

ABSTRACT

THE RELATIONSHIP BETWEEN HEMOGLOBIN (Hb) LEVELS AND RANDOM BLOOD GLUCOSE (RBG) LEVELS IN PULMONARY TUBERCULOSIS PATIENTS UNDERGOING TREATMENT AT UPTD PUSKESMAS PACET

By

REVALINA PUTRI AMELYSA

Pulmonary tuberculosis (TB) is a chronic infectious disease that may lead to hematological and metabolic disturbances, including decreased hemoglobin (Hb) levels and elevated random blood glucose (RBG) levels. This study aimed to determine the relationship between hemoglobin levels and random blood glucose levels among pulmonary TB patients undergoing treatment at UPTD Puskesmas Pacet. A quantitative study with a correlational and retrospective design was conducted using a total sampling technique involving 70 pulmonary TB patients. Data were obtained from patients' medical records, including Hb and RBG laboratory results, and were analyzed using Pearson correlation and simple linear regression tests. The findings showed that the mean Hb level during the intensive treatment phase was 9.644 g/dL, while the mean RBG level was 195.44 mg/dL. Pearson correlation analysis revealed a strong and statistically significant negative correlation between Hb and RBG levels ($r = -0.764$, $p < 0.001$). Simple linear regression analysis indicated that Hb levels accounted for 58.4% of the variation in RBG levels ($R^2 = 0.584$). Lower Hb levels tended to be associated with higher RBG levels in patients with pulmonary TB. This association may be explained by chronic inflammation caused by TB infection, which stimulates the release of pro-inflammatory cytokines, impairs erythropoiesis and iron metabolism, and promotes insulin resistance and hepatic glucose production. Therefore, reduced hemoglobin levels and elevated random blood glucose levels in pulmonary TB patients may represent manifestations of the same underlying systemic inflammatory mechanism during the course of infection and treatment.

Keywords: Hemoglobin (Hb), Random Blood Glucose (RBG), Pulmonary Tuberculosis, Tuberculosis Treatment, Intensive Phase.

ABSTRAK

HUBUNGAN KADAR HEMOGLOBIN (HB) DENGAN KADAR GULA DARAH SEWAKTU (GDS) PADA PASIEN TB PARU YANG MENJALANI PENGOBATAN DI UPTD PUSKESMAS PACET

Oleh

REVALINA PUTRI AMELYSA

Tuberkulosis (TB) paru merupakan penyakit infeksi kronis yang dapat menyebabkan gangguan hematologis dan metabolik, seperti penurunan kadar hemoglobin (Hb) dan peningkatan kadar gula darah sewaktu (GDS). Penelitian ini bertujuan mengetahui hubungan antara kadar Hb dan kadar GDS pada pasien TB paru yang menjalani pengobatan di UPTD Puskesmas Pacet. Penelitian menggunakan metode kuantitatif dengan pendekatan korelasi dan desain retrospektif. Sampel berjumlah 70 pasien TB paru yang dipilih dengan teknik total sampling. Data diperoleh dari rekam medis berupa hasil pemeriksaan Hb dan GDS, kemudian dianalisis menggunakan uji korelasi Pearson dan regresi linear sederhana. Hasil penelitian menunjukkan rata-rata kadar Hb fase intensif sebesar 9,644 g/dL dan rata-rata kadar GDS sebesar 195,44 mg/dL. Uji korelasi Pearson menunjukkan hubungan negatif yang kuat dan signifikan antara kadar Hb dan kadar GDS ($r = -0,764$; $p = 0,000$). Analisis regresi linear sederhana menunjukkan bahwa kadar Hb berkontribusi sebesar 58,4% terhadap variasi kadar GDS ($R^2 = 0,584$). Penurunan kadar Hb cenderung diikuti peningkatan kadar GDS pada pasien TB paru. Kondisi ini diduga berkaitan dengan proses inflamasi kronis akibat infeksi TB yang memicu pelepasan sitokin proinflamasi, menghambat eritropoiesis dan metabolisme besi, serta meningkatkan resistensi insulin dan produksi glukosa oleh hati. Dengan demikian, rendahnya kadar Hb dan tingginya kadar GDS diduga merupakan manifestasi dari mekanisme inflamasi sistemik yang sama selama proses infeksi dan pengobatan TB paru.

Kata kunci : Hemoglobin (Hb), Gula Darah Sewaktu (GDS), Tuberkulosis Paru, Pengobatan Tuberkulosis, Fase Intensif