## INTISARI

**Latar belakang:** Infeksi masih menjadi penyebab utama mortalitas pada anak dengan leukemia akut. Salah satu bentuk infeksi yang serius adalah bakteremia. Dibutuhkan penanda yang dapat menjadi faktor prognosis mortalitas pada kondisi bakteremia. Berbagai literatur menyebutkan kadar hemoglobin (Hb), kadar *absolute lymphocyte count* (ALC), kadar *absolute neutrophil count* (ANC), angka trombosit, kadar prokalsitonin, durasi demam, durasi awitan demam hingga pemberian antibiotik intravena, adanya pneumonia, dan hasil kultur darah berhubungan dengan mortalitas pada pasien dengan leukemia akut.

**Tujuan:** Penelitian ini bertujuan untuk mengidentifikasi faktor prognosis mortalitas pada pasien anak dengan leukemia akut yang mengalami bakteremia.

**Metode penelitian:** Penelitian ini merupakan penelitian observasional analitik dengan desain kohort retrospektif. Data seluruh pasien anak dengan leukemia akut yang dirawat inap dan memiliki kultur darah positif sejak Februari 2021 hingga Mei 2023 diinklusi dalam penelitian. Variabel tipe leukemia, kadar hemoglobin, kadar ALC, kadar ANC, angka trombosit, kadar prokalsiotonin, durasi demam, durasi dari awitan demam hingga mendapat antibiotik, ada tidaknya pneumonia, dan hasil kultur darah dianalisis dan dipresentasikan sebagai *adjusted risk ratio* (RR) dari nilai *odds ratio* (OR) dengan interval kepercayaan (IK) 95% menggunakan analisis multivariat.

**Hasil:** Pada penelitian ini dari 125 pasien, terdapat 110 pasien yang selanjutnya masuk dalam analisis. Dari seluruh episode bakteremia, didapatkan angka mortalitas sebesar 39,1%. Infeksi masih didominasi bakteri Gram negatif, terutama *Escherichia coli* ESBL positif. Faktor prognosis mortalitas pasien leukemia akut dengan bakteremia yang terbukti bermakna adalah trombositopenia $\leq 20 \times 10^3/\mu L$ dengan *adjusted* RR 2,32 (IK 95% 1,05 – 10,4), durasi demam lebih dari 4 hari dengan *adjusted* RR 3,87 (IK 95% 1,73 – 23,3), mendapatkan antibiotik intravena >48 jam dengan *ajdusted* RR 2,16 (IK 95% 1,14 – 16,2), dan infeksi oleh bakteri Gram negatif ESBL yang memiliki *adjusted* RR 3,25 (IK 95% 1,94 – 59,1). Sedangkan tipe leukemia akut, kadar Hb, kadar ALC, kadar ANC, kadar prokalsitonin, dan adanya pneumonia kurang bermakna sebagai faktor prognosis mortalitas pada pasien anak leukemia akut dengan bakteremia.

**Kesimpulan:** Faktor prognosis mortalitas pasien leukemia akut yang mengalami bakteremia meliputi trombositopenia $\leq 20 \times 10^3/\mu L$, durasi demam lebih dari 4 hari, mendapat antibtiotik intravena>48 jam, dan infeksi oleh bakteri Gram negatif ESBL.

**Kata kunci:** bakteremia, leukemia limfoblastik akut, leukemia myeloid akut, anak, mortalitas

# ABSTRACT

**Background:** Infections remain a leading cause of mortality in children suffering from acute leukemia. One serious form of infection is bacteremia. There is a need for a marker that can serve as a prognostic factor of mortality in cases of bacteremia. Various literature mentions hemoglobin levels (Hb), absolute lymphocyte count (ALC), absolute neutrophil count (ANC), platelet count, procalcitonin levels, duration of fever, time from the onset of fever to intravenous antibiotic administration, pneumonia, and blood culture results were associated with mortality in patients with acute leukemia. Identifying mortality prognostic factors is expected to expedite management interventions to improve the survival of children with acute leukemia.

**Objective:** This study aims to identify mortality prognostic factors in pediatric patients with acute leukemia who experience bacteremia.

**Methods:** This study is an analytical observational research with a retrospective cohort design. Data from all pediatric patients with acute leukemia who were hospitalized and had positive blood cultures from February 2021 to May 2023 were included in the study. Variables such as leukemia type, hemoglobin levels, ALC levels, ANC levels, platelet count, procalcitonin levels, duration of fever, time from fever onset to intravenous antibiotics, pneumonia, and blood culture results were analyzed and presented as adjusted risk ratio (RR) from the odds ratio (OR) with a 95% confidence interval (CI) using multivariate analysis.

**Results:** In this study, from 125 patients with acute leukemia, there was 110 patients which were further analyzed. The overall mortality rate for bacteremia was 39.1%. Gram-negative bacteria, particularly *Escherichia coli* ESBL-positive, remained the dominant cause of infection. Prognostic factors of mortality in acute leukemia with bacteremia which are statistically proven include thrombocytopenia $\leq 20 \times 10^3/\mu L$ (adjusted RR 2.09 ; 95% CI 1.05 – 10.4), fever duration of more than 4 days (*adjusted* RR 3,87; 95% CI 1.73 – 23.3), duration from fever onset to intravenous antibiotics of more than 48 hours (adjusted RR 2.16; 95% CI 1.14 – 16.2), and infection of Gram-negative ESBL-producing bacteria (adjusted RR 3,25; 95% CI 1.94 – 59.1). Meanwhile, leukemia type, Hb levels, ALC levels, ANC levels, procalcitonin levels, and pneumonia are not proven statistically to be mortality prognostic factors in pediatric acute leukemia with bacteremia.

**Conclusion:** Significant independent mortality prognostic factors in pediatric acute leukemia experiencing bacteremia are thrombocytopenia $\leq 20 \times 10^3/\mu L$, fever duration of more than 4 days, time to intravenous antibiotics >48 hours, and infection of Gram-negative ESBL-producing bacteria.

**Keywords:** bacteremia, acute lymphoblastic leukemia, acute myeloid leukemia, pediatric, mortality.