methods of morphological research (anthropometry, morphometry, microscopy, three-dimensional computer reconstruction and statistical analysis).

The first signs of the basics of derivatives of a diverticulum of a mesonephric channel are defined in human embryos of the 6th week of intrauterine development (IUD) (10.0-11.0 mm PCL). It is represented by an ampoule blind expansion of the diverticulum – the basis of the renal pelvis. Starting with embryos 12.0 mm PCL, there is a protrusion of the wall of the blind end of the diverticulum in cranial and caudal directions, i.e. there are the basics of large cups. In embryos 12.0-13.0 mm TCD, these basics are represented by short tubes with extended ends. The base of small calices is formed by the protruding wall of large calices, and appears in embryos of 14.0-15.0 mm PCL (beginning of the 7th week of IUD). They have the shape of elongated tubes, the lumen diameter of which differs at different levels. Individual bases of small calices, elongated, reach the surface of the body, and their course determines significant expansion of the lumen. In the same period, further branching of derivatives of the diverticulum of the mesonephric duct occurs, i.e. the papillary ducts are formed and developed tubules. Each basis, reaching the layer of metanephrogenic cells, divides usually on three tubes of the next generation. Due to the fact that these three tubes of new generations deviate from the previous one almost at right angles and in their length are located along the surface of the rudiment of the organ, going in different directions, two of them can be found on histological sections simultaneously. Application of three-dimensional reconstruction by series of successive histological sections, made sure that each of the derivatives of mesonephric duct, growing into the thickness of metanephrogenic cells, during its division usually gives rise to three bases of the next generation. Around the extended blind at the end of each base condensation of metanephrogenic cells is formed, which in embryos 16.0 mm PCL is divided by a constriction in the form of a furrow into two consolidations. Fewer of them are located closer to the surface of the organ, and more – to its central part. Kidneys in the process of fetal development move from the place of their primary localization in the pelvis, where the source of their blood supply is a common iliac artery, cranial to the rudiments adrenal glands, giving their own vessels to the aorta, which become the renal arteries.

The source of the base of the genitourinary system is the intermediate mesoderm paired urogenital crest. As a result of its differentiation, three departments are formed: pronephros, mesonephros (mesonephric tubules and mesonephric ducts) and metanephros. Metanephral blastema of the intermediate mesoderm surrounds the ureter and gives rise to the epithelium of the renal tubules. 2. The ureter is differentiated into a developed region urinary system (in particular, in the ureter and pelvic system of the kidney). The base of renal pelvis was first observed at the beginning of the 6th week of IUD (embryos 10.0-11.0 mm PCL), large calices – at the end of the 6th week of IUD (embryos 12.0-13.0 mm PCL), small calices – at the beginning of the 7th week of IUD (embryos 14.0-15.0 mm PCL).

Chernikova G. M.

DEVELOPMENT OF THE LUNGS IN THE EMBRYONIC PERIOD OF HUMAN ONTOGENESIS

Department of Histology, Cytology and Embryology
Bukovinian State Medical University

The lungs acquire their usual shape, structure, and adequate function in 6-7 years of a child's life. But any violation of the development of the bronchi and bronchioles in intrauterine development, during childbirth, or during early childhood significantly restricts lung function in an older child or adult. Developmental disorders can be caused by genetic factors, exogenous, viral infections of the lower respiratory tract, as well as lung development abnormalities. Therefore, a more detailed study of the anatomy, topography and histological structure of the organ at the stages of prenatal development, and especially in the early period of human ontogenesis, is relevant.

When studying histological sections of human embryos of 6.0-7.0 mm parietal-coccygeal length (TCL) in the mesenchymal mass, which is located on the surface of the anterior intestine, there are two outgrowths of the endoderm – these are the rudiments of the main bronchi. The

outgrowth on the left side is smaller than the outgrowth on the right. The left-sided outgrowth goes laterally in comparison with the right-sided outgrowth, which has a course parallel to the esophagus. In the fifth week, there is a branching of the right main bronchus. So for the first time, there is a formation called the bronchus of the first order.

