

THE EFFECT OF DELAYED BLOOD SAMPLE EXAMINATION AT ROOM TEMPERATURE ON RETICULOCYTE LEVELS IN CHRONIC KIDNEY DISEASE PATIENTS

Pauliani Elfiani Kanni¹, Zulfikar Husni Faruq²,

Ullyia Rahmawati,³

^{1,2,3}Department of Medical Laboratory Technology, Health Polytechnic of the
Ministry of Health Yogyakarta

Jl. Tata Bumi No.3 Banyuraden, Gamping, Sleman

Email: kannipauliani@gmail.com

ABSTRACT

Background: Reticulocyte examination is used to assess erythropoiesis activity in patients with chronic kidney disease (CKD), but it is highly influenced by pre-analytical factors such as delayed examination, which may affect the results.

Objective: To determine the statistical and clinical impact of 4 and 8 hours delay in blood samples of chronic kidney failure patients at room temperature on the results of reticulocyte level examinations.

Methods: This study was a quantitative research with a pre-experimental repeated measures design. The study was conducted using 12 EDTA blood samples from CKD patients. Reticulocyte examination was performed using the Brilliant Cresyl Blue method at three time points: immediate examination, 4-hour delay, and 8-hour delay at room temperature. Data were analyzed using Repeated Measures ANOVA after the Shapiro-Wilk normality test.

Results: The mean reticulocyte level decreased from 2.242% to 1.717% at 4 hours and 1.267% at 8 hours. There was a significant difference between examination times ($p < 0.05$). The decrease was 5.25% at 4 hours and 9.75% at 8 hours. The bias values of 23.4% and 43.5% exceeded the allowable bias limit of 7.8%.

Conclusion: Delayed examination significantly decreases reticulocyte levels and produces unacceptable bias. Therefore, reticulocyte examination should be performed immediately after sample collection.

Keywords: reticulocyte, delay, chronic kidney disease, bias, pre-analytical

PENGARUH PENUNDAAN SAMPEL DARAH PASIEN GAGAL GINJAL KRONIK PADA SUHU RUANG TERHADAP HASIL PEMERIKSAAN KADAR RETIKULOSIT

Pauliani Elfiani Kanni¹, Zulfikar Husni Faruq²,

Ullyia Rahmawati³

^{1,2,3}Jurusan Teknologi Laboratoriu Medis Poltekkes Kemenkes Yogyakarta
Jl. Tata Bumi No.3 Banyuraden, Gamping, Sleman

Email: kannipauliani@gmail.com

ABSTRAK

Latar Belakang: Pemeriksaan retikulosit digunakan untuk menilai aktivitas eritropoiesis pada pasien gagal ginjal kronik (GGK), namun sangat dipengaruhi faktor pra-analitik seperti penundaan pemeriksaan yang dapat menyebabkan perubahan hasil.

Tujuan: Mengetahui adanya pengaruh pada statistik dan klinis penundaan 4 dan 8 jam sampel darah pasien gagal ginjal kronik pada suhu ruang terhadap hasil pemeriksaan kadar retikulosit.

Metode: Penelitian kuantitatif dengan desain *pre-experimental repeated measures* pada 12 sampel darah EDTA pasien GGK. Pemeriksaan retikulosit dilakukan dengan metode Brilliant Cresyl Blue pada pemeriksaan segera, penundaan 4 jam, dan 8 jam suhu ruang. Analisis menggunakan Repeated Measures ANOVA setelah uji normalitas Shapiro-Wilk.

Hasil: Rata-rata retikulosit menurun dari 2,242% menjadi 1,717% (4 jam) dan 1,267% (8 jam). Terdapat perbedaan bermakna ($p < 0,05$). Penurunan sebesar 5,25% (4 jam) dan 9,75% (8 jam). Bias sebesar 23,4% dan 43,5% melebihi batas allowable 7,8%.

Kesimpulan: Penundaan pemeriksaan menurunkan kadar retikulosit secara signifikan dan menghasilkan bias yang tidak dapat diterima, sehingga pemeriksaan sebaiknya dilakukan segera.

Kata Kunci: retikulosit, penundaan, GGK, bias, pra-analitik