

# HUBUNGAN LAMA HEMODIALISIS DENGAN KADAR *C-REACTIVE PROTEIN* DAN *BETA TRACE PROTEIN* SERUM PADA PENYAKIT GINJAL KRONIK

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## ABSTRAK

**Latar Belakang:** Penyakit ginjal kronik telah menjadi sebuah krisis kesehatan yang melanda seluruh dunia. Hemodialisis merupakan pilihan terbaik terapi pengganti ginjal untuk mencegah progresifitas pada PGK stadium lanjut. Lama HD dapat memicu peningkatan *petanda* peradangan seperti serum CRP. Peradangan terjadi karena adanya kontak darah dengan alat-alat HD, seperti membran dialisis, akses vaskuler, cairan dialisis. Kadar BTP merupakan prediktor independen PGK. Kadar BTP serum berbanding lurus dengan laju filtrasi glomerulus dan meningkat seiring perkembangan PGK. Penelitian tentang hubungan lama HD dengan kadar BTP masih jarang ditemukan.

**Tujuan :** Membuktikan hubungan antara lama hemodialisis dengan serum CRP dan serum BTP pada pasien PGK yang menjalani HD.

**Metode :** Penelitian cross-sectional, pada 59 subjek dengan diagnosis penyakit ginjal kronik yang menjalani HD 2x/minggu di RSUP Dr. Kariadi Semarang pada bulan Agustus - Oktober 2024. Lama HD diukur dalam bulan, kadar CRP diukur dengan metode PETIA dan kadar BTP diukur dengan metode ELISA. Uji normalitas menggunakan uji *Kolmogorov-Smirnov* dimana pada data lama HD berdistribusi dengan normal, sedangkan kadar CRP dan BTP tidak berdistribusi normal, sehingga selanjutnya dilakukan uji korelasi Spearman. ( $p < 0,05$ ).

**Hasil :** Lama HD berkorelasi secara signifikan dengan kadar CRP dengan nilai  $p = 0,001$  dan nilai  $r = 0,435$ . Lama HD berkorelasi secara signifikan dengan kadar BTP, dengan nilai  $p < 0,001$  dan nilai  $r = -0,451$

**Simpulan :** Terdapat hubungan positif sedang antara lama HD dengan kadar serum CRP pada pasien PGK. Terdapat hubungan negatif sedang antara lama HD dengan kadar serum BTP pada pasien PGK.

**Kata Kunci :** Penyakit Ginjal Kronik, Lama Hemodialisis, CRP, BTP

# THE CORRELATION BETWEEN HEMODIALYSIS DURATION AND SERUM C-REACTIVE PROTEIN AND BETA-TRACE PROTEIN LEVELS IN CHRONIC KIDNEY DISEASE

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## ABSTRACT

**Background:** Chronic kidney disease (CKD) has become a global health crisis. Hemodialysis (HD) is the preferred renal replacement therapy to prevent the progression of advanced-stage CKD. The duration of HD may trigger an increase in inflammatory markers, such as serum C-reactive protein (CRP). Inflammation occurs due to contact of blood with HD-related devices, including the dialysis membrane, vascular access, and dialysate fluid. Serum beta-trace protein (BTP) levels serve as an independent predictor of CKD. BTP levels correlate inversely with glomerular filtration rate (GFR) and increase as CKD progresses. Research on the correlation between HD duration and BTP levels remains unavailable.

**Objective:** To demonstrate the correlation between the duration of hemodialysis and serum C-reactive protein (CRP) and serum beta-trace protein (BTP) levels in chronic kidney disease (CKD) patients undergoing hemodialysis.

**Methods:** A cross-sectional study was conducted on 59 subjects diagnosed with chronic kidney disease (CKD) undergoing hemodialysis (HD) twice a week at Dr. Kariadi General Hospital, Semarang, from August to October 2024. The duration of HD was measured in months, serum CRP levels were assessed using PETIA method, and serum BTP levels were measured using ELISA method. Normality test was performed using Kolmogorov-Smirnov test, which showed that HD duration was normally distributed, whereas CRP and BTP levels were not. Consequently, Spearman's correlation test was used for statistical analysis ( $p < 0,05$ ).

**Results:** The duration of HD showed a significant correlation with serum CRP levels, with a p-value of 0,001 and a correlation coefficient (r) of 0,435. Additionally, HD duration demonstrated a significant correlation with serum BTP levels, with a p-value of  $< 0,001$  and a correlation coefficient (r) of -0,451.

**Conclusion:** There is a moderate positive correlation between HD duration and serum CRP levels in chronic kidney disease (CKD) patients. There is a moderate negative correlation between HD duration and serum BTP levels in CKD patients.

**Key Words:** Chronic Kidney Disease, Hemodialysis Duration, CRP, BTP