

HUBUNGAN ANTARA KADAR *GROWTH DIFFERENTIATION FACTOR-15* (GDF-15) DENGAN RETIKULOSIT DAN *IMMATURE RETICULOCYTE FRACTION* (IRF) PADA PASIEN TALASEMIA β MAYOR DEWASA

ABSTRAK

Latar Belakang: Talasemia beta disebabkan oleh kelainan gen β -globin tunggal sehingga mengganggu sintesis rantai globin hemoglobin. Penyakit ini menyebabkan eritropoiesis inefektif. *Growth differentiation factor-15* (GDF-15) berperan penting dalam regulasi eritropoiesis dan meningkat pada kondisi eritropoiesis inefektif. Pemeriksaan retikulosit dan *immature reticulocyte fraction* (IRF) juga dapat menilai eritropoiesis inefektif. Penelitian ini bertujuan untuk mengetahui hubungan antara kadar GDF-15 dengan nilai retikulosit dan IRF sebagai indikator aktivitas eritropoiesis pada pasien talasemia beta mayor dewasa.

Metode: Penelitian *cross-sectional* pada 42 pasien dewasa dengan talasemia beta mayor di RSUP dr. Kariadi yang rutin mendapatkan transfusi darah. Kadar GDF-15 serum diperiksa dengan *enzyme linked immunosorbent assay* (ELISA), nilai retikulosit dan IRF diperiksa menggunakan alat *hematology analyzer*. Hasil yang diperoleh dilakukan uji normalitas *Shapiro-Wilk*. Uji statistik menggunakan uji korelasi *Spearman Rank*. Nilai $p < 0,05$ dianggap signifikan.

Hasil: Nilai median (min-maks) GDF-15 dan retikulosit berturut-turut adalah 3243,5 (445 – 4769) pg/mL dan 4,49 (0,08 – 28,79) %. Rerata \pm SD nilai IRF adalah 17,16 \pm 10,76 %. Uji hubungan antara kadar GDF-15 dengan nilai retikulosit dan nilai IRF berturut-turut didapatkan ($r = 0,331$; $p = 0,032$), ($r = 0,410$; $p = 0,007$).

Simpulan: Terdapat hubungan positif lemah antara kadar GDF-15 dengan nilai retikulosit. Terdapat hubungan positif sedang antara kadar GDF-15 dengan nilai IRF

Kata Kunci: Talasemia beta mayor, GDF-15, retikulosit, IRF, eritropoiesis inefektif

CORRELATION BETWEEN GROWTH DIFFERENTIATION FACTOR 15 (GDF-15) LEVELS WITH RETICULOCYTES AND IMMATURE RETICULOCYTE FRACTION (IRF) IN ADULT β THALASSEMIA MAJOR PATIENTS

ABSTRACT

Background: Beta thalassemia is caused by a single β -globin gene disorder that disrupts the synthesis of hemoglobin globin chains. This condition leads to ineffective erythropoiesis. Growth differentiation factor-15 (GDF-15) plays a crucial role in regulating erythropoiesis and is elevated in conditions of ineffective erythropoiesis. The assessment of reticulocyte count and immature reticulocyte fraction (IRF) can help evaluate ineffective erythropoiesis. This study aimed to determine the relationship between GDF-15 levels and reticulocyte and IRF values as indicators of erythropoietic activity in adult patients with beta thalassemia major.

Method: This cross-sectional study involved 42 adult patients with beta thalassemia major who received regular blood transfusions at Dr. Kariadi General Hospital. Serum GDF-15 levels were measured using enzyme-linked immunosorbent assay (ELISA), while reticulocyte and IRF values were determined using a hematology analyzer. The results obtained were subjected to Saphiro-Wilk normality test. Spearman rank correlation test was used for statistical analysis. A p -value < 0.05 was considered significant.

Results: The median (min-max) levels of GDF-15 and reticulocytes were 3243.5 (445-4769) pg/mL and 4.49 (0.08-28.79) %, respectively. The mean \pm SD of the IRF value was 17.16 ± 10.76 %. Relationship test between GDF-15 levels with reticulocyte and IRF values were obtained respectively ($r = 0.331$; $p = 0.032$), ($r = 0.410$; $p = 0.007$).

Conclusion: There was a weak positive correlation between GDF-15 levels and reticulocyte value. There was a moderate positive correlation between GDF-15 levels and IRF value.

Keywords: Beta thalassemia major; GDF-15, reticulocyte, IRF, ineffective erythropoiesis