Abstract

In my thesis I focused on comparing a differential leukocyte count (DIF) determined by the analyzer and by microscope in the group of pediatric oncological and hemato-oncological patients. Thesis is divided into theoretical and practical parts. The theoretical part includes an explanation of the process of hematopoiesis, the development of blood cells and the characteristic of time series, a decription of hemato-oncological and oncological diseases which occur most frequently in the monitored group of pediatric patients, and their treatment.

In a practical part is described a determination of the DIF by the analyzer Beckman Coulter LH 750 and by microscope Meopta. I measured a blood count with the differencial leukocyte count, I made a blood smear and I evaluated microscopically it, in the selected group of pediatric patients. The results were reported in the tables and statistically processed using paired t-test in GraphPad Prism and were created graphs.

An aim of this thesis was to explore and evaluate further the differences between the two methods. In 19,32% of patients in the test group was not evaluated the DIF by the analyzer . They were patients with the fresh catch of acute leukemia, were they applied growth factors or were they the patients after chemotherapy. If in such cases analyzer evaluated the differential leukocyte count, may be a result significantly distorted. Because younger cell forms can be by the analyzer classified as a different cell category.

In 80,68% of patients in the test group was assessed the DIF by the analyzer. When comparing the number of different types of leukocyte, I am caught a statistically significant difference in determining the number of monocytes ($p = 0,0072$) in comparison with the microscope. This difference is probably due to the fact that the analyzer assesses a higher leukocyte count and thus a higher number of monocytes or result is influenced by the presence of reactive and atypical lymphocytes in the sample.