

## **Analysis of Uric Acid Level and Kidney Function after Allopurinol Administration in Pediatrics with Tumor Lysis Syndrome (TLS) and High Risk TLS**

### **ABSTRACT**

**BACKGROUND** – Tumor lysis syndrome (TLS) is a life-threatening oncologic emergency that occurs when cancer cells break down and release their intracellular contents into the bloodstream. This massive release of uric acid can lead to hyperuricemia and increase the risk of acute kidney injury (AKI). The effectiveness of allopurinol needs to be studied in TLS and high risk TLS patients.

**OBJECTIVE** – To analyze uric acid levels, kidney function (creatinine serum and BUN), and their achievement after allopurinol administration in pediatric patients with hematological malignancy who have TLS and high risk TLS at Dr. Soetomo Teaching Hospital.

**METHOD** – The study was conducted prospectively with a total sampling method from March to July 2020 period. Inclusion criteria was hematological malignancy pediatric patients who have TLS or high risk TLS  $\leq 16$  years and received allopurinol 10 mg/kg/day in 2-3 divided dose who were treated at the Pediatric Ward of Dr. Soetomo Teaching Hospital. Data obtained were uric acid, Scr, and BUN serum levels, each was measured pre- and post- allopurinol administration. The study had been reviewed by the Ethics Committee at Dr. Soetomo Teaching Hospital.

**RESULTS AND CONCLUSIONS** – The results showed that the uric acid levels fluctuated beyond normal limits ( $>5.5$  mg/dL) in hematological malignancy patients with TLS. This also was occurred in creatinine serum and BUN levels. Allopurinol 10 mg/kg/day was not adequate to reduce uric acid levels in patients with TLS. Achievement of the normal uric acid levels was 25%, serum creatinine level of 0%, and BUN value of 50% on the 6<sup>th</sup> day. At high risk of TLS, allopurinol 10 mg/kg/day could prevent uric acid formation with normal levels ( $\leq 5.5$  mg/dL) and maintain kidney function properly within a range of normal levels. Achievement of the normal uric acid levels, serum creatinine, and BUN on the 6<sup>th</sup> day were 67%, 100%, and 67%, respectively.

**KEYWORDS** : Allopurinol, BUN, Creatinine Serum, Pediatric, Tumor Lysis Syndrome, Uric Acid