

**МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ
ВИЩИЙ ДЕРЖАВНИЙ НАВЧАЛЬНИЙ ЗАКЛАД УКРАЇНИ
«БУКОВИНСЬКИЙ ДЕРЖАВНИЙ МЕДИЧНИЙ УНІВЕРСИТЕТ»**



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101 – ї

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професорсько-викладацького персоналу

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artery develop in the majority of cases in the course of already formed branches of the portal vein of the liver.

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**STRUCTURAL ORGANIZATION OF THE THYMUS
IN 4-10-MONTH-OLD HUMAN FETUSES**

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Morpho- and immunogenesis result from the complex interaction of precursor cells of thymocytes and their immature forms with different structural components of the stroma which allows forming a microenvironment for T-lymphocytes. The response of the immune system to the antigenic effects depends on the morphofunctional maturity of the immune-competent organs. However, information on the features of the microscopic fetal structure of the thymus has not been systematized in the sources of scientific literature and this area needs further studying.

The purpose of the study was to analyze the features of the thymus histotopography development in 4-10 month-old human fetuses.

The study involved 27 series of histological sections of thymus of human fetuses with 81.0-375.0 mm of crown-rump length.

We have studied features of the thymus structural organization in fetuses aged 4-10 months. It was established that in the early fetal period of ontogenesis the development of medullary substance is significantly ahead of cortical zone formation - the area of the medullary substance in the thymus is much greater, you can observe numerous epithelioreticular stromal cells in it. At the end of the 5th month of fetal growth, an intensive development of connective tissue stroma, germinating between the thymus particles, occurs; an intensive formation of the cortical substance in the thymus particles can be observed; vascularization, which creates conditions for the formation of the blood-thymic barrier, further differentiation of stromal cells and practically complete development of lymphocyte programmed differentiation, improves.

From the middle of the 7th month of intrauterine development (fetuses with 250.0-260.0 mm of crown-rump length) there is an increase in the area of the peripheral part of the thymus lobe - the cortical substance. The thymus lobes are well-formed, limited by stromal connective tissue with blood vessels. In the thymus there are large-sized particles with a large area of cerebrospinal fluid, with the connective tissue layers and with small vessels in their cortical substance. In the medullary substance of the thymus there are Hassall's corpuscles among which there are single large thymic corpuscles. When the Hassall's corpuscles are magnified enough you can clearly distinguish cells (nuclei and cytoplasm), some layers of cells (layered corpuscles). In the 8th month of intrauterine development (fetuses with 271.0-310.0 mm of crown-rump length), the structural organization of the thymus is similar to the previous term. In the fetuses with 320.0-330.0 mm of crown-rump length, the cortical substance of the thymus lobes is infiltrated by T-lymphocytes, which densely fill the lumens of the reticulate epithelial shell resulting in this part of the lobe having a characteristic appearance and dark color on the specimens. The brain substance of the thymus lobe has a lighter color, because it contains less lymphocytes compared with the cortical substance. In the brain substance of the thymus are the bodies of Hassall. The medullary substance of the thymus is lighter in color as it contains fewer lymphocytes than the cortical substance. The medullary substance of the thymus contains Hassall's corpuscles. At the end of the fetal period of human ontogenesis, an increase in the area of the cortical substance of the thymus lobes is observed. In the thymus there are large-sized particles with a large area of medullary substance with layers of the connective tissue with small vessels in their cortical substance. The medullary substance of the thymus contains a moderate number of Hassall's corpuscles.

In the fetuses with 320.0-330.0 mm of crown-rump length in the thymus lobes the cortical and medullary substances are clearly differentiated. Cortical substance of the thymus lobes is infiltrated by T-lymphocytes, which densely fill the lumens of the reticulate epithelial shell.



Compared to the cortical substance, the medullary substance of the thymus lobe contains fewer lymphocytes. The medullary substance contains Hassall's corpuscles, many of which are found in large lobes of the thymus.

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MORPHOGENESIS OF THE MAXILLA OF THE HUMAN FETUSES

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The position of the maxilla in the structure of the facial skeleton, its role in the formation of the facial profile and adjoining osseous structures create a certain originality in its shape. Congenital clefts of the upper lip and palate are not often a part of this or that syndrome, but as an independent congenital disease in the form of an isolated developmental defect of separate organs.

The purpose of our study was to detect and systematize peculiarities of the development and structure of the maxilla and its body in the perinatal period of ontogenesis.

The study was conducted on 53 dead 4-10-month fetuses and 11 newborns (5 isolated organ complexes in particular) of both sexes without external signs of anatomical defects or abnormalities and without vivid macroscopic deviations from the normal structure of the skull. Before the beginning of the craniometric examination every specimen was fixed in craniostat in the horizontal auricular-ocular plane, in so-called "Frankfurt horizontal line". All the measurements on the skulls were made by means of a tape measure, caliper, slide compasses and dial calipers.

A typical shape of the maxilla during the perinatal period is short and wide, found in early fetuses (4-5 month) – in 94% of cases, in fetuses of 6-7 month of age – in 82% and in fetuses of 8-10 month of age (late fetuses) – in 68% and newborns. A short and wide shape of the maxilla changes into a high and narrow one with age.

The absence of the zygomatic-cellular crest is a characteristic sign of the fetuses of all the age groups and newborns. With the age of fetuses the relief of the anterior surface of the maxilla changes. Thus, a flat anterior surface of the maxilla is found in 4-month fetuses, it changes into a little concave one in the area of the infraorbital opening in 5-month fetuses. In 6-7-month fetuses the surface is more concaved passing from the base of the frontal process to the infraorbital opening. In 8-10-month fetuses and newborns a deep concavity is found near the cellular process from the nasal incisures to infraorbital opening. In the perinatal period of ontogenesis the height of the anterior surface increases by 2,3 times, and the length – by 2,1 times as much. The height and length of the anterior surface of the maxilla increases most intensively in 8-10-month fetuses and newborns, and the slowest – in 5-month of the intrauterine development.

A typical shape of the infraorbital opening is oval and round, and it is considered to be as a variant of it. During the perinatal period of ontogenesis the infraorbital opening is usually projected in the point of crossing of the line connecting the lateral angle of the eye with the nasal wing and the line passing from the median angle of the eye to the angle of the mouth. In early (4-5-month) fetuses this projection of the infraorbital opening is found in 70,6% – in the right and 64,7% – in the left, in 6-7-month fetuses in the right – in 75% and in the left – 80%, and in late fetuses (8-10-month) and newborns – in 74% and 77,7% respectively.

A typical shape of the anterior surface of the maxilla for early fetuses is irregular trapeziform, and for 6-7 month, late fetuses and newborns - an elongated triangle shape. The ratio of the height of the anterior surface to the height of the infratemporal surface in the perinatal period is in an average 1:1 (1:1,03 – in 5-month fetuses and 1:1,25 – in 6-month fetuses), which is indicative of the similarity of the height sizes of these surfaces. The ratio of the length of the anterior surface of the maxillary body and the length of the infratemporal surface in the perinatal period ranges between 3,1:1 (in 4-month fetuses) and 4,2:1 (in 8-10-month fetuses), which is indicative of a considerable development of the anterior surface in its length associated with the development of the cellular process.