
ОГЛЯДИ ЛІТЕРАТУРИ

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Bilash S. M., Pronina O. M., Koptev M. M.

COMPREHENSIVE MORPHOLOGICAL STUDIES AS AN INTERGAL PART OF MODERN MEDICAL SCIENCE. LITERATURE REVIEW

Ukrainian Medical Stomatological Academy (Poltava)

mn_koptev@ukr.net

Publication relation to planned scientific research projects. The paper has been written within the research scientific study, carried out at the Department of Clinical Anatomy and Operative Surgery of the Higher State Educational Establishment of Ukraine "Ukrainian Medical Stomatological Academy", entitled "Determination of mechanisms of morphogenesis of organs, tissues and vascular-nerve structures of the body in normal condition, during experiment and under the influence of external factors. Morphoexperimental grounding of the efficacy of new surgical suture material used in clinical practice". State registration number: 0113U00124.

Introduction. Present-day anatomical studies synthesize data of related disciplines: Histology, Cytology, Embryology, Biochemistry, Comparative Anatomy, Physiology, etc. [1]. Nowadays, the comprehensive research of the current morphological problems includes not only the routine morphological methods of investigation. Modern methodological approaches are widely used in anatomical studies, which make it possible to examine morphological problem extensively.

The aim. The aim of the study was to analyze methodological approaches of Ukrainian scientists applied in current comprehensive morphological investigations.

Object and methods. The bibliosemantic method has been used in the process of investigation. The study of methodological approaches regarding the present-day morphological investigations performed by Ukrainian scientists was carried out.

Results. Considering the literary data and scientific studies performed by the staff of the Department of Clinical Anatomy and Operative Surgery (Ukrainian Medical Stomatological Academy), it has been determined that the modern scientists widely implement comprehensive investigations for solving the topical morphological problems. The scientific achievements of the Department of Clinical Anatomy and Operative Surgery, which has a long glorious history, have not only theoretical, but also important practical significance. The scientists of the Department conducted profound studies of the blood supply and innervation system of the palate, a significant contribution was made to the study of the face innervation, the comprehensive research on the paranasal sinuses remains topical to date. Among the present-day scientific studies special attention should be paid to the researches of Professor Olena Pronina regarding the creation of new surgical sutures and improvement of existing ones [2]. The study of the morpho-functional state of various organs and systems under normal conditions and on the background of the various unfavorable factors effect, after experimental surgical interventions with the use of the surgical ab-

sorbable biological threads, made it possible to solve a number of topical problems for medical practice and was provided with comprehensive investigations which combined morphological methods with clinical and experimental ones. In particular, the study of morpho-functional changes in the body caused by stressful conditions was carried out after simulation of experimental models for the acute and chronic stress [3-6].

Comprehensive investigations are carried out by Ukrainian scientists to solve various important morphological problems. Thus, osteological issues, namely, study of the mandibular morphogenesis features under exposure to various adverse factors, the growth and structure of long tubular bones in case of hydroxyapatite implantation, etc., are investigated by Ukrainian scientists providing comprehensive studies, which include osteometric, histomorphometric, biomechanical, biochemical methods, X-ray diffraction analysis, microhardness testing [7-11].

The comprehensive studies are performed by morphologists while investigating other systems and organs, in particular, major salivary glands. So, the methods of serial histological section microscopy, histochemistry, morphometry, graphic and plastic reconstruction, macro- and microphotography were used to determine the features of human parotid gland morphogenesis in the pre-fetal period of prenatal ontogenesis [12]. The thesis regarding structural features specification of major salivary glands in rats under normal conditions and in case of platyphylline and proserin administration included a number of research methods: histological – to study the structural changes in lobules of glands at the light-optical level; histochemical – for detection of ratio changes in proteins and glycosaminoglycans in composition of secretion granules of major salivary glands in rats of the control group and in case of platifillin and proserin administration; the electron microscopy method – to determine the ultrastructural features of secretory epitheliocytes in the terminal parts and ducts of the major salivary glands in various functional states; morphometric – for evaluation of the quantitative parameters and sizes of the secretory epithelial salivary gland complexes and diameters of the blood vessels in the hemomicrocirculatory bed under normal conditions and after platyphylline and proserin administration; karyometric – to identify the nuclear classes of epithelial cells in the terminal parts and excretory ducts of the parotid glands under normal conditions and in case of their stimulation; variational statistical methods – for objective assessment of the data obtained and specification of the main features of reactive changes in the major salivary glands [13].

The morphofunctional reorganization of gastric tissues in rats after removal of the parotid and mandibular glands was also studied using a complex of adequate morphological investigation methods, namely, macroscopic, X-ray angiographic, injection, microscopy of histological sections, morphometric. The obtained data processing and evaluation of their reliability were carried out applying mathematical and statistical methods. Thus, the spatial organization of the stomach bloodstream was studied using contrast X-ray angiography; aqueous suspension of finely dispersed red lead was used to fill the arterial bed, X-ray was performed without intensifying screen in the lateral projection with Koch & Sterzel apparatus. The quantitative evaluation of the vascular spatial organization and statistical processing of the data were carried out further [14,15].

