

FAKTOR RISIKO GANGGUAN GINJAL AKUT PADA ANAK LEUKEMIA LIMFOBLASTIK AKUT DENGAN HIPERLEUKOSITOSIS

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INTISARI

Latar belakang. Gangguan ginjal akut (GnGA) dapat ditemukan pada pasien anak leukemia limfoblastik akut (LLA) dengan hiperleukositosis. Kondisi GnGA meningkatkan lama rawat inap dan mortalitas. Penelitian sebelumnya hanya melaporkan insidensi GnGA pada pasien LLA anak dengan hiperleukositosis dan tidak menjelaskan faktor risiko yang memengaruhi kejadian GnGA.

Tujuan. Mengetahui faktor risiko kejadian GnGA pada anak LLA dengan hiperleukositosis.

Metode penelitian. Studi kasus kontrol dilakukan pada anak usia 1-18 tahun yang dirawat di RSUP Dr. Sardjito dengan diagnosis hiperleukositosis LLA antara Januari 2017 sampai Desember 2021. Kelompok kasus diambil dengan metode *total population sampling* melalui kriteria inklusi dan eksklusi. Kelompok kontrol ditetapkan berdasarkan *matching* jenis kelamin. Nilai *cut-off* tiap variabel independen dihitung berdasarkan kurva ROC, lalu dilakukan analisis bivariat serta multivariat untuk mengetahui hubungan faktor risiko.

Hasil. Empat belas anak hiperleukositosis LLA dengan GnGA diidentifikasi sebagai kelompok kasus dan 28 anak tanpa GnGA. Insidensi GnGA pada anak dengan hiperleukositosis LLA yang dirawat sebesar 15,4%. Perbandingan laki-laki dan perempuan adalah 1:1 dengan rerata usia terdiagnosis adalah 7,17 tahun. Analisis multivariat menunjukkan bahwa kadar fosfat $\geq 5,15$ mg/dL (OR 10,43; IK 95% 1,38 – 79,04; $p = 0,02$) dan kadar asam urat $\geq 9,08$ mg/dL (OR 12,39; IK 95% 1,88-81,44; $p = 0,009$) merupakan faktor risiko terjadinya GnGA pada anak hiperleukositosis LLA.

Kesimpulan. Kadar fosfat $\geq 5,15$ mg/dL dan asam urat $\geq 9,08$ mg/dL merupakan faktor risiko terjadinya GnGA pada anak LLA dengan hiperleukositosis. Usia, angka leukosit, kadar hemoglobin dan tidak hiperhidrasi tidak terbukti sebagai faktor risiko GnGA pada anak LLA dengan hiperleukositosis.

Kata kunci. Faktor risiko, gangguan ginjal akut, leukemia limfoblastik akut, anak, hiperleukositosis.

RISK FACTORS OF ACUTE KIDNEY INJURY IN CHILDREN WITH HYPERLEUKOCYTOSIS RELATED ACUTE LYMPHOBLASTIC LEUKEMIA

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ABSTRACT

Background. Acute kidney injury (AKI) can be found in acute lymphoblastic leukemia (ALL) children with hyperleukocytosis. It increases the length of stay and mortality. Previous studies only reported the AKI incidence in ALL children with hyperleukocytosis without clarifying the risk factors attributed to AKI incidence.

Objective. To determine the risk factors of AKI in ALL children with hyperleukocytosis.

Method. A case-control study was conducted on children aged 1-18 years old admitted to Dr. Sardjito Hospital between January 2017 and December 2021. Total population sampling was used for the case group based on inclusion and exclusion criteria, with matching process based on gender for the control group. Cut-off values for each independent variable were extracted from the ROC curve, and then bivariate and multivariate analyses were performed to know the relationship between risk factors.

Result. Fourteen ALL children with hyperleukocytosis with AKI were included in the case group and 28 children without AKI were included in the control group. The ratio of females and males was 1:1. The mean age of the subjects was 7.17 years old. The incidence of AKI in children with hyperleukocytosis-related ALL was 15,4%. Significant risk factors of AKI in ALL children with hyperleukocytosis were obtained from multivariate analysis, which were phosphate concentration ≥ 5.15 mg/dL (OR 10.43; IK 95% 1.38 – 79.04; $p = 0,02$) and uric acid concentration ≥ 9.08 mg/dL (OR 12,39; IK 95% 1.88-81.44; $p = 0,009$).

Conclusion. Phosphate concentration ≥ 5.15 mg/dL and uric acid ≥ 9.08 mg/dL were risk factors of AKI in pediatric ALL with hyperleukocytosis. Age, leucocyte count, hemoglobin level, and not having hyperhydration were not proven for AKI in pediatric ALL with hyperleukocytosis.

Keywords. Risk factor, acute kidney injury, acute lymphoblastic leukemia, children, hyperleukocytosis.