

**FEATURES OF THE STATE OF THE LIVER IN ACUTE LEUKEMIA.
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Summary: *According to the literature, liver damage in patients with acute leukemia is manifested by the presence of cholestatic and hepatodepressive syndromes and a decrease in the activity of the monooxygenase system. As a result, studies aimed at studying the clinical and laboratory parameters of the liver in patients with acute leukemia will be of great help in predicting the early treatment of the disease.*

Key words: *leukemia, hepatodepressive, decrease, disease*

Prevalence. Acute leukemia is a disease first described by R. Virchow in 1858 and presented by clinical cases and autopsy data, this disease has long been interpreted as a rapid and severe course of a chronic process. Only in 1889, acute leukemia was recognized as an independent nosological unit, and later, due to the rapid development of morphological and cytological research methods, acute leukemia began to reflect not temporary, but morphological differences [2,9,14].

Leukemia is a heterogeneous group of hematopoietic cancers that includes a number of diverse and biologically distinct subgroups. The study of the prevalence of leukemia worldwide and the study of various patterns of incidence in order to elucidate the explanatory factors that may support preventive measures and health resource planning is the main goal of epidemiological research. Estimating the global incidence of leukemia according to the four main subtypes, stratified by age and sex, is one of the important issues on the way to achieving the goal. In the structure of malignant neoplasms, acute leukemia is 2-3% and an average of 3-5 cases per 100,000 population. Of these, 75% of cases occur in the adult population and 25% in children. In the adult population over 40 years old, 80% of cases are represented by myeloid forms, and in children up to 75-80% are lymphoid. Observations from 2003 to 2007 with analysis of 717,863 cases of leukemia according to Cancer on Five Continents Volume X (CI5-X), which includes data from 290 cancer registries in 68 countries, as well as data from the International Agency for Research on Cancer (IARC's GLOBOCAN) (2012 more than 350,000 new cases of leukemia have been studied) showed significant regional and ethnic differences in the incidence of leukemia [22,23,24,25,5].

The lowest incidence rates are noted in the countries of Africa and Central Asia, a relatively higher incidence in China, Japan, the USA, and Europe. The highest rates of leukemia for both sexes were found in Australia and New Zealand (ASR per 100 000 11.3 in men and 7.2 in women), North America (10.5 in men and 7.2 in women) and in Western Europe (9.6 years for men and 6.0 for women), and the lowest was in West Africa (1.4 for men and 1.2 for women) [12,16,17]. In Russia, leukemia incidence rates are variable, with the highest incidence rates recorded in the Penza (11.2 per 100,000 men and 7.7 per 100,000 women) and Murmansk (10.4 and 10.3 per 100,000, respectively) regions. The lowest rates are observed among men in the Primorsky and Khabarovsk Territories (2.4–3.1 per 100,000) and among women in Kalmykia,

In the Republic of Kazakhstan, as in other countries of the world, over the past decade there has been a tendency towards an increase in the incidence of malignant neoplasms in children. In 2006, up to 550 cases of malignant neoplasms in children were registered in various regions of the republic, in a percentage ratio of which 40-45% were hemoblastoses (220-250 cases per year), the largest share in structural terms belongs to leukemias (185 to 220 cases in year). Analysis of incidence from 1997 to 2006 showed a gradual increase from 7.2‰ (in 1997) to 8.7‰ in 2006. With regard to the incidence of leukemia, the incidence rate in children in the Republic of Kazakhstan increased from 2.8‰ (1997) to 3.2‰ in 2006, and the incidence of leukemia in children in the structure of malignant neoplasms was $32.0 \pm 0.34\%$ [10]. In relation to leukemia in children, and in relation to all malignant neoplasms in children in the Republic of Kazakhstan, territorial variability was revealed, relatively high rates of incidence of malignant neoplasms were obtained in Kyzylorda (15.8‰), Pavlodar (14.5‰), Vostochno- Kazakhstan (9.8‰ LLC), West Kazakhstan (9.1‰ LLC) and Atyrau (8.9‰ LLC) regions, as well as in the cities. Astana (10.8‰) and Almaty (9.4‰). Incidence rates in other regions of Kazakhstan were lower and ranged from 4.6‰ (Akmola) to 7.0‰ in the South Kazakhstan region [11,15]. In Europe, there are clear geographical features of the distribution of various types of leukemia, acute lymphoblastic leukemia accounts for up to 80% of leukemia among children aged 0-14 years. In Korea, according to the Korean National Statistics Office, the crude incidence of acute myeloid leukemia between 1999 and 2012 was 3.7 per 100,000 population, and the mortality rate per 100,000 population was 2.0, according to estimated calculations, the mortality rate should decrease to 1.3 per 100,000 population by 2032 [20]. When comparing the incidence of acute leukemia by sex, the incidence of ALL, especially the T-cell variant, is higher in boys than in girls, but in the first period of life (up to 1 year) the incidence in girls is higher than in boys. In AML, there were no significant differences in incidence between boys and girls [21,19]. The study of the epidemiological characteristics of acute leukemia, depending not only on the geographical location and age characteristics, but also on ethnicity, is one of the main issues in the study of epidemiologists, which makes it possible to comprehensively present the epidemiological

picture. The incidence of malignant neoplasms is gradually increasing throughout the world, this growth is primarily due to the mutagenic effects of environmental carcinogens. However, Considering the growth of childhood oncopathology, it is necessary to pay special attention to teratogenesis and oncogenesis, as triggering factors for the development of acute leukemia. Taking into account epidemiological studies of ethnic characteristics, it can be concluded that the factors influencing and provoking these differences may be the result of exposure to carcinogenic agents and / or genetic characteristics. Based on the results of more than 50 years of observation, an increase in the incidence of acute leukemia in Japan has been proven, a 45-fold increase in the incidence among people within the radius of the explosion, compared with those living outside the area. it can be concluded that the factors influencing and provoking these differences may be the result of exposure to carcinogenic agents and / or genetic features. Based on the results of more than 50 years of observation, an increase in the incidence of acute leukemia in Japan has been proven, a 45-fold increase in the incidence among people within the radius of the explosion, compared with those living outside the area. it can be concluded that the factors influencing and provoking these differences may be the result of exposure to carcinogenic agents and / or genetic features. Based on the results of more than 50 years of observation, an increase in the incidence of acute leukemia in Japan has been proven, a 45-fold increase in the incidence among people within the radius of the explosion, compared with those living outside the area. The disease is detected during the onset of the advanced stage of acute leukemia, when the bone marrow begins to actively produce blast cells. The active efforts of oncologists-hematologists lead to a decrease in their amount in the patient's blood to 5% or less. If this condition persists for five years, then the remission is considered complete, and the patient is cured.

The study argued that liver damage as a result of the direct action of hepatotoxic substances and exposure to one or more of the known provoking factors (ionizing radiation, viruses, damage at the level of the genetic apparatus) is a trigger in the development of OL.

The liver is an organ that synthesizes vitamin K-dependent procoagulants, as well as physiological anticoagulants antithrombin III (AT III), proteins C (PrS) and S (S). The main physiological inhibitor of thrombin, as well as factors IXa, Xa, XIa and XIIa, is AT III. In addition to providing 75% of the anticoagulant potential of plasma, it has a pronounced anti-inflammatory effect, realized by enhancing the synthesis of prostacyclins and suppressing free radical reactions, which increases its antithrombotic effect [7]. According to N.A. Vorobiev (2006), the content of AT III below 80% is dangerous for the occurrence of thrombosis; other researchers give a figure of less than 60% [4]. The most significant reasons for the decrease in AT III are a violation of its synthesis or excessive consumption, for example, with the progression of DIC [13].

In the liver, endothelial cells also synthesize PrS, which exhibits anticoagulant activity, mainly in the microvasculature [6]. It stops thrombin production by cleaving factors Va and VIIfa associated with cell membranes [9]. The reaction cofactor is the free form of IgS, which is also synthesized in the liver and is contained in the blood plasma, enhancing the binding of activated PrS and forming a 1:1 complex with it, which has anticoagulant properties regardless of PrS [8].

When analyzing the literature data, it was found that in patients with hemablastoses, in 85-90% of cases, liver damage is determined, which occurs in most patients in an anicteric form, and sometimes asymptotically. The most common form of liver damage is a specific infiltration of blast cells, then protein, fatty degeneration. In patients with acute leukemia, liver damage is manifested by the presence of cholestatic, hepatodepressive syndromes and a decrease in the activity of the monooxygenase system. Clinical manifestations, according to the literature, are often scarce, patients present with complaints characteristic of gastric and intestinal dyspepsia (periodically nausea, vomiting, stool disorders, etc.). Of the laboratory signs, fluctuations in indicators were noted: the level of total bilirubin, less sharp within normal values - activities of serum aminotransferases, a slight decrease in the prothrombin index, an increase or decrease in cholesterol levels, serum iron levels, dysproteinemia due to hypoalbuminemia and hypergammaglobulinemia or alpha-2- globulinemia.

Thus, research aimed at studying clinical and laboratory parameters of the liver in patients with acute leukemia, will provide significant assistance in predicting the early treatment of the disease, which will lead to a decrease in its relapses, complications and an increase in the quality of life of patients with AL.

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