МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ
БУКОВИНСЬКИЙ ДЕРЖАВНИЙ МЕДИЧНИЙ УНІВЕРСИТЕТ»

М А Т Е Р І А Л И

105-ї підсумкової науково-практичної конференції
з міжнародною участю
професорсько-викладацького персоналу
БУКОВИНСЬКОГО ДЕРЖАВНОГО МЕДИЧНОГО УНІВЕРСИТЕТУ
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Конференція внесена до Реєстру заходів безперервного професійного розвитку, які проводитимуться у 2024 році № 3700679

Чернівці – 2024

У збірнику представлені матеріали 105-ї підсумкової науково-практичної конференції з міжнародною участю професорсько-викладацького персоналу Буковинського державного медичного університету, присвяченої 80-річчю БДМУ (м. Чернівці, 05, 07, 12 лютого 2024 р.) із стилістикою та орфографією у авторській редакції. Публікації присвячені актуальним проблемам фундаментальної, теоретичної та клінічної медицини.

Material and methods. A complex of morphometric research methods (anthropometry, morphometry, macroscopy, microscopy of series of histological sections, statistical analysis) examined 7 embryos of 5-6 weeks of development and 27 human pre-fetuses aged from 7 to 11 weeks (24.7-61.0 mm parietal coccygeal length (TCL)). The methods of variational statistics were used to determine the average value (M) and its error (m), as well as the degree of reliability (p).

Results. As a result of the study, the growth indicators of the body of the pancreas in the prenatal period of human embryogenesis (M±m): the length of the embryo is 24.7-28.0 mm, the dimensions of the pancreas (mm): length - 3.00±0.05 (p < 0 .05), body width - 0.160± 0.012; body thickness - 0.040± 0.001; embryo length 31.0-40.3 mm, pancreas dimensions (mm): length - 4.20±0.22 (p < 0.05), body width - 0.240± 0.013 (p < 0.05), thickness bodies - 0.120 ± 0.008 (p < 0.05); the length of the embryo is 42.0-48.5 mm, the size of the pancreas glands (mm): length - 5.80±0.12 (p < 0.05), body width - 0.310± 0.012 (p < 0.05), body thickness - 0.190± 0.012 (p < 0.05); embryo length 53.5-61.0 mm, pancreas dimensions (mm): length - 7.40±0.26 (p < 0.01), body width - 0.370± 0.003 (p < 0.05), thickness bodies - 0.230 ± 0.009 (p < 0.05); embryo length 53.5-61.0 mm, pancreas dimensions (mm): length - 10.30±0.28 (p < 0.01), body width - 0.370± 0.003 (p < 0.05), thickness bodies - 0.230 ± 0.009 (p < 0.05). The rate of increase in the size of the pancreas in the prenatal period of human embryogenesis, calculated per 1 mm TCL of the embryo in mm, is as follows: in embryos with a length of 24.7-28.0 mm, the pancreas has a length of 0.110 mm, while the width of the body is 0.006 mm, the thickness of the body is 0.010 mm; in embryos with a length of 31.0 - 40.3 mm, the pancreas has a length of 0.120 mm, while the width of the body is 0.007 mm, the thickness of the body is 0.003 mm; in embryos with a length of 42.0 - 48.5 mm, the pancreas has a length of 0.130 mm, while the width of the body is 0.007 mm, the thickness of the body is 0.004 mm; in embryos with a length of 53.5 - 61.0 mm, the pancreas has a length of 0.130 mm, while the width of the body is 0.006 mm, the thickness of the body is 0.004 mm.

Conclusions. The obtained data indicate that when the length of the fetus increases from 24.7 mm to 61.0 mm, the establishment and development of the body of the pancreas is slow, which may further contribute to the divergent differentiation of the endodermal epithelium of the pancreas into pancreatic exocrinocytes and endocrinocytes of the islets of Langerhans.

Dmytrenko R.R.

PECULIARITIES OF THE IDENTIFICATION OF DIFFERENT TYPES OF TISSUES DURING 3D-RECONSTRUCTION OF HUMAN MICROSCOPIC STRUCTURES

Department of Histology, Cytology and Embryology
Bukovinian State Medical University

Introduction. 3D-reconstruction is an informative, objective method of morphological research, which aims at transforming a series of consecutive sections (histological, macroscopic, anatomical sections, computer tomography (CT), etc.) into a virtual three-dimensional image that can be studied in different projections and measure volume, area, diameters, angles, save, copy, edit. Modern methods of medical diagnostic imaging (CT, MRI, USD) are based on obtaining a 3D image from a series of consecutive "virtual" sections, which, of course, do not involve tissue destruction. Their interpretation requires exhaustive knowledge of their real anatomical structure, especially for objective monitoring of intrauterine development (IUD).

