# CAUSES OF ONCOLOGICAL DISEASES IN YOUNG PEOPLE: ANATOMICAL ASPECTS

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***Annotatsiya.*** *Ushbu tezisda yoshlarda onkologik kasalliklarning kelib chiqish sabablari, a'zolar anatomiyasi, to'qimalar tuzilishi va o'sma rivojlanishining morfologik xususiyatlari yoritiladi.*

***Kalit so'zlar:*** *onkologiya, yoshlar, anatomiya, o'sma, hujayra, to'qima, a'zo, morfologiya, mutatsiya, epiteliy.*

***Аннотация.*** *В тезисе рассматриваются причины возникновения онкологических заболеваний у молодёжи с акцентом на анатомическое строение органов, структуру тканей, клеточные изменения и морфологические особенности опухолей.*

***Ключевые слова:*** *онкология, молодёжь, анатомия, опухоль, клетка, ткань, орган, морфология, мутация, эпителий.*

***Abstract.*** *This thesis examines cancer causes in young people, focusing on organ anatomy, tissue structure, cellular changes, and morphological characteristics of tumors.*

***Keywords:*** *oncology, young people, anatomy, tumor, cell, tissue, organ, morphology, mutation, epithelium.*

Oncological diseases are complex pathological processes that arise from the uncontrolled proliferation of cells within the human body. When studying tumor-related diseases in young people, it is essential to focus not only on their underlying causes but also on the anatomical structure of the body's organs, the characteristics of their tissues, and the physiological activity of their cells. This is because every organ is composed of specific tissues, and the development of a tumor process is intrinsically linked to the organ's anatomical and histological features.

During youth, the body undergoes continuous growth, development, hormonal shifts, and the active renewal of certain tissues. These processes are tied to the natural mechanisms of cell division. However, the accumulation of genetic

alterations within cells—combined with the disruption of mechanisms that regulate growth—can, in some instances, lead to the formation of malignant tumors[2].

Every organ in the human body possesses a unique anatomical and histological structure. Organs may be composed of epithelial, connective, muscular, and nervous tissues. Oncological diseases manifest in various forms, depending on the specific cells or tissues in which they originate.

For instance, the skin is covered by stratified squamous epithelium. Certain types of skin tumors can develop as a result of alterations in the genetic material of the cells within the epidermis. Studying the anatomical characteristics of skin tissues is crucial for understanding the origin of a tumor, its spread through the layers of the skin, and its impact on surrounding tissues.

Bone tissue also holds a significant place in the study of oncological diseases among young people. Bones are covered externally by the periosteum and consist of dense (compact) and spongy (cancellous) bone tissue, bone cells, and bone marrow. During the growth phase, the length of bones increases via the epiphyseal growth plates. Certain malignant tumors—such as osteosarcoma—are associated with bone-forming cells and can occur in adolescents and young adults.

The lymphatic system plays a role in the body's immune defense. It is composed of lymphatic vessels, lymph nodes, and lymphoid tissue. Lymph nodes play a crucial role in the activity of lymphocytes and the formation of the immune response. Pathological changes in the cells of this system can lead to the development of certain types of lymphoma.

Hodgkin lymphoma—which occurs in young people—and various non-Hodgkin lymphomas are oncological diseases associated with the lymphoid system. Anatomically, these conditions may manifest in lymph nodes located in the neck, armpits, chest, or abdominal cavity. Enlargement of the lymph nodes does not always indicate an oncological disease, as such changes can also be observed during infectious or inflammatory processes.

Bone marrow is the primary tissue responsible for the production of blood cells. It contains hematopoietic stem cells, from which red blood cells (erythrocytes), white blood cells (leukocytes), and platelets are formed. When the genetic mechanisms that regulate the development of these cells are disrupted, conditions such as leukemia can arise[1].

Therefore, knowing the anatomical location of the bone marrow and its role in blood formation is important to understand the nature of leukemia.

In young people, oncological diseases can occur in the brain, liver, kidney, thyroid gland and other organs. The anatomical structure of each organ affects the clinical symptoms of the tumor.

The brain is located inside the skull, and the main part of it is the nervous tissue. Nerve cells and their supporting glial cells are important in the functioning of the central nervous system. Depending on their location, brain tumors can affect movement, vision, hearing, speech, and coordination. Studying the anatomical localization of some central nervous system tumors in children and adolescents is important for diagnosis and treatment planning.

The thyroid gland is located in the front of the neck, in front of the larynx and trachea. It has a follicular structure and is involved in the production of hormones. Genetic alterations within the cells of the thyroid gland can lead to the development of thyroid tumors. The anatomical location of this organ explains why a growing tumor may affect other structures in the neck.

The development of cancer can involve genetic mutations, certain hereditary syndromes, exposure to ionizing radiation, and specific biological factors. In many cases, however, the emergence of a tumor is not linked to a single cause, but rather to the interplay of several biological processes.

DNA, located within the cell nucleus, stores hereditary information. Certain changes in DNA can disrupt the mechanisms that regulate cell division, growth, and death. Consequently, cells may proliferate abnormally, increasing the likelihood of tumor formation.

From an anatomical perspective, the development of a tumor is not confined to its tissue of origin. A malignant tumor can invade surrounding tissues and spread to other organs via blood vessels or lymphatic vessels. This process is known as metastasis. For example, spread via lymphatic vessels can lead to the involvement of lymph nodes, while dissemination through the bloodstream can result in the formation of secondary tumor foci in distant organs[3].

It should be noted that not all oncological diseases in young people can be explained by lifestyle factors or environmental influences. Some tumors may be linked to embryonic development, the process of cellular maturation, or genetic alterations.

When studying oncological diseases in young people, it is essential to analyze the anatomical structure of the body's organs, the histological characteristics of tissues, and the biological activity of cells in an integrated manner. The skin, bones, lymphatic system, bone marrow, brain, and endocrine organs are among the various anatomical structures where tumor processes can develop.

Anatomical knowledge helps in understanding the tumor's location, its tissue of origin, its relationship with surrounding structures, and its pathways of spread. Furthermore, genetic alterations and disruptions in the mechanisms that regulate cell division play a significant role in the formation of tumors. For early detection of

oncological diseases in young people, it is necessary to evaluate suspicious signs in time, conduct necessary laboratory and instrumental examinations and consult a specialist. Anatomical and morphological approach is one of the important scientific bases for correct understanding of the disease, diagnosis and treatment tactics.

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