identification and correct classification have important implications for appropriate genetic treatment and counselling. Previous studies have described the profile of hematological parameters in hemoglobinopathies and iron deficiency, but not much scientific publications in Indonesia, especially Yogyakarta.

Objective: The aim of this study is to describe the profile of hematological parameters in BTT, HbE, and ID.

Method: This was a descriptive study with a cross-sectional design. The subjects were participants in the medical examination at the Department of Clinical Pathology and Laboratory Medicine, FK-KMK UGM in 2018-2021. The inclusion criteria were age ≥ 12 years, MCV value < 80 fL and/or MCH < 26 pg, Hb 9-16 g/dL and willing to take part in the research. Research subjects were divided into BTT, HbE, and iron deficiency based on the algorithm of examination including ferritin, CRP, and Hb analysis. The hematological parameter profile of each group was presented in tables and graphs. Differences analysis of parametric numerical data was using One Way ANOVA and non-parametric test was using Kruskal-Wallis test; $p < 0,05$ was statistically significant.

Result: A total of 266 subjects, who met the inclusion and exclusion criteria, were included in this study. The research subjects were mostly female with a median age of 20 years, which consisted of 35 subjects with BTT, 54 HbE, and 177 ID. In BTT, the RBC and %Micro values were the highest while the MCV and MCH values were the lowest. In HbE, the levels of Hb, hematocrit, MCH, and MCHC were the highest while the values for RDW, %Micro, and %Hypo were the lowest. In ID, RDW and %Hypo were the highest, while the values for RBC, Hb, hematocrit and MCHC were the lowest. The mean or median difference test of the hematological parameters studied in BTT, HbE, and ID showed statistically significant differences. In post hoc analysis, RBC, MCHC, RDW, %Micro, and %Hypo, statistically significant differences were found between BTT with HbE, BTT with ID, and HbE with ID. Hematocrit and MCH showed statistically significant differences between BTT and ID, and HbE with ID. MCV showed statistically significant differences between BTT with HbE and BTT with ID.

Conclusion: RBC and %Micro in BTT; Hb, hematocrit, MCV, MCH, and MCHC in HbE; RDW and %Hypo in ID DB were the highest value. The profile of hematological parameters on BTT, HbE, and DB showed statistically significant differences.

Keywords: hematological parameters, microcytic, hypochromic, beta thalassemia trait, hemoglobin E, iron deficiency.