

## PROFIL PROCALCITONIN PADA PASIEN DEWASA DENGAN BAKTEREMIA YANG DIRAWAT DI RUANG ICU RSUP Dr. SARDJITO

### INTISARI

**Latar belakang:** *Bloodstream infection* telah menjadi perhatian global karena menjadi penyebab utama morbiditas dan mortalitas penyakit menular di seluruh dunia. Kematian disebabkan oleh BSI mencapai 6 juta setiap tahunnya. Holmes *et al.*, 2021, menyatakan bakteremia bertanggung jawab atas lebih dari 90% kasus BSI. Bakteremia dapat didiagnosis secara dini menggunakan biomarker infeksi procalcitonin (PCT). Penggunaan PCT sebagai biomarker bakteremia belum memiliki rekomendasi baku, sehingga memerlukan penelitian lebih lanjut.

**Tujuan:** Mengetahui perbedaan profil PCT pada bakteremia Gram positif dibanding Gram negatif.

**Metode:** Penelitian observasional bersifat deskriptif analitik dengan pendekatan retrospektif. Pengambilan sampel data penelitian dilakukan di ICM RSUP Dr. Sardjito, periode Januari 2020-Desember 2021.

**Hasil:** Pada periode Januari 2020 sampai Desember 2021 terdapat 92 kasus bakteremia, 47 (51,09%) laki-laki, 45 (48,91%) perempuan. Kelompok usia 60-79 tahun mendominasi dengan 41 kasus bakteremia (44,57%). Komorbid terbanyak diabetes mellitus dan hipertensi. 18,48% diabetes mellitus; 14,13% hipertensi pada bakteremia Gram negatif. Sementara 21,74% diabetes mellitus dan 16,30% hipertensi pada bakteremia Gram positif. Antibiotik yang paling sering digunakan adalah Meropenem sebesar 14,13% pada bakteremia Gram negatif dan 11,96% bakteremia Gram positif. Patogen bakteremia yang paling sering adalah *Acinetobacter baumannii* (16 kasus; 30,19%), kadar PCT rata-rata  $18,88 \pm 48,95$  ng/mL, dan *Staphylococcus aureus* (10 kasus; 23,81%) kadar PCT rata-rata  $28,72 \pm 36,65$  ng/mL. Analisis perbedaan kadar Prokalsitonin bakteremia Gram negatif dan Gram positif menggunakan analisis statistik non parametrik *Mann-Witney U Test*. Uji beda PCT antar bakteri CoNS tidak signifikan. Uji beda PCT kelompok komorbid (44,09) tidak signifikan lebih rendah dari kelompok tidak ada komorbid (52,02). Uji beda PCT CoNS (14,27) signifikan lebih rendah dibanding *Staphylococcus aureus* (21,40). Hasil analisis mean-rank kadar Procalsitonin bakteri Gram negatif (52,60) lebih tinggi dibandingkan Gram positif (38,91), dan *p-value* (sig) 0,015.

**Kesimpulan:** Kadar Procalsitonin (ng/mL) bakteremia Gram negatif signifikan lebih tinggi dibanding Gram positif.

**Kata kunci:** Bakteriemia, Procalcitonin, Kultur darah, Bakteri Gram positif, Bakteri Gram negatif.

## PROCALCITONIN PROFILE IN ADULT PATIENTS WITH BACTEREMIA TREATED IN ICU DR. SARDJITO HOSPITAL

### ABSTRACT

**Background:** Bloodstream infection was one of a mayor cause of disease morbidity and mortality worldwide, and has been a global concern. The mortality caused by BSI reached 6 million annually. Holmes et al.,2021, reported that bacteremia was responsible for more than 90% of BSI cases. Bacteremia can be diagnosed early using the infection biomarker procalcitonin. PCT as a biomarker of bacteremia does not have a standard recommendation, therefore requiring further research.

**Objective:** Determine the differences PCT profiles in Gram-positive and Gram-negative bacteremia.

**Methods:** Retrospective study using medical record of patients admitted to the ICU of Dr. Sardjito Hospital, Yogyakarta from January 2020 to December 2021.

**Results:** From January 2020 to December 2021, there were 92 cases of bacteremia with 47 (51,09%) males and 45 (48,91%) females. The age group of 60-79 years dominated with 41 cases of bacteremia (44.57%). Predominant comorbidity was diabetes mellitus and hypertension. 18.48% diabetes mellitus; 14.13% hypertension in Gram negative bacteremia. While 21,74% diabetes mellitus and 16,30% hypertension in Gram positive bacteremia. The most frequently used antibiotic was Meropenem (14,13%) in Gram-negative bacteremia and (11,96%) Gram-positive bacteremia. Most common bacteremia pathogens were *Acinetobacter baumannii* (16 cases; 30,19%) with an average PCT level of  $18,88 \pm 48,95$  ng/mL, and *Staphylococcus aureus* (10 cases; 23,81%) with an average PCT level  $28,72 \pm 36,65$  ng/mL. Analysis of differences procalcitonin levels Gram negative and Gram positive bacteremia using non-parametric statistical analysis Mann-Witney Test. PCT difference test between CoNS bacteria was not significant. PCT difference test comorbid group (44,09) was not significantly lower than the group without comorbid (52,02). The PCT test for CoNS (14,27) was significantly lower than *Staphylococcus aureus* (21,40). The analysis of the average levels of Procalcitonin (ng/mL) Gram negative bacteria (52.60) were higher than Gram positive bacteria (38.91), and p-value (sig) 0.015.

**Conclusion:** The level procalcitonin (ng/mL) of bacteremia Gram negative bacteria was significantly higher than Gram positive bacteria.

**Keywords:** Bacteremia, Procalcitonin, Blood culture, Gram positive bacteria, Gram negative bacteria.