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МАТЕРІАЛИ ДЕВ'ЯТОЇ ВСЕУКРАЇНСЬКОЇ НАУКОВО-ПРАКТИЧНОЇ КОНФЕРЕНЦІЇ З МІЖНАРОДНОЮ УЧАСТЮ

«ТЕОРІЯ ТА ПРАКТИКА СУЧАСНОЇ МОРФОЛОГІЇ»

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ЗМІСТ

The obtained data showed that within the analyzed sample, three structural types could be distinguished, each with a different manifestation frequency. The glandular type was the most prevalent — in 24 cases (48%), fibrous replacement was observed in 15 cases (30%), while fatty involution occurred in 11 cases (22%). In 40% of specimens with predominant fibrous tissue, inflammatory signs — mostly chronic — were observed, and in 20% of them, papillary apocrine ductal metaplasia was identified.

Conclusions. In the randomized group of women aged 25–40 years, the glandular structural type of the breast predominated (48%), followed by fibrous (30%) and fatty (22%) types. In histological specimens showing fibrous replacement, inflammatory changes were most often detected (in 40% of cases), as well as papillary apocrine metaplasia (in 20% of cases). The ratio of glandular, connective, and adipose components defines the breast structure type and helps to determine the optimal imaging method for women of reproductive age.

THE USE OF ARTIFICIAL INTELLIGENCE IN MEDICAL MORPHOLOGY AND MEDICAL EDUCATION

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Background. Modern science is experiencing a stage of rapid development due to the integration of innovative digital technologies, among which artificial intelligence (AI) occupies a leading position. In morphology, AI opens up new opportunities for analyzing large datasets, automating image analysis, and modeling complex processes. In the field of medical education, the implementation of AI transforms traditional approaches to teaching morphological disciplines and determines new directions for the development of medical training.

Objective. To analyze the possibilities and approaches to the use of AI in medical morphology and in the educational process of histology, cytology, and embryology.

Methods. The study employed comprehensive methods of practical orientation, including analysis, synthesis, induction, and deduction, as well as specialized methods such as component analysis.

Results. The use of AI in morphological science enables the automation of cell and tissue analysis, the identification of subtle patterns, and the creation of large-scale digital databases of histological images. The application of CNNs, U-Net, and Vision Transformers allows automated histological slide analysis, improves morphometric accuracy, and ensures standardized evaluation of morphological changes. In the educational process, the integration of digital platforms, virtual microscopes and simulators (Labster, Anatomage, Organon, QuPath, PathPresenter), VR/AR technologies, and Explainable AI provides interactivity, personalization, and deep immersion of students into the structure of tissues and organs, fostering the development of critical thinking and

analytical skills.

Conclusion. The use of AI in morphology and histology teaching is not only a technological trend but also a strategic direction in the development of medicine and education. The integration of digital platforms, virtual laboratories, and VR/AR systems makes learning interactive, personalized, and practice-oriented. The combination of traditional teaching methods with AI enhances motivation, cultivates critical thinking, and prepares future physicians for work in the era of digital medicine.

THE PECUARITIES AND FORMATION OF PHYSIOLOGICAL ATRESIA IN EMBRYOGENESIS

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Introduction. The process of physiological atresia or fetal occlusion is inherent in the digestive, respiratory, genitourinary and biliary systems, as well as in the natural openings of the head - the eye slit, external nasal openings, external and internal auditory canals. This phenomenon is a natural process in the development of the organism in the early stages of prenatal human ontogenesis. Tubular organs and openings temporarily lose their lumen, and then recanalization occurs - restoration of the cavity of the organ, duct, or opening. The disappearance of epithelial occlusion has a close correlation with the formation of villi and restructuring of the epithelial layer, at this time mesenchyme tissue with vessels penetrates the epithelium from the side of the intestinal wall.

The aim of the study. To find out the peculiarities of the syntopy and trace the chronological changes morphometric parameters of the physiological atresia of human ontogenesis.

Research material and methods. The study was conducted on: 18embryos 4.0-14.0 mm PCL; 20 prenatal 14.0-68.0 mm PCL; 12 newborns. Series of histological and topographic-anatomical sections, morphometric, microscopic, histological, reconstruction and statistical methods were used for the research.

Results. Embryos 6.5-6.8 mm PCL below the tracheo-pulmonary rudiment have no lumen of the esophagus due to the presence of an epithelial "plug". Cranially and caudal to it, the lumen of the esophagus is lined with a single-layered, 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, intensive processes of interaction between the rudiments of the esophagus, trachea, lungs, and heart take place. The rudiments of the esophagus increase in size, protrusions of the organ are formed in both the frontal and sagittal planes. The process of formation of the mucous membrane of the esophagus begins, as well as the fusion of the rudiments of the diaphragm, close topographic-anatomical relationships with the vagus nerves are established. In embryos with a length of 5.0-.5 mm PCL lumen of the beginning of the esophagus due to intensive