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THE DEVELOPMENT OF LIVER IN THE PREFETAL PERIOD OF HUMAN ONTOGENESIS

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The characteristics of the liver in fetal period of human ontogenesis were studied on the basis of 20 human prefetal specimens by means of morphological methods.

The size of the liver was found to be significantly increased, its transverse dimension was already 5.0 mm at the beginning of the prefetal period (prefetal 14.0 - 20.0 mm of crown-rump length (CRL)). The right and left sagittal fissures are clearly defined on the visceral surface of the liver in seventh week prefetuses. The gallbladder lies in the right anterior sagittal sulcus; the umbilical vein is in the right anterior sagittal sulcus. The development of the liver during the eighth week of prenatal development was studied on the basis of 10 series of histological sections of human prefetuses (21.0 mm to 30.0 mm CRL). The liver was detected to continue its enlargement, the transverse dimension in the correspondent group of the prefetuses was 6.0 mm. The hepatic-duodenal ligament runs from the gate of the liver to the upper part of the duodenum and pancreatic head. The hepatic artery and the bile ducts are located inside of the ligament. The portal vein of the liver lies to the left of the bile duct and slightly behind the hepatic artery.

Morphogenesis of the liver during the ninth week of fetal development was studied on the basis of 6 series of histological sections of human prefetuses (31.0 mm to 41.0 mm CRL). The liver occupies superior and middle floors of the abdominal cavity in prefetuses of this age group, the transverse size of the liver is 3.5 mm, longitudinal size - 7.0 mm. The proper hepatic artery lies to the left of the common bile duct in the gate of the liver. The portal vein of the liver passes behind and slightly below the proper hepatic artery.

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STRUCTURAL PECULIARITIES OF THE MAXILLA AND ITS SURFACES IN THE PERINATAL PERIOD OF ONTOGENESIS

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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.

Lavriv L.P.

ANATOMICAL PECULIARITIES OF THE PAROTID GLAND STRUCTURE IN HUMAN FETUSES

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Formation of organs is a very complicated process not investigated completely. The role and value of additional information concerning the intrauterine human development are hardly to be overestimated for the solution of issues of perinatal medicine. The parotid gland is an object of a special attention of many scientists. At the same time, the findings concerning typical and variant anatomy of the parotid gland during the fetal period of human development remain disputable and even controversial.

The objective of the study was to investigate variant anatomy and topographic-anatomical peculiarities of the human parotid gland and surrounding structures in fetuses. The parotid gland was examined on 25 human fetuses, 130,0-375,0 mm of the parietal-coccygeal length (PCL). The following methods were applied in the course of the study: thing section of the parotid gland and parotid-masticatory area under4 the control of a binocular magnifying glass; macro- and microscopy; morphometry; computed 3-D design.

The parotid gland is found to be located in fetuses with130,0-375,0 mm of PCL in a deep depression posteriorly the branch of the lower jaw, in the posterior mandibular fossa. A greater part of the gland is located between the mandible and sternocleidomastoid muscle penetrating deeply between these structures. The skin of the area is mobile, the adipose tissue and superficial fascia are especially well seen at the end of the examined period of the prenatal development. The structure of the parotid gland of 4-10 month human fetuses is anatomically changeable which is manifested by different shape (oval, leaf-shaped, horseshoe-like, triangle, irregular tetragonal), location and syntopy. Computed 3-D design of the gland presents its volumetric description which is the most practical one – in the shape of trilateral pyramid turned to the malar arch by its base, and to the mandibular angle – by its apex. A number of structures pass through the tissue of the parotid gland including facial nerve, posterior mandibular vein, external carotid artery, auricular-temporal nerve. The parotid duct is formed due to the fusion of two extra-organ lobular branches which in their turn are formed by means of fusion of several upper and lower lobular ducts emerging from the gland tissue passing through its capsule. The direction of the parotid gland is arch-like, with upward convexity. Passing along the external surface of the mastication muscle the parotid duct touches the upper extremity of the adipose body of the cheek and penetrates through the buccal muscle into the oral vestibule where it opens in the shape of a papilla of the parotid duct. The length of the parotid duct in the fetuses of the third trimester is 8,0-26,0 mm, diameter of the lumen is within 0,8-2,5 mm. The parotid duct is projected on the skin of the face from both sides along the line from antilobium to the mouth angle. The wall of the parotid duct consists of the connective tissue rich in elastic fibers and epithelium lying the lumen of the duct. The epithelium consists of two layers – deep cubic and superficial cylindrical.

Therefore, morphogenesis and topographic formation of the human parotid gland in fetuses are influenced by a total effect of spatial-temporal factors associated with the dynamics and close syntopic correlation of organs, vascular-nervous formations and fascial-cellular structures of the parotid area. At the end of the 10th month of the prenatal development the parotid gland under the microscope demonstrates its practically definite shape, although histological processes of differentiation in it are not completed yet.

Lazaruk O.V.

DETERMINATION OF MATRIX METALOPROTEINATES EXPRESSION IN CELLS OF DUCTAL BREAST CARCINOMA WITH METASTASES AND WITHOUT THEM

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Ductal breast carcinoma is about 80% of all types of carcinomas. Immunological and histochemical methods of investigation were used for the study of matrix metalloproteinases (MMP) in tumors during past years. They have the ability to change the properties or destroy the extracellular matrix components. Tumor cells acquire metastatic capabilities, including changes in intercellular connections, basal membranes and other barriers for multilevel process of metastasis.

In addition, the formation of a "metastatic niche" in the area of future implantation plays a significant role in the processes of metastasis. Resent researches point to a particular functional role of MMP-9 in creating of "niches" in places of distant metastases before migration.

162 cases of ductal breast carcinoma, including 97 cases with metastasis and 65 cases without them were used in the research. The expression of MMP-2, -9 was determined with the help of the immunohistochemical diagnostic method. The obtained preparations were transformed into digital images. The level of expression in units of optical density was determined by (ImageJ), the computer microdensitometer program. Quantitative indicators between groups with metastases and without them were compared on the basis of the obtained data. It was found out that the index was within the range of 0.221-0.272, the average figure was 0.238 in determining the expression of MPP-2. In 91% of cases, the metastatic indicators of optical density were $\geq$ 0.238, at 9% $\leq$ 0.238. In the non-metastatic group, the results were: