



Міністерство освіти і науки України
Міністерство охорони здоров'я України
Національна академія медичних наук України
Всеукраїнська громадська організація «Наукове товариство
анатомів, гістологів, ембріологів та топографоанатомів України»
Асоціація патологоанатомів України
Дніпровський державний медичний університет

МАТЕРІАЛИ ВОСЬМОЇ ВСЕУКРАЇНСЬКОЇ
НАУКОВО-ПРАКТИЧНОЇ КОНФЕРЕНЦІЇ
З МІЖНАРОДНОЮ УЧАСТЮ

«ТЕОРІЯ ТА ПРАКТИКА
СУЧАСНОЇ МОРФОЛОГІЇ»

ЗБІРНИК НАУКОВИХ РОБІТ

6-8 Листопада 2024 року

м. Дніпро, Україна

УДК 61(063)

Т93 Теорія та практика сучасної морфології : матеріали Восьмої Всеукраїнської науково-практичної конференції з міжнародною участю (м. Дніпро, 6-8 листопада 2024 року) / Дніпровський державний медичний університет. – Дніпро: ДДМУ, 2024. – 181 с.

Збірник містить матеріали Восьмої Всеукраїнської науково-практичної конференції з міжнародною участю «Теорія та практика сучасної морфології» (м. Дніпро, 6-8 листопада 2024 року), а також реферати наукових статей, опублікованих в журналі «Морфологія» (2024, Том. 18, № 3), який входить до Переліку наукових фахових видань України (категорія Б).

На конференції розглянуті методологія та базові принципи морфологічних досліджень, фундаментальні питання нормальної анатомії та гістології, проведений морфологічний аналіз патологічних процесів, питання ембріології та клітинної біології в нормі та при патології, сучасні морфологічні дослідження в експерименті та клініці, морфологічні дослідження у фармакології та клінічній медицині, питання з історії розвитку вітчизняної та світової морфології, а також оптимізації навчальної діяльності кафедр морфологічного профілю. Значну увагу на конференції присвячено новітнім морфологічним методам і науковим технологіям.

Матеріали конференції можуть бути корисними для широкого кола науковців-морфологів, науково-педагогічних працівників закладів вищої медичної освіти, співробітників науково-дослідних установ, аспірантів, слухачів курсів підвищення кваліфікації, практичних лікарів.

Редколегія не завжди поділяє погляди авторів статей. Автори опублікованих матеріалів несуть повну відповідальність за підбір, точність наведених фактів, цитат, отриманих даних, ілюстрацій, висновків та інших відомостей. Матеріали подаються в авторській редакції мовою оригіналу.

Відповідальний за випуск – Твердохліб І.В.