The study of structural peculiarities and sintopy of the laryngeal part of the pharynx in men before and after laryngectomy, which was conducted in patients of the Vinnytsia Regional Clinical Oncology Dispensary at the department of head and neck tumors presented the example of a comprehensive research which was relevant not only for morphology, but also for clinical medicine. Before and after laryngectomy all patients underwent multislice computed tomography with oral contrast enhancement using TOSHIBA ASTETION SUPER 4 computer tomograph. Multislice computed tomography is a novel and highly informative method for laryngeal cancer radiodiagnostics, which enable to diagnose diseases accurately and assess the incidence of tumor involvement in larynx and metastasis in the cervical lymph nodes. Morphometric parameters for the contrasted pharynx of the pharynx and cervical esophagus were obtained using the Vitrea 2.0 computer program. Anthropometric, radiographic and morphometric methods were combined with histological and immunohistochemical ones [16].

The comprehensive researches also allowed determining typical and variant forms of the rectum in different periods of perinatal ontogenesis, made it possible to assess extensively the correlation of the rectum organometric parameters with pelvic sizes and parietal calcaneal length. The methods applied for topografoanatomical sectioning, micro/macropreparation, radiographic examination and morphometry significantly supplemented modern concepts regarding the mechanisms of morphogenesis and ontogenesis of rectum in fetuses and newborns without external signs of anatomic disorders in the gastrointestinal tract structure, and also made it possible to determine the morphofunctional correlation between structural elements of the vascular system and tissues of the rectum. The method of multifactorial regression analysis of rectum parameters enabled to substantiate the stages of its perinatal development [17,18].

Structural features of the pancreas in the normal conditions and under the opioid effect were also studied in the experiment using a set of research methods, including injecting, histological, histochemical, electron microscopy and morphometric [19].

When studying the morphological characteristics of the diffuse neuroendocrine system of the small intestine with high acute intestinal obstruction and its correction in the experiment, the author of other research has combined morphological methods (macroscopic,

microscopic, electron microscopic, morphometric) with biochemical ones, which made it possible to determine the functional changes in the organisms of experimental animals in detail [20].

Biochemical investigations are particularly important for morphological studies of morpho-functional features of various organs and systems and their changes in response to unfavorable endo- or exogenous effects. The study regarding morphological structure of solitary kidney in case of hydronephrosis and its correction included the following research methods: experimental, histological, roentgenologic, morphometric and biochemical. The experimental method was necessary for creating ureterohydronephrosis model and performing various methods of its surgical correction; the general clinical laboratory tests evaluated blood biochemical changes (creatinine, urea) while applying various methods of ureteroplasty in case of ureterohydronephrosis, radiography was used for the assessment of urodynamics and reconstruction of the pelvicalyceal system in dynamics, histological methods were applied for investigation of the anastomoses regeneration patterns in the areas of urinary system and small intestine epithelium after urinal passage restoration, morphometric – for more detailed study of kidney structures [21].

The combination of classical morphological research methods with biochemical ones also helped to detect the morphological basis of oral mucosa remodeling in case of obstructive jaundice and under corrective conditions [22], morphofunctional changes in the liver and kidneys under conditions of combined trauma [23], myocardial remodeling peculiarities in animals of different genders under conditions of sodium nitrite effect on the organism [24].

The morphological substantiation of new treatment methods for superficial bladder cancer also included the general clinical, laboratory and instrumental methods in addition to classical morphological methods (histological, electron microscopic and morphometric) [25].

Macro-microscopic anatomy and dynamics of the topography formation of bladder and urethral segment in the early period of human ontogeny, the features of its components development and relation to congenital malformation development, as well as dependence of topography and shape of bladder and urethral segment on the formation of adjacent organs and structures have been studied by Chernivtsi morphologists applying anthropometric, macromicroscopic, histological, morphometric, radiographic methods and method for arterial blood vessels injecting followed by dissection under microscopic control and 3-D reconstruction [26].

Nowadays, computer reconstruction has become widely used in scientific morphological investigations. In particular, a complex study involving both classical morphological methods and new ones, namely, the method of graphic reconstruction, the method of plastic reconstruction, three-dimensional computer reconstruction, made it possible to study the peculiarities of morphogenesis and formation of the urethra topography in the intrauterine period of human development [27].

The combination of routine morphological investigation methods with modern (X-ray angiography, ultrasound scanning, color ultrasound angiography, electron microscopy) enabled to determine morpho-functional changes in scrotal organs in men of different ages under

the normal conditions and in case of hemocirculation disorders in detail [28].

The comprehensive study which included preparation of topographic anatomical sections, histological, morphometric, macroscopic, ultrasound and X-ray methods, graphic reconstruction as well as magnetic resonance imaging has revealed morphogenesis and syntopy features of organs and structures of the superior mediastinum in the perinatal period of human ontogenesis [29].

