



MORPHOLOGICAL DATA OF THE ORGANS OF HEMATOPOIESIS AND HEMATOPOIESIS

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Annotation. The basis for maintaining the consistency of quantitative and qualitative composition in each cellular link of the blood system is compliance with the basic law of the kinetics of hematopoiesis: the same number of cells are born and die per unit of time. Hematopoietic stem cells have the ability to simultaneously differentiate into all types of blood cells and proliferate to maintain the constancy of their quantitative composition, since there is no replenishment of this pool from the outside in the postnatal period.

Key words: bone marrow, thymus, lymphoid follicles

A common feature of the histological structure of hematopoietic organs is the presence in their composition of the parenchyma of reticular (in the case of the thymus - reticuloepithelial) connective tissue, which performs a number of special functions:

- 1) trophism of the hematopoietic tissue proper,
- 2) differentiation of groups of maturing shaped elements belonging to different lines of differentiation,
- 3) they are "chemical beacons" for reducing blood cells (lymphocytes, etc.).

The organs of hematopoiesis include the red bone marrow, lymph nodes, spleen, thymus, and the organs of hematopoiesis include the liver, bone marrow, and spleen.

Red Bone Marrow

localization: between the bone trabeculae of the spongy substance of tubular and flat bones

structural features: honeycomb-like structure (due to the abundance of fat cells)

functions: hematopoietic (all types and sprouts of hematopoiesis), immune (the place of formation of precursors of B and T lymphocytes, differentiation and maturation of T lymphocytes occurs in the thymus). It also causes the destruction of cells (erythrocytes), the reutilization of iron, and the synthesis of Hb.

The spleen.

localization: in the left hypochondrium, along the course of the blood vessels



structural features: the largest peripheral hematopoietic organ; covered with a peritoneum and a capsule of connective tissue with a high content of smooth myocytes (give the organ the ability to contract); trabeculae extend from the capsule deep into the organ, anastomosing with each other; in the parenchyma, white and red pulp are distinguished: the first is represented by a multitude of lymphoid follicles (nodules), the second by blood vessels, reticular tissue and splenic cords lying in the nodes of the latter - special cellular associates, which include erythrocytes, platelets, leukocytes, macrophages, plasmocytes, etc.; it is believed that it is in the splenic cords that occurs destruction of old shaped blood elements, primarily erythrocytes and blood plates;

functions: hematopoietic (formation of B lymphocytes), protective (phagocytosis, participation in immune reactions), depositing (operative blood depot, platelet accumulation), destruction of old and damaged erythrocytes, leukocytes, platelets.

Thymus (thymus gland)

localization: behind the sternum

age dynamics: it reaches its greatest development in childhood; after puberty it undergoes gradual involution; by old age it is almost completely replaced by adipose tissue (since a significant part of T-lymphocytes are represented by long-lived cells capable of selective proliferation when encountering an antigen, age-related thymus atrophy does not lead to a catastrophic decrease in immunity)

structural features: it is covered with a connective tissue capsule, the partitions extending from it divide the organ into lobules; cortical and medullary matter are distinguished in each lobule; the parenchyma of the lobules is formed by precursors of T lymphocytes (migrated to the thymus from the red bone marrow), T lymphocytes at various stages of differentiation and reticuloepithelial tissue; layered thymus corpuscles are located in the medulla presumably performing an endocrine function

functions: a) hematopoietic (the place of formation of the first lymphocytes in the embryo), b) immune, c) endocrine (secretes a number of hormones and hormone-like substances that stimulate the reproduction and differentiation of T -lymphocytes and regulate certain links of the immune response).

The lymph node

localization: along the course of lymphatic vessels

structural features: the organ is bean-shaped, several bearing lymphatic vessels approach the lymph node from the convex side, on the opposite side there are gates



through which the carrying lymphatic vessel and veins exit and the artery and nerves enter; it is covered with a connective tissue capsule, from which trabeculae extend deep into the organ; in the parenchyma, cortical and cerebral matter are distinguished, the first is formed by spherical lymphoid follicles (nodules representing dense clusters of lymphocytes), the second by fleshy cords - branching and anastomosing strands consisting of many lymphocytes; the tissue composition of the parenchyma: hematopoietic tissue (B lymphocytes, plasmocytes, macrophages, etc.) and reticular tissue; the spaces through which the lymph moves within the node are called sinuses

functions: hematopoietic (formation of B lymphocytes), protective (lymph filtration, phagocytosis, participation in the immune response - in the lymph nodes, B lymphocytes are converted into plasmocytes - producers of antibodies)

The amygdala.

localization: depending on the topography, pharyngeal, laryngeal, tubal, lingual and palatine tonsils are distinguished structural features: the amygdala belongs to the so-called lymphoepithelial organs and is a cluster of lymphoid follicles (nodules) around the finger-like (or slit-like) ingrowth of the epithelium into the underlying connective tissue; has its own capsule functions: hematopoietic (formation of lymphocytes), protective (phagocytosis, local immunity)

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