СЕКЦІЯ 1
ОСНОВИ МОРФОЛОГІЇ ОРГАНІЗМУ ЛЮДИНИ І ТВАРИН, АКТУАЛЬНІ ПИТАННЯ ПАТОЛОГІЧНОЇ АНАТОМІЇ ТА СУДОВОЇ МЕДИЦИНИ

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FORMATION OF THE PHYSIOLOGICAL ATRESIA OF SEPARATED ORGANS OF DIGESTIVE SYSTEM IN HUMAN EMBRYOGENESIS

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In embryos 6.5-6.8 mm parietal coccygeal length (PCL) below the tracheo-pulmonary embryo there is no lumen of the esophagus, due to the presence of epithelial "plug". More cranially and caudally, the lumen of the esophagus is lined with a single layer, mostly cylindrical epithelium. The cells of the epithelial "plug" are smaller (6-7 μm) than the cells of the single-layer cylindrical epithelium.

During the embryonic period there are intense processes of interaction between rudiments of the esophagus, trachea, lungs and heart. The rudiment of the esophagus increases in size, protrusions of the organ are formed in both the frontal and sagittal planes. In embryos with a length of 5.0-5.5 mm PCL, the lumen of the esophagus due to the intensive development of the epithelium is almost absent, which should be considered as a stage of formation of the epithelial "plug" – physiological atresia. The significant proliferation of the mucous membrane epithelium of the esophagus provokes physiological atresia of its lumen. There is a complete separation of the rudiments of the trachea and esophagus. Physiological atresia of the esophagus is manifested not only in the proliferation of the epithelium and thickening of the epithelial layer, but also in the absence of lumen at some levels of the esophagus.

In embryos of 4.5-5.5 mm TCD, the rudiment of the stomach is an asymmetrically expanded and slightly bent to the left part of the intestinal tube, which differs from the rudiment of the esophagus by an altered shape of the lumen. During this period of development it is possible to allocate a gullet-gastric transition as the site containing three departments: 1 – a distal part of a gullet; 2 – the area of the junction of the esophagus with the stomach (future cardiac opening); 3 – part of the cardiac stomach, which is adjacent to the cardiac opening.

So, at the 4-th week of fetal development begins the formation of the esophagogastric junction. In the histogenesis of the duodenum there is a cranio-caudal gradient and the appearance of villi (prenatal 19.0-24.5 mm TCD), which extend to the jejunum. The cavities between the epithelial bridges of the duodenum differ from the vacuoles of the esophagus because the lumens of the duodenum are separated from each other by epithelial septa, in which the nuclei of epithelial cells are laid.

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MORPHOGENESIS AND FORMATION OF TOPOGRAPHY OF THE ABDOMINAL AORTAL PART AT EARLY STAGES OF THE HUMAN INTRAUTERINE DEVELOPMENT

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The study was conducted on 34 histological sections of embryos and pre-fetuses, and on 67 specimens of fetuses and human neonates. The primary system of blood supply in the embryo was found to function at early stages of embryogenesis. According to the findings of our study the embryos 3,1-3,6 mm of PCL in addition to other components of the cardiovascular system possess aorta, umbilical and vitelline-mesenteric arteries. The major blood vessels of the arterial and venous systems were found to form and function in the IV week embryos. To our opinion, a specific feature of the vascular system during III-IV weeks of development was availability of the dorsal segmental or inter-segmental vessels, which originate from the dorsal aorta in the form of metameric fine vessels.

Examination of the majority of histological sections of the human embryos found that branches of the abdominal aorta, the abdominal trunk in particular, superior and inferior mesenteric arteries, were formed from the aortal wall in the form of bulging. At this stage of development three branches arise from the descending part of the aorta – unpaired visceral and paired visceral and parietal ones. The vitelline arteries belong to the germs of the paired branches, because the vitelline-mesenteric artery further develops from them. After the vitelline sac is reduced the vitelline-mesenteric artery is transformed into the superior mesenteric artery.

During V-VII weeks of development the ventral branches are transformed with the following formation of the abdominal trunk, superior and inferior mesenteric arteries, that is, the vessels peculiar for the adult organism.

The length of the abdominal aorta on our specimens of III-V month fetuses was on an average 22,4-27,8 mm, of VI-VII month fetuses – 33,6-37,5 cm, of VIII-IX months – 40,7-51,2 cm, and of X month – 56,4-65,5 cm. The longitudinal aortal axis is located to the left from the midline.

Special attention in our studies was paid to the relation between an average length of the abdominal aorta and the body of fetuses 167,0-388,0 mm of PCL – it was 8,2%.

Examination of the human fetuses and neonates found that bifurcation level of the aorta in fetuses was determined on the level of III-IV transversal cartilages, and in neonates it was more often found on the level of the inferior margin of IV or middle of V transverse vertebrae. Though, on the specimens of the fetuses 458,0 mm PCL and neonate 517,0 mm PCL, bifurcation of the aorta was found on the level of the inferior margin of II transversal vertebra.

Considering our own studies and literature data, the aorta can be divided into the three types depending on the level of bifurcation: 1st high – division level within L2; 2nd middle – division level within L3 - L4; 3rd low level – lower the cartilage between L4 - L5.

Examination of the bifurcation angle of the aorta enabled us to conclude that the lower bifurcation level is the larger is the angle, and on the contrary, the higher the level, the smaller the branching angle is. Bifurcation angle of the aorta in fetuses and neonates ranges within 27° to 39°.

The upper margin of the aorta on the majority of specimens was relatively stable on the level of XI-XII thoracic vertebrae. A marked fascial compartment formed by circular oriented fibers with relatively thick perivascular cellular tissue was found around the aorta. It should be noted that in all the cases a clearly marked fissure was detected between the aortal wall and fascial compartment. Considering the above, a relative stability of the superior margin of the aorta fixed to the diaphragm by this fascial compartment can be explained.

To our mind, the results of the study will supplement the existing literature data concerning topography of the aorta and its unpaired and paired visceral and parietal branches in embryos, pre-fetuses, fetuses and neonates. They will form the basis for antenatal prevention of normal embryogenesis disorders.

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PROLIFERATIVE PROCESSES IN CASE OF PRETERM MATURATION OF THE PLACENTAL CHORIONIC TREE AND IRON DEFICIENCY OF PREGNANCY IN 33-36 WEEKS

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Nowadays the influence of iron-deficiency anemia of the gravidas (IDAG) upon the morphology of preterm maturing of the choroid tree is not studied. There are certain non-systematized observations of an opposite condition available – choroid tree immaturity in case of IDAG. Investigation of the regulation processes concerning the number of cells is essential to specify the mechanisms of preterm maturation of the chorionic placental tree and preterm labour that was carried out for the first time in case of IDAG. The diagnosis of preterm maturing of the chorionic tree is based on finding the fact of its preterm structure as compared to the parameters of a certain gestation period, which can be calculated on the percentage of various types of choroid villi. Preterm maturing of the chorionic tree is found during preterm labour.