On the outgrowths of the bronchi of the first order (in embryos of 7.0-9.0 mm TCL), protrusions appear. The latter begins to branch intensively, lengthen and become second-order bronchi. In the future, the second-order bronchi branch out again and give rise to smaller bronchi. The lumen of the bronchial tubes of the first and second orders has a slit-like or round-oval shape. The wall of the bronchial tubes is lined with small cubic cells that are located on the basement membrane. The bronchial rudiments are surrounded by the pulmonary parenchyma, in which blood vessels are diagnosed. The mesenchyme is a source of formation of both the pulmonary parenchyma and the wall of bronchial vessels. The first blood vessels appear in embryos aged 4.5-5.0 weeks of intrauterine development. Bronchial blood vessels repeat the pattern of the bronchial tree. The wall of these vessels contains a single layer of elongated endothelial cells. Inside the bronchi, as well as in the mesenchymal network surrounding them, there are blood cells. The mesenchymal mass, into which bronchial tubes grow during lung development, thickens around them, differentiates over time, and gives rise to components of connective and muscle tissues.

Thus, in the embryonic period of human development, important processes occur that determine in the future the formation of the main bronchi and bronchi of I and II orders, the appearance of rudiments of blood vessels in the lung parenchyma, and also during this period, the initial stage of differentiation of the mesenchyme around the bronchi begins.

Khodorovska A.A.

DEVELOPMENTAL PECULIARITIES OF LUNGS IN HUMANS

Department of Histology, Cytology and Embryology
Bukovinian State Medical University

Studying the organogenesis of the upper respiratory tract and lungs will contribute to the development of new methods for prevention, diagnosis and treatment of congenital and acquired pathology in pulmonology and thoracic surgery.

The study was performed on human embryos of parietal-coccygeal length (PCL) of 42.0 mm, the longitudinal size of the right lung is 4.18 mm, the left - 4.40 mm, in an embryo 45.0 mm in length - 4.40 and 4.74 mm, respectively, and in 43.0 mm - 4.76 and 5.20 mm. The transverse size of the right lung, as in the earlier stages of development, is larger than the left and the embryo 42.0 mm in length is 2.86 mm (right lung) and 2.42 mm (left lung), in an embryo with a PCL size of 45.0 mm - 3.30 and 2.96 mm, respectively, in a 48.0 mm embryo - 3.52 and 3.19 mm.

There is a further branching of the bronchial tree and, starting with the embryos of 45.0 mm in length, in contrast to earlier stages of development, the branching of the bronchi occupies almost the same area of the lung bookmark as its mesenchymal part. In addition, due to the differentiation of the mesenchyme, interlobular connective tissue septa begin to form.

The length of the right main bronchus in the embryo with a PCL of 42.0 mm is 1.32 mm, in the embryo 45.0 mm -1.54 mm, in the 48.0 mm - 1.84 mm, the left - respectively 1.76, 1, 98 and 2.42 mm. The diameter of the right main bronchus increases from 594 microns (embryo 42.0 mm long) to 924 microns (embryo 43.0 mm long), the left - from 528 to 660 microns, their wall thickness - from 132 to 176 microns. The diameter of the lobular bronchi ranges from 264 to 330 microns (embryo 42.0 mm long) and from 308 to 374 (embryo 48.0 mm long). The largest diameter has the lower lobe bronchus of the right lung, the smallest - the middle lobe bronchus of the same lung.

The structure of the bronchial tree is similar to the same embryo 37.0 mm long, but the cartilage anlage, in addition to the main bronchi, is also in the wall of the lobular bronchi. In addition, the folds of the bronchial mucosa become more numerous, and their height increases, reaching 198-220 microns in the main bronchi, 88-110 microns - in the lobes, and 44-66 microns - in the segmental (embryo with PCL size 45.0 mm).