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**"MULTIDISCIPLINARY SCIENTIFIC NOTES. THEORY,
HISTORY AND PRACTICE"**

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NOTES. THEORY, HISTORY AND
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INDICATORS OF MORPHOLOGICAL AND BIOCHEMICAL EXAMINATION OF THE BLOOD OF CHILDREN WITH DIFFERENT ACCUMULATION OF LEAD IN THE BODY

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The World Health Organization's 2021 update of the "Public health impact of chemicals: knowns and unknowns" estimate that 2 million lives and 53 million disability-adjusted life-years were lost in 2019 due to exposures to selected chemicals. And nearly half of them were due to lead exposure [1]. Human exposure is usually assessed through the measurement of lead in blood. Lead exposure can have serious consequences for the health of children [2].

The purpose of this investigation was to study the indicators of morphological and biochemical examination of the blood of Ukrainian children depending on the level of lead in their blood.

50 children of a random sample aged from 7 to 15 years were examined. Determination of lead was carried out in heparinized venous blood by the method of atomic absorption spectrometry with electrothermal atomization.

To determine the dependence of studied indicators on the level of lead in the blood, children were divided into 4 groups: 1) with lead content up to 49 $\mu\text{g/l}$, $n = 22$; 2) 50-99 $\mu\text{g/l}$, $n = 11$; 3) 100-199 $\mu\text{g/l}$, $n = 11$; 4) more than 200 $\mu\text{g/l}$, $n = 6$.

Indicators in which changes were detected are presented in Table 1.

Comparison of the average content of hemoglobin in the blood of children of different groups revealed a significant decrease of this indicator with an increase in the level of lead. The analysis of the number of erythrocytes allowed to reveal statistically reliable decrease in the same groups.

Thus, we see a pronounced tendency to development of anemia in children even with relatively low levels of lead in the blood. It is known that anemia itself can cause a decline intellectual development of the child [3]. And taking into account the fact that lead also has negative neurotropic effect [2], anemia with lead intoxication has particularly unfavorable prognostic value in this regard.

Table 1.
Indicators of morphological and biochemical examination in children of different groups

Indicators	Groups of children			
	1	2	3	4
Hb, g/l	134.32±1.85	126.91±2.15*	126.00±3.04*	127.33±5.56
Erythrocytes, T/l	4.30±0.07	4.02±0.07*	4.02±0.11*	4.00±0.21
Eosinophils, %	2.68±0.38	4.64±0.96*	6.09±2.38*	5.00±1.03*
ALT, μmol/l/sec	0.39±0.02	0.40±0.02	0.44±0.02*	0.33±0.01

Note. * - The difference is significant ($p < 0.05$) with the indicators of the first group.

A slight severity of changes in group 4, in which the level of lead was the highest and in which the most significant violations were expected, can obviously be explained by the small the number of children in this group, which affected the statistical analysis.

The relative number of blood eosinophilic leukocytes was increased in groups 2 - 4 compared to group 1 in 1.7 - 2.3 times. This indicates a possible allergization of the body due to long-term exposure to lead.

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