SPLEEN MORPHOMETRIC PARAMETERS IN EXPERIMENTAL BREAST CANCER THERAPY

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Abstract. The spleen is a secondary immune and the largest organ of the reticuloendothelial system, actively involved during infectious mononucleosis. Clinically, assessing a degree of organ involvement in the pathological process seems unlikely. As a rule, only palpation and percussion are used to determine the size of the spleen, which represents a late and subjective sign of potential splenomegaly. Ultrasound examination provides ample opportunities to estimate the spleen size during infectious mononucleosis. Our study was aimed at identifying morphometric and Doppler ultrasound changes in the spleen in patients with infectious mononucleosis. presented.

Key words: infectious mononucleosis, spleen, ultrasound, splenomegaly, spleen mass, spleen mass coefficient.

An analysis of the epidemiological situation on the territory of the Russian Federation over 16 years indicates an increase in the incidence in all age groups (12.8 per 100,000 population) [3, 4]. Over the past 25 years, a steady increase in the incidence of myocardial infarction has been revealed in our country, there is a cyclical rise and fall with a time interval of 5-7 years. All regions of the country are ranked according to the level of long-term incidence. The regions with a low incidence of MI include the republics of Dagestan, Kabardino-Balkaria, Kalmykia, Karachay-Cherkess, North Ossetia-Alania, Chechen, Altai, Buryatia, Tyva, Yakutia (Sakha) and the Orenburg region. In the Vologda, Penza, Samara, Sverdlovsk and Tyumen regions, the republics of Karelia, Udmurtia, Kamchatka Territory and Sevastopol, the incidence rate is above average, and in the Yaroslavl and Tomsk regions and St. Petersburg, the average long-term incidence of infectious mononucleosis is estimated as high [6].

The occurrence of MI depends on age and gender, the prevalence of EBV in people, and the level of seroconversion. Symptoms of the disease are severe and may persist for a long time [15, 29]. The age of the patient is one of the main factors determining the presence of pathognomonic symptoms of the disease. The classic triad of MI (fever, sore throat, and lymphadenopathy) is characteristic of both children and adults. However, pediatric patients are more likely to develop nonspecific symptoms of the disease: rash, cough, diarrhea, runny nose, dehydration, and convulsions. Enlargement of lymphoid organs (lymph nodes, spleen, and liver) is typical for adult patients [20]. A prospective

study by Dunmire S.K. et al. showed that in young people aged 19 to 22 years, 75% develop typical MI, in other cases the disease proceeds in asymptomatic or erased forms [14, 15]. In older age groups, MI also more often occurs in asymptomatic or erased forms [10, 14].

Given the unpredictability of the course of MI and the high likelihood of severe forms of this disease in patients of the older age group, as well as taking into account the possibility of an increase in the frequency and severity of MI in the coming years [18, 20, 31], early prediction and prevention of Treatment of complications with the help of ultrasound and morphometric characteristics of the spleen.

Splenomegaly is a fairly common phenomenon that can be caused by a wide range of diseases, including myocardial infarction [20], hematological diseases and liver cirrhosis [30]. Ultrasound examination (ultrasound) of the spleen is a promising method that allows you to accurately determine the normal size of the organ in different age groups and in pathological conditions [26]. The spleen, as an organ of the circulatory and lymphatic systems, due to the wide variety of functions, can be considered an indicator for a large number of pathological conditions associated with diseases of the liver, blood system, infectious, autoimmune diseases and diseases of the connective tissue. These pathological conditions may be accompanied by an increase in the size of the spleen.

In the literature there are a large number of works devoted to the morphometry of the spleen, its vessels and ligaments. The vast majority of the work was done on sectional material. They cover all age periods, starting from the fetal period of ontogeny [3] and ending with the adult period [1].

At the same time, today the study of intravital anatomy is of great importance, which is ensured by the improvement and introduction into clinical practice of various intravital imaging methods.

The trigeminovascular complex receives direct and indirect modulating impulses: direct ones come from the somatosensory cortex and the island, and indirect ones come from the hypothalamus. This complex provides pro- and antinociceptive interactions. The suprachiasmatic nucleus of the hypothalamus receives direct impulses from the cells of the retinal ganglion and indirect signals from the environment (light - dark). The posterior thalamic neurons receive light signals from the retina, these neurons project onto the sensory and visual cortex, which is a neuronal substrate for the development of photophobia during a migraine attack and increased sensitivity to light. The monoaminergic nucleus inhibits the ventrolateral preoptic nucleus, which leads to stimulation of the hypothalamic (orexinergic) system and the nucleus of the bridge. When going to sleep, the orexinergic system activates the ventrolateral preoptic nucleus. Direct inhibition of the system and a decrease in orexinergic support for the state of sleep determine the rapid transitions from sleep to wakefulness and vice versa. The

orexinergic system, including neuropeptides (orexin A and B), is present in the posterior, lateral, and paraventricular hypothalamus [7].

There are works devoted to intravital anatomy of the adult spleen [5, 8].

There are works devoted to the study of intravital morphometry of the spleen in children. They are aimed at establishing the relationship between various morphometric indicators of the spleen and anthropometric indicators, such as height, body weight, body mass index, body surface area, etc. [7, 9, 12]. There are works on the morphometry of the spleen in children with blood pathology (myelofibrosis, sickle cell anemia) [4, 11] and injuries [6]. In most of them, the research method that made it possible to determine the morphometric parameters of the spleen was ultrasound scanning, while there are practically no works on computed tomographic anatomy.

Before a migraine attack, patients often yawn, feel hungry and feel sleepy, which may be caused by changes in the hypothalamus and orexin neurons and is confirmed by neuroimaging studies using functional magnetic resonance imaging before and during attacks migraine [10]. Thus, a connection is established between the systems that regulate the processes of sleep and wakefulness, and the systems involved in the formation of headaches.

A biobehavioral model of the mechanisms of connection between chronic insomnia and chronic headache was proposed, which involves three basic points:

1) attempts to overcome headaches can accelerate and intensify sleep disturbances;

2) violation of the physiology of sleep increases the tendency to headache;

3) over time, these cycles interact and serve to transform or transition from episodic headache to chronic [11].

Among the important prerequisites, there are traits of an anxious personality, a tendency to activate the sympathetic nervous system, which, together with psychological stress, can be a trigger for sleep disorders. Efforts to overcome sleep disorders (compensatory daytime sleep, taking sleeping pills before bed and caffeine in the daytime) lead to the consolidation of chronic insomnia. This model explains the interaction between biological and psychological factors in the development of sleep disorders [11].

At the same time, data on spleen morphometry in children and adolescents will improve the quality of radiological methods for diagnosing spleen pathologies, increase the safety and effectiveness of surgical interventions, and expand the understanding of morphologists about spleen morphometry among children and adolescents in age and gender aspects.

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