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Kardiotoksisitas Antrasiklin pada Pasien Kanker Anak di RSUP Dr.Sardjito
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ABSTRACT

Background: Anthracyclines are anti-cancer therapy that have been used since 1960s for treatment of solid tumors and hematological malignancies, yet their efficacy is limited by dose-dependent cardiotoxicity. This cardiotoxicity can manifest as a reduction in left ventricular ejection fraction (LVEF), arrhythmias, or congestive heart failure, significantly impacting survivor morbidity. In Indonesia, clinical data regarding the profile of anthracycline-induced cardiotoxicity (AIC) in pediatric populations remain limited.

Aim: To determine the incidence of anthracycline-induced cardiotoxicity in pediatric cancer patients at Sardjito Hospital and describe the clinical profile among anthracycline-induced cardiotoxicity survivor.

Method: An observational study with a retrospective cohort design was conducted at Dr. Sardjito General Hospital, involving all pediatric cancer patients aged 2 months to 18 years treated between January 2018 and December 2025 identified of having anthracycline exposure were followed for certain period of time until the last dose of anthracycline and echocardiography evaluation was done. AIC was defined as a decrease in LVEF of 10% from the baseline. Data on demographics, cancer type, time to follow up, cumulative anthracycline dose, and nutritional status were analyzed using IBM SPSS Statistics version 26.

Result: This study examined the correlation between various clinical factors and the occurrence of AIC. Out of 38 subjects, the incidence of AIC was 10.5% (n=4), identified in 10.5% of patients aged >10 years. Statistical analysis revealed no significant differences in correlation regarding age at diagnosis, gender, nutritional status, cancer type, radiotherapy exposure, cumulative anthracycline dose, or follow-up intervals ($p > 0.05$). While not statistically significant, radiotherapy exposure presented a Risk Ratio of 3.000 (95% CI 0.283-31.802) of AIC development. Specific incidences were observed in osteosarcoma (5.2%), Hodgkin's lymphoma (2.6%), and Ewing's sarcoma (2.6%). The findings indicate that while certain trends exist, standard risk factors did not reach statistical significance in this study.

Conclusion: The incidence of anthracycline-induced cardiotoxicity among pediatric cancer patients in this study was 10.5%, numerically occurred more frequently among patients with solid tumors, malnutrition, radiotherapy exposure, and higher cumulative anthracycline doses; however, none of these factors reached statistical significance. The findings warrant the necessity for vigilant, long-term cardiovascular monitoring and comprehensive preventive strategies for pediatric cancer survivors receiving anthracycline-based chemotherapy, as cardiotoxicity may occur acutely or chronically.

Keywords: anthracyclines, cardiotoxicity, pediatric cancer, left ventricular ejection fraction, clinical profile