EVALUATION OF IMMUNOLOGICAL CHANGES IN CHILDREN WITH ACUTE LYMPHOBLASTIC LEUKEMIA DURING CHEMOTHERAPY

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Introduction

Acute lymphoblastic leukemia (ALL) is the most common malignant disease in childhood. Chemotherapy and the malignant disease itself cause suppression of the immune system and the development of secondary immune deficiency.

Materials and methods

This study includes 17 children aged 2 to 12 years, with newly diagnosed ALL, treated at the Oncology Department at the University Clinic for Children's Diseases - Skopje over a period of 1 year. All children were treated according to the BFM-ALL-IC 2002 protocol. The total number of Leukocytes (neutrophils, lymphocytes), the level of immunoglobulins (Ig) in serum (IgA, IgG, IgM), IgG subclasses, and lymphocyte subpopulations (CD3, CD4, CD19, CD45) were analyzed at 3-time points: before the start of chemotherapy, after completion of the induction phase of therapy and after completion of the reinduction phase.

Results

IgM in serum has the lowest values after completion of the induction phase, t (0.33 vs 0.76, p=0.002). An overall statistically significant difference was found for p=0.02 for subclass IgG1, p=0.015 for subclass IgG2, p=0.014 for subclass IgG3, and p=0.027 for subclass IgG4. For p=0.017, an overall statistically significant difference in the values of CD19 cells between the three-time points was confirmed. CD19 cells were with significantly lower values after the induction phase compared to the initial ones (1.22 vs 15.3, p=0.008) and significantly lower values at the end of therapy compared to the values before therapy (2.5 vs 15.3, p=0.021)

Conclusion

Modern multiagent chemotherapy in the immune system of children with ALL leads to secondary immunodeficiency. Detection of secondary immune deficiency is important for successful and much more easy treatment.