

**Influence of the functional status of nervous system
on the indicators of the leukocyte formula**

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Today there is a tendency of growing of acute and chronic human diseases of bacterial and viral origins and oncologic problems. It causes a dysfunction of the immune system that protects the genetic stability of the internal environment of organism and defends the macroorganism from many exogenous and endogenous antigens [5]. WHO represents that about 50-70% of the population of the Earth have immune disorders of various etiologies, for example, reactions of hypersensitivity, autoimmune illnesses and immunodeficiency conditions. One of the causes is the stress factors [6].

Synchronous changes in immune and neurohumoral reactions can be produced by different stress situations [3; 4; 8; 9]. It is a conformation, that dynamic of immune response is controlled by neurohumoral system. As a result, we pay a great attention to study the interaction between these systems [2; 7]. But the data about influence of the functional condition of nervous system on immune system is very contradictory and it needs more researches.

We analyzed the influence of the functional status of nervous system on the indicators of the leukocyte formula in the students of the ChNU.

During the studying we used a method for examine the leukocyte formula by staining the blood smear with Romanowsky stain by the Pappenheim method and evaluating the functional status of the nervous processes using the correction method, "tapping test" and the methods for restoring the amplitude of motions without view of I. P. Ilyin. Statistical processing of the material was carried out using the Microsoft Excel program package.

23 persons from 19 to 21 years old who lived in Cherkasy or arrived in the city for studying from relatively clean areas of the Cherkasy region were examined during the research. According to medical cards, they did not have any acute and chronic illness at the time of the survey. Examined people were the students of the 3rd year studying at the Cherkassy Bogdan Khmelnytsky National University, the Institute of Natural Sciences.

The analysis of indicators of leukocyte formula and evaluation of functional status of the central nervous system of students was carried out in early May, in a state of relative rest, with a preliminary instruction on the conditions for conducting a diagnosis. For the period of analysis, the students did not have any exams or tests, which would determine a strong psycho-emotional load.

It was established that persons with low mobility of nervous processes had a higher number of indicators of leukogram that output beyond the limits of homeostatic norm than in those with high mobility of nerve processes. The strength and balance of the nerve processes played a smaller role in the variation of the output beyond the norm of the indicators of leukograma than the mobility of the nervous processes. The relative and absolute numbers of lymphocytes in people with low

motility of nerve processes were significantly lower; the relative number of segmental neutrophils was significantly higher, the relative and absolute number of basophils was significantly lower than in people with high mobility of nerve processes. The number of lymphocytes examined in the weak type of nerve processes was significantly lower than in those with a strong type of nerve processes. In the students with different balance of nerve processes there were no statistically significant difference in all analyzed parameters of the leukocyte formula.

Over all, the statistical analysis showed the presence of the greatest number of differences in the indicators of leukogram in people with different mobility of nerve processes. Mobility of the nervous processes shows the ability to change behaviour depending on the environment, quickly moves from one action to another, from the passive condition to the active and vice versa. The strength of the nervous processes reflected less on the variability of the indicators of the leukogram. This indicator determines efficiency and it appears primarily by functional endurance. That is the ability to withstand long or short-term, but strong excitement [1]. In our case, such stimuli were absent. Perhaps this factor would have a greater influence on the immune system for conditions of intense emotional stress or physical activity.

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