Lectin histochemical studies can be considered as another more prospective approach in modern morphological science for investigation of organ morphogenesis processes. Lectins belonging to proteins or non-immune glycoprotein class have been detected in most living organisms, including animals and humans since P.H. Stillmark description. Lectins and lectin-like components perform various physiological functions and can be used in clinical practice as histochemical reagents due to their properties. For example, the investigations of structural and functional changes in rat liver under conditions of autoimmune damage and radon therapy

used a set of modern research methods: histological, immunohistochemical, electron microscopic, and lectin histochemical [30].

The analysis of the literary data has determined that comprehensive researches enable modern scientists to solve topical morphological problems. However, practical medicine, especially surgical practice, often needs morphological investigations to be carried out in addition to clinical studies, which is presented in scientific researches of our university staff [31-33].

Thus, the present-day scientific morphological researches are based on comprehensive studies considered as the future of medical science.

Conclusion. Nowadays, Normal Anatomy is an integrative science which synthesizes the data of related disciplines: Histology, Cytology, Embryology, Biochemistry, Comparative Anatomy, Physiology, etc. Effective solution of the current morphological problems is possible due to comprehensive studies and implementation of new investigation methods which provide profound examination and analysis of the studied issues.

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ЗНАЧЕННЯ КОМПЛЕКСНИХ МОРФОЛОГІЧНИХ ДОСЛІДЖЕНЬ ДЛЯ СУЧАСНОЇ МЕДИЧНОЇ НАУКИ. ОГЛЯД ЛІТЕРАТУРИ

Білаш С. М., Проніна О. М., Коптев М. М.

Резюме. Сучасна анатомія синтезує дані суміжних і споріднених із нею дисциплін: гістології, цитології, ембріології, біохімії, порівняльної анатомії, фізіології тощо. Тому на сьогодні глибоке вивчення актуальних проблем морфології не можливе лише за допомогою рутинних морфологічних методів дослідження. Сучасні науковці-анатоми проводять комплексні дослідження, які дозволяють усебічно розглянути морфологічну проблему, яка ними вивчається. Метою роботи стало проаналізувати методологічні підходи українських вчених при проведенні сучасних морфологічних досліджень. Аналіз літературних даних показав що саме комплексні дослідження нині використовуються як у дослідженнях структурно-функціональних характеристик різних органів і систем, так і в науково-експериментальних морфологічних дослідженнях. Ефективне вирішення актуальних завдань морфології у наш час можливе лише завдяки проведенню комплексних досліджень, які дозволяють усебічно розглянути проблему, що вивчається.

Ключові слова: морфологія, комплексне дослідження, методи морфологічного дослідження.

ЗНАЧЕНИЕ КОМПЛЕКСНЫХ МОРФОЛОГИЧЕСКИХ ИССЛЕДОВАНИЙ ДЛЯ СОВРЕМЕННОЙ МЕДИЦИНСКОЙ НАУКИ. ОБЗОР ЛИТЕРАТУРЫ

Билаш С. М., Пронина Е. Н., Коптев М. Н.

Резюме. Современная анатомия синтезирует данные смежных и родственных с ней дисциплин: гистологии, цитологии, эмбриологии, биохимии, сравнительной анатомии, физиологии и др. Поэтому сегодня глубокое изучение актуальных проблем морфологии невозможно только с помощью рутинных морфологических методов исследования. Современные ученые-анатомы проводят комплексные исследования, которые позволяют всесторонне рассмотреть изучаемую морфологическую проблему. Целью работы стало проанализировать методологические подходы украинских ученых при проведении современных морфологических исследований. Анализ литературных данных показал, что именно комплексные исследования в настоящее время используются как в исследованиях структурно-функциональных характеристик различных органов и систем, так и в научно-экспериментальных морфологических исследованиях. Эффективное решение актуальных задач морфологии в наше время возможно лишь благодаря проведению комплексных исследований, которые позволяют всесторонне рассмотреть изучаемую проблему.

Ключевые слова: морфология, комплексное исследование, методы морфологического исследования.

COMPREHENSIVE MORPHOLOGICAL STUDIES AS AN INTERGAL PART OF MODERN MEDICAL SCIENCE. LITERATURE REVIEW

Bilash S. M., Pronina O. M., Koptev M. M.

Abstract. Current anatomical studies synthesize data of related disciplines: Histology, Cytology, Embryology, Biochemistry, Comparative Anatomy, Physiology, etc. Nowadays, a comprehensive study of the current morphological problems requires new investigation methods and approaches. Modern scientists-anatomists carry out comprehensive studies applying new methods, which provide profound evaluation of the morphological problems. The aim: Methodological approaches of Ukrainian scientists while conducting modern comprehensive morphological studies have been analysed. Analysis of the literary data has determined, that the comprehensive investigations are currently used both in the studies on structural-functional characteristics of various organs and systems, and in scientific experimental morphological researches. Modern scientific morphological studies are mainly based on the comprehensive investigations, which are considered as the future of the medical science. Nowadays, the effective solution of current morphological problems is possible while carrying out comprehensive investigations, which provide extensive study of the problem.

Key words: morphology, comprehensive research, methods of morphological investigation.

*Рецензент – проф. Єрошенко Г. А.
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