

ABSTRACT

**EFFECTIVENESS OF LEUCOVORIN ON 5-MTHF LEVELS
(5-METHYLTETRAHYDROFOLATE) POST HIGH-DOSE
METHOTREXATE THERAPY IN PEDIATRIC PATIENTS WITH
ACUTE LYMPHOBLASTIC LEUKEMIA
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Background: One of the cytotoxicity of high-dose methotrexate is the occurrence of 5-MTHF depletion in the body. Leucovorin can be used to selectively “rescue” cells from the adverse effects of methotrexate. Leucovorin supplies the necessary cofactor blocked by methotrexate, enters the cells via the same active transport system as methotrexate.

Objective: This study aims to analyze the effectiveness of leucovorin to prevent depletion of 5-MTHF post HD-MTX in pediatric patients with ALL consolidation phase.

Method : This prospective observational study was conducted in the Hematology-Oncology Division Pediatric Department, Dr. Soetomo Teaching Hospital Surabaya at the period of March to April 2019. The blood serum sample collected time were before hydration, 36 and 90 hours post hydration (post HD-MTX and post leucovorin). The 5-MTHF levels was measured using Elisa Human 5-MTHF (5-Methyltetrahydrofolate).

Results: This study include 13 ALL patients with 19 cycles of chemotherapy. The depletion of 5-MTHF levels were 7.88 ± 3.69 ng/mL before hydration, 7.75 ± 2.52 ng/mL post HD-MTX, 7.38 ± 3.75 ng/mL post leucovorin, respectively. Based on the cut-off value of 5-MTHF levels, the percentage of patients had 5-MTHF depletion were 84.2% before hydration, 100% post HD-MTX and 79.0% post leucovorin.

Conclusion: Leucovorin dosage 10 mg/m^2 every 6 hours for 5 times the dose had not been effective to prevent depletion of 5-MTHF levels post HD-MTX.

Keywords: Acute Lymphoblastic Leukemia (ALL), Leucovorin, 5-MTHF (5-Methyltetrahydrofolate), High-Dose Methotrexate (HD-MTX).