© ДДМУ, автори тез доповідей, 2024

6-8 листопада 2024 року
Дніпро, Україна

Roman Sukhonosov, Anatoly Tereshchenko, Mariia Halycha MORPHO-HISTOLOGICAL FEATURES OF THE DEVELOPMENT OF THE HUMAN FRONTAL FONTANEL DURING THE EMBRYONIC AND EARLY FETAL PERIODS	144
І.А. Танчин, Л.Р. Матешук-Вацеба, М.В. Подолук ЕНДОВАСКУЛЯРНА ЛАЗЕРНА ТЕРАПІЯ ОЧНОГО ЯБЛУКА ПРИ ЕКСПЕРИМЕНТАЛЬНОМУ ВЕНОЗНОМУ ЗАСТОЮ	148
А.Т. Телев'як, П.Р. Сельський, І.І. Боймиструк, О.М. Герман, В.В. Бурій, Р.О. Сельський ЗМІНИ АНГІОАРХІТЕКТОНІКИ АРТЕРІАЛЬНОГО РУСЛА ПРИ ГОСТРІЙ ЕКСПЕРИМЕНТАЛЬНІЙ ШЕМІЇ-РЕПЕРФУЗІЇ	149
Т.П. Теслик, О.С. Ярмоленко, С.М. Дмитрук ВПЛИВ ХРОНІЧНОЇ ГІПЕРГЛІКЕМІЇ НА БІОЕЛЕМЕНТНИЙ СКЛАД ТКАНИНИ ЛЕГЕНЬ ЩУРІВ У ЕКСПЕРИМЕНТІ	151
Н.О. Ткаченко, О.С. Проценко, О.М. Мазний, А.В. Кісь ЕПІДЕМІОЛОГІЧНІ ТА МОРФОЛОГІЧНІ ОСОБЛИВОСТІ ГОСТРОГО ІНФАРКТУ МІОКАРДА	153
Р.І. Фаліон, О.Р. Малик, Ю.І. Бекєтова, Р.С. Пшик, І.С. Дроник МОРФОЛОГІЯ ЗМІН ОТОЧУЮЧОЇ ШЕМІЧНИЙ ІНФАРКТ ТКАНИНИ ГОЛОВНОГО МОЗКУ	154
Ю.В. Федоренко, В.І. Ковалишин ОСОБЛИВОСТІ УЛЬТРАСТРУКТУРИ ТКАНИНИ ПЕЧІНКИ ЗА УМОВ ВПЛИВУ СВИНЦЮ І ЗАСТОСУВАННЯ ПЕКТИНУ	156
Г.С. Фесюнова, Н.І. Молчанюк, Г.Б. Абрамова, Ю.С. Волкова ХАРАКТЕР УЛЬТРАСТРУКТУРНИХ ЗМІН РОГІВКИ ОКА КРОЛІВ ПІСЛЯ ІНСТИЛЯЦІЙ ТА СУБТЕНОНОВИХ ІН'ЄКЦІЙ ЛІПОСОМАЛЬНОЇ ФОРМИ КВЕРЦЕТИНУ НА ФОНІ МОДЕЛЬОВАНОГО КИСЛОТНОГО ОПІКУ РОГІВКИ ІІ-ГО СТУПЕНЯ ТЯЖКОСТІ	157
Д.С. Хапченкова, С.О. Дубина, С.В. Бондаренко ВРОДЖЕНІ ВАДИ ЯК ФАКТОРИ ВИЗНАЧЕННЯ ЖИТТЄВОГО ПРОГНОЗУ	158
Л.І. Хламанова, Л.М. Яременко, О.М. Грабовий ДЕЯКІ ШЛЯХИ УДОСКОНАЛЕННЯ ПРОБЛЕМНО-ОРІЄНТОВАНОЇ ПІДГОТОВКИ СТУДЕНТІВ ПОЧАТКОВИХ КУРСІВ МЕДИЧНОГО УНІВЕРСИТЕТУ: НАШІ ПЕДАГОГІЧНИЙ ДОСВІД	160
О.В. Цигикало, К.А. Владиченко, В.В. Проняєв МОРФОЛОГІЯ ПРЕНАТАЛЬНОГО АНГІОГЕНЕЗУ СЕЧОВОЇ СИСТЕМИ ЛЮДИНИ ТА СВИНІ СВІЙСЬКОЇ (SUS DOMESTICA)	162
О.В. Цигикало, О.Д. Бурюк ОСОБЛИВОСТІ МОРФОГЕНЕЗУ ЯЗИКА ЛЮДИНИ	164

Given the TMJ's complexity and the diverse causes of TMD, extensive research is necessary to enhance the understanding of these disorders and improve methods of diagnosis and treatment.

TMJ is one of the most intricate joints in the human body, facilitating both hinge-like and sliding movements. It plays a crucial role in various functions, such as eating and speaking. Its anatomy, which includes muscles, bones, discs, and ligaments, makes it vulnerable to different dysfunctions. When the TMJ is not functioning properly, it can hinder essential activities like chewing and talking, resulting in significant discomfort.

