

ABSTRAK

Perbandingan Profil Imunoprotein Inflamasi IL-6 dan hs-CRP Berdasarkan Polimorfisme Genetik IL-6 (rs1800795) pada Pasien Penyakit Ginjal Kronis

Latar Belakang: Penyakit ginjal kronis (PGK) merupakan masalah kesehatan global yang ditandai oleh proses inflamasi kronis. Interleukin-6 (IL-6) dan *high-sensitivity C-reactive protein* (hs-CRP) merupakan imunoprotein inflamasi yang berperan penting dalam patogenesis PGK. Polimorfisme genetik IL-6 (rs1800795) diketahui dapat mempengaruhi kadar kedua biomarker tersebut, namun data pada populasi Indonesia masih terbatas. **Metode:** Penelitian ini merupakan studi analitik observasional dengan desain *cross-sectional* pada pasien PGK yang menjalani hemodialisis di RSUD Prof. Dr. Margono Soekarjo Purwokerto. Polimorfisme IL-6 (rs1800795) dianalisis menggunakan metode PCR-RFLP, sedangkan kadar IL-6 dan hs-CRP diukur dengan metode multiplex immunoassay (Luminex). Data dianalisis untuk mengetahui perbedaan profil imunoprotein inflamasi IL-6 dan hs-CRP berdasarkan polimorfisme genetik IL-6 (rs1800795) serta kondisi klinis pasien. Uji normalitas Kolmogorov–Smirnov dilakukan untuk menentukan distribusi data. Analisis data meliputi uji univariat untuk deskripsi karakteristik subjek, analisis bivariat (Mann–Whitney dan *t*-test independen) serta analisis multivariat dengan regresi linier berganda ($p < 0,05$). **Hasil:** Seluruh sampel menunjukkan genotipe GG. Median kadar IL-6 sebesar 3,19 pg/mL dan hs-CRP sebesar 0,94 mg/L, mencerminkan inflamasi sistemik ringan hingga sedang. Secara simultan, ureum dan albumin tidak berpengaruh signifikan terhadap IL-6 ($p = 0,254$), sedangkan ureum, albumin, dan kondisi hipertensi berpengaruh signifikan terhadap hs-CRP secara simultan ($p = 0,019$), dengan albumin berpengaruh signifikan secara parsial ($p = 0,010$). **Kesimpulan:** Tidak ditemukan variasi genetik IL-6 (rs1800795) pada pasien PGK. Kadar IL-6 dan hs-CRP menunjukkan inflamasi sistemik ringan hingga sedang, dengan albumin berpengaruh signifikan terhadap hs-CRP, menegaskan keterkaitan antara status nutrisi dan respon inflamasi pada pasien PGK..

Kata kunci:

IL-6 (rs1800795), hs-CRP, polimorfisme genetik, penyakit ginjal kronis, kondisi klinis

ABSTRACT

Comparison of Inflammatory Immunoprotein Profiles of IL-6 and hs-CRP Based on IL-6 (rs1800795) Genetic Polymorphism in Patients with Chronic Kidney Disease

Background: Chronic kidney disease (CKD) is a global health problem characterized by chronic inflammatory processes. Interleukin-6 (IL-6) and high-sensitivity C-reactive protein (hs-CRP) are inflammatory immunoproteins that play important roles in the pathogenesis of CKD. The IL-6 genetic polymorphism (rs1800795) has been reported to influence the levels of these biomarkers; however, data in the Indonesian population remain limited. **Methods:** This study was an observational analytic study with a cross-sectional design conducted among CKD patients undergoing hemodialysis at Prof. Dr. Margono Soekarjo Regional General Hospital, Purwokerto. The IL-6 (rs1800795) polymorphism was analyzed using the PCR-RFLP method, while IL-6 and hs-CRP levels were measured using a multiplex immunoassay (Luminex). Data were analyzed to assess differences in the inflammatory immunoprotein profiles of IL-6 and hs-CRP based on IL-6 (rs1800795) genetic polymorphism and patients' clinical conditions. The Kolmogorov–Smirnov test was used to assess data normality. Data analysis included univariate analysis to describe subject characteristics, bivariate analysis (Mann–Whitney and independent t-test), and multivariate analysis using multiple linear regression ($p < 0.05$). **Results:** All samples exhibited the GG genotype. The median IL-6 level was 3.19 pg/mL and the median hs-CRP level was 0.94 mg/L, indicating mild to moderate systemic inflammation. Simultaneously, urea and albumin had no significant effect on IL-6 levels ($p = 0.254$). In contrast, urea, albumin, and hypertension status had a significant simultaneous effect on hs-CRP levels ($p = 0.019$), with albumin showing a significant partial effect ($p = 0.010$). **Conclusion:** No genetic variation of IL-6 (rs1800795) was identified among CKD patients. IL-6 and hs-CRP levels reflected mild to moderate systemic inflammation, with albumin significantly influencing hs-CRP levels, highlighting the association between nutritional status and inflammatory response in CKD patients.

Keywords:

IL-6 (rs1800795), hs-CRP, genetic polymorphism, chronic kidney disease, clinical conditions