

Paszowska A., Dąbrowska K.

**BLOOD TRANSFUSIONS AND ITS EFFECTS ON SERUM FERRITIN
CONCENTRATION IN DEPARTMENT OF PEDIATRIC ONCOLOGY AND
HEMATOLOGY IN BIAŁYSTOK**

Tutor: Małgorzata Sawicka-Żukowska MD, PhD

*Department of Pediatric Oncology and Hematology
Medical University of Białystok*

Rationale: Blood products and components, as a type of adjunctive therapy, are important parts of treatment in oncology. They support and allow to maintain the treatment of underlying disease. However, adjunctive therapy has side effects, such as iron overload, which can be measured indirectly with serum ferritin concentration.

Objective: The aim of the study was to evaluate the number of blood transfusions and serum ferritin concentration in pediatric patients with oncological and hematological disorders.

Materials and methods: The study group consisted of 370 children who received blood transfusions in the Department of Pediatric Oncology and Hematology, Medical University of Białystok. The data were obtained from patients transfusion books and medical documentation, starting in January 2010, till February 2017. After excluding patients who were given only one transfusion, results from 219 participants (male: 123, female: 96) between 1 month - 17 year of age (mean age 7.06) treated for leukaemias (n=100), lymphomas (n=16), solid tumors (n=48), hemato-poiesis dysfunctions (n=20) and iron-deficiency anaemias (n=35) were analysed. The population was divided into 4 groups according to the age: up to 1 year old (y. o.), 1-5 y.o., 5-10 y.o., >10 y.o. Serum ferritin concentration (ng/ml) was measured in every patient at the beginning, towards the end of the treatment and after termination of therapy.

Results and discussion: The study showed significantly increased serum ferritin concentration in patients after multiple blood transfusions. Statistically significant increased serum ferritin concentration was observed in patients with leukaemias comparing to other diagnoses: at the beginning of the treatment ($p<0.0001$) and towards the end ($p<0.005$). Statistically significant increased amount of received blood in millilitres ($p<0.0001$), in millilitres per kilogram of body weight ($p<0.0001$) and increased mean number of transfusions per patient ($p<0.0001$) was observed in patients with leukemias comparing to other diagnoses. The mean quantity of transfusions and total volume of received blood was the highest in the group of age >10 y.o. The highest number of blood transfusions (n=78) and the highest total amount of blood (23400 ml) was given to the patient treated from acute myeloid leukemia.

Conclusions: The study revealed that the amount of blood transfusions correlates with the increased serum ferritin concentration. The amount of transfusions and increased serum ferritin concentration depend on the diagnosis, but has no correlation with gender or age. The research allows to identify the group of patients with the highest number of blood transfusions and the highest serum ferritin concentration, who require chelation therapy from the beginning of the antineoplastic treatment as a group of higher risk of side effects. According to the results, appropriate attention should be paid to protect young patients from side effects of adjuvative therapy from the beginning of their antineoplastic treatment.