

ABSTRAK

**HUBUNGAN ANTARA BIOFILM KATETER *DOUBLE LUMEN*
DENGAN KULTUR DARAH PADA DUGAAN *CENTRAL LINE*
ASSOCIATED BLOODSTREAM INFECTION PASIEN HEMODIALISIS****Dicky Pendi Alaudin Sangadji**

Latar Belakang: Salah satu komplikasi kateter *double lumen* (KDL) hemodialisis adalah infeksi sistemik terkait kateter (*Central line associated bloodstream infection* / CLABSI). Pemeriksaan kultur darah masih menjadi *gold standart* untuk penegakan diagnosis. CLABSI juga sering dikaitkan dengan pembentukan biofilm. Biofilm dapat menyebabkan bakteremia berulang dan resistensi antibiotik sehingga meningkatkan mortalitas dan morbiditas. Sampai saat ini di RSUD Dr. Soetomo, belum ada data objektif atau penelitian tentang hubungan antara biofilm dengan kejadian infeksi sistemik terkait kateter.

Tujuan: Menganalisis hubungan antara biofilm *kateter double lumen* dengan kultur darah pada dugaan CLABSI pasien hemodialisis.

Metode: Penelitian ini merupakan observasional analitik dengan rancangan *cross sectional* untuk mengetahui hubungan biofilm dengan kultur darah dugaan CLABSI pasien HD RSUD dr. Soetomo periode Agustus 2019 - November 2019. Kriteria inklusi: berusia > 18 tahun, pasien PGK HD rutin dengan dugaan CLABSI, bersedia mengikuti penelitian dan menandatangani *informed consent*. Kriteria eksklusi: adanya sumber infeksi lain. Pemeriksaan biofilm pada KDL menggunakan metode test tube dibaca dengan nephelometer. Hasil biofilm positif bila $\leq 0,36$ MF, negatif bila $>0,36$ MF. Pemeriksaan kultur darah dengan dengan alat BacT/ALERT 3D di laboratorium Instalasi Mikrobiologi Klinik RSUD dr. Soetomo.

Hasil: 33 pasien menjadi subjek penelitian. laki- laki (45,5%) perempuan (54,5%), rerata usia $49,06 \pm 1,5$ tahun. Penyakit dasar penyebab PGK paling banyak hipertensi 54,5 %. Median lama menjalani HD adalah 3 bulan rentang 1-8 bulan. lokasi insersi KDL terbanyak yaitu subclavia dextra 87,9 %, rerata lamanya terpasang KDL $77,94 \pm 5,22$ hari. Status gizi mayoritas normal 66,7%, hipoalbumin dengan nilai rerata $3,28 \pm 0,07$ g/dl. Pertumbuhan biofilm sebanyak 16 pasien (48,5%). Hasil kultur darah dari 33 subjek penelitian didapatkan adanya 15 pertumbuhan (45,5%). Hasil uji hubungan biofilm dengan kultur darah pada dugaan CLABSI menggunakan *chi square* didapatkan hasil p 0,001. Hubungan densitas biofilm dan CLABSI didapatkan perbedaan signifikan antara kedua kelompok ($p=0,024$).

Kesimpulan: Pertumbuhan biofilm pada KDL berhubungan dengan bakteri yang ditemukan pada pemeriksaan kultur darah pasien CLABSI. Selain itu, pasien CLABSI memiliki densitas biofilm yang tinggi pada KDL.

Kata kunci: PGK, Kateter double lumen, Biofilm, Kultur darah, Infeksi, CLABSI.

ABSTRACT

ASSOCIATION BETWEEN THE BIOFILM OF DOUBLE LUMEN CATHETER AND BLOOD CULTURE IN HEMODIALYSIS PATIENT WITH SUSPECTED CENTRAL LINE ASSOCIATED BLOODSTREAM INFECTION**Dicky Pendi Alaudin Sangadji**

Background: One complication of hemodialysis double lumen catheter (CDL) is central line associated bloodstream infection (CLABSI). Blood culture examination is still the gold standard for diagnosis. CLABSI is also often associated with biofilm formation. Biofilms can cause recurrent bacteremia and antibiotic resistance thereby increasing mortality and morbidity. Until now in Dr. Soetomo's General Hospital, there have been no objective data or research on the relationship between biofilms and blood cultures in patients with systemic infections associated with catheters. This study aims to analyze the relationship between the biofilms of double lumen catheter and blood cultures in hemodialysis (HD) patients with suspected CLABSI.

Method: This was an analytic observational study with cross sectional design to determine the association of biofilms and blood culture in HD patients with suspected CLABSI at Dr. Soetomo General Hospital in August - November 2019. Inclusion criteria: patients aged >18 years with routine HD and suspected CLABSI, also were willing to participate in the study with informed consent. Exclusion criteria: other sources of infection. Biofilm examination on CDL using the test tube method was measured with a nephelometer. Biofilm results is positive if ≤ 0.36 MF and negative if > 0.36 MF. Blood was cultured with a 3D BacT/ALERT tool in the Clinical Microbiology Installation Laboratory of RSUD Dr. Soetomo.

Result: Of the 33 subjects, mainly were women (54.5%), with an average age of 49.06 ± 1.5 years. The most common cause of CKD is hypertension (54.5%). The median length of HD was 3 months, ranging from 1-8 months. CDL were mostly inserted at subclavia dextra (87.9%) and installed with a mean duration of 77.94 ± 5.22 days. The majority (66.7%) had normal nutritional status. The mean albumin level was 3.28 ± 0.07 g/dL. There were biofilm growth in 16 subjects (48.5%). The evaluation of blood culture revealed 15 positive results (45.5%). From chi-square test, the association of biofilms with blood culture in HD patients with suspected CLABSI obtained a *p* value of 0.001. Further analysis between biofilm density and CLABSI showed significant differences between the two groups (*p*=0.024).

Conclusion: Biofilm growth in CDL is related to bacteria found in the blood culture examination of CLABSI patients. In addition, CLABSI patients have high biofilm density in CDL.

Keywords: CKD, Double lumen catheter, Biofilm, Blood culture, Infection, CLABSI