The aim of the study. The aim was to compare the effectiveness of 3D-reconstruction methods of various tissues and microscopic anatomical structures of the human body in the prenatal period of development.

Materials and methods. The research was carried out on 6 series of consecutive histological sections of human embryos aged 4 to 6 weeks of intrauterine development (IUD), 15 specimens of organ complexes of the head, limbs and trunks of human prefetuses aged 7 to 12 weeks of IUD, human fetuses aged 4-9 months of IUD by the method of creating histological (5), as well as histotopographic sections (10) directly from the paraffin block and their digitization, and 14 CT of human fetuses aged from 4 to 9 months of IUD.

Results. According to the technology of obtaining and preparing digital images of a series of consecutive sections, which are loaded into the software for further stages of creating a 3D-reconstruction, we divided the material into three groups: 1) microphotographs of a series of consecutive histological sections; 2) a series of microphotographs of the paraffin block's surface; 3) DICOM CT files of fetuses.

3D-reconstruction of series of consecutive histological sections is effective for the study of embryo specimens, organ complexes of prefetuses and certain microscopic structures of human fetuses due to easy identification of histological structures, however, it is necessary to improve the methods of alignment histological sections both in the correct sequence of the series and in the natural position in two-dimensional coordinate system.

3D-reconstruction of histotopographic sections (images of the surface of the paraffin block) is advisable to use in the study of specimens of organocomplexes of human prefetuses and fetuses, since it allows identification of individual parenchymal and hollow organs and blood vessels, especially if their injection is performed before fixation of the specimen. 3D-reconstruction of CT sections is an effective and highly accurate tool for the study of X-ray contrast anatomical structures in the fetal period of the human development (bone tissue, contrasted blood vessels). The method allows, when using a certain research algorithm, to detect and measure ossification centers and syntopy of blood vessels with bones.

The choice of the technique of 3D-reconstruction of microscopic structures in the prenatal period of human ontogenesis depends on the age period of the material for research, which is caused by certain technological limitations of the specific technique: 3D-reconstruction of a series of histological sections is advisable to use when studying embryos and fetuses, as well as individual structures and organs of the fetuses; 3D-reconstruction of a series of histotopographic sections – for the study of organocomplexes of human prefetuses and fetuses; 3D-reconstruction of CT-slices – for the study of individual structures of human fetuses.

Conclusions. For wide application in morphology, the method of 3D-reconstruction requires technical improvement of the software-hardware complex for reconstruction, namely: automation of segmentation of sections, as well as improvement of methods of polychrome marking of anatomical structures for their clear differentiation.

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Grynkevych A. Yu .
PECULIARITIES OF MORPHOGENESIS OF THE STOMACH AT AN EARLY PERIOD OF THE HUMAN ONTOGENESIS
Department of Histology, Cytology and Embryology
Bukovinian State Medical University

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Introduction. The relevance of the study of the stomach morphogenesis peculiarities at an early period of human ontogenesis is determined by the requests of surgeons, gastroenterologists, and pediatricians. Embryological and anatomical studies of the main stages of organogenesis of the stomach, syntopic changes of this organ during intrauterine development will create a foundation for the development of new and improvement of existing methods of early diagnosis and treatment of organs of the gastrointestinal tract. Morbidity of organs of the human digestive system is one of the most important medical and social problems of our time. That is why the morphological study of the organogenesis of the stomach in relation to age, sex, and individual typological morphological features will allow to identify and justify the critical periods of the organ's development and to provide a scientifically based morphological basis for the improvement of therapeutic measures in practical medicine.

The aim of the study is to find out the peculiarities of morphogenesis, microscopic and variant anatomy of the stomach in the dynamics of the prenatal period of human ontogenesis.

Material and methods. The study was conducted on histological specimens of 12 human embryos aged from 4 to 6 weeks of intrauterine development (embryos 4.0-13.5 mm of parietal-coccygeal length). A complex of morphological research methods (morphometry, microscopy, three-dimensional reconstruction, statistical analysis) is applied.