TMD encompass many issues affecting the muscles, joints, and related structures. These disorders frequently present as chronic pain, jaw locking, and headaches, which can significantly disrupt daily activities. Despite how common TMD is, its underlying causes remain debated. Further research is essential to investigate not only mechanical factors like occlusion but also psychological and social influences (Engel, 1977; de Kanter et al., 2018).

Investigating the development of temporomandibular joint and its related disorders is essential because of their significant effect on vital human functions. Although the biomechanical properties of the TMJ are well established, the intricate interplay of factors contributing to TMD remains a topic of debate. Continued research is vital for improving diagnostic methods and treatment strategies, especially as the influence of psychosocial factors on TMD becomes increasingly recognized.

MORPHO-HISTOLOGICAL FEATURES OF THE DEVELOPMENT OF THE HUMAN FRONTAL FONTANEL DURING THE EMBRYONIC AND EARLY FETAL PERIODS

Roman Sukhonosov, Anatoly Tereshchenko, Mariia Halycha

Kharkiv National Medical University
Kharkiv, Ukraine

Relevance: The process of fontanel development is closely related to the development of the brain and the skull as a whole. Fontanels are a characteristic feature of a child's skull. The diagnostic significance of fontanels, particularly the frontal fontanel, is well known in cases of rickets. In such cases, the shape and size of the frontal fontanel indicate not only the severity of the disease but also reflect the course of the illness and the effectiveness of treatment. The condition of the frontal fontanel is crucial for diagnosing various organic brain and meningeal lesions. The presence of sutures and fontanels during fetal life is also important during childbirth, as the reduction of the fetal head size is possible due to the mobility of the skull bones in the area of the sutures and fontanels.

Objective of the study: To examine the morpho-histological features of the structure and changes in the frontal fontanel during the embryonic period.

Materials and methods: *Theoretical:* review and analysis of scientific and methodological literature; *Practical:* personal research.

Results and Conclusions: In a human embryo at 4-5 weeks of development, during the primary formation of tissues, organs, and systems, the skull bones consist of mesenchyme

6-8 листопада 2024 року

Дніпро, Україна

surrounding the brain vesicles. Unlike the dorsal perimedullary mesenchyme, the mesenchyme surrounding the anterior wall of the three brain vesicles is more significantly developed. The ventral perimedullary mesenchyme is also well developed in the region of the *rhombencephalon*, from where it extends to the anterior wall of the spinal cord. The dorsal wall of the brain vesicles is covered with a dense network of mesenchyme, consisting of oval and triangular cells. In both the ventral and dorsal perimedullary mesenchyme, two layers can be distinguished: 1) the inner loose layer, which is adjacent to the brain vesicles and rich in blood vessels, and 2) the outer dense layer, composed of more tightly packed mesenchymal cells. In the layer of ventral perimedullary mesenchyme, the notochord and auditory vesicle are located. The inner layer of the ventral perimedullary mesenchyme, which contains a large number of blood vessels, fills the spaces between the walls of the *prosencephalon*, *mesencephalon*, and *rhombencephalon*. In the area of the hindbrain vesicle, folds of the inner layer of mesenchyme penetrate together with the dorsal wall of the brain vesicle, forming the choroid plexus.

By the 8th week, at the end of embryonic development, the cartilaginous base of the skull begins to form in the human embryo. Simultaneously, the histological differentiation of the pia mater begins, which is formed by the condensation of the inner layer of perimedullary mesenchyme and the formation of a large number of blood vessels within it.

In the area of the skull vault, three layers of mesenchyme can be distinguished:

1) The outer layer (ectocranium) consists of loosely arranged round and oval mesenchymal cells.

2) The middle layer of the skull vault contains more densely packed mesenchymal cells than in the outer layer. It is highly vascularized, with blood vessels resembling sinusoidal capillaries. The lumens of the vessels contain many blood cells, including nucleated erythrocytes. Many blood cells are also freely located between the mesenchymal cells.

3) The inner layer of the skull vault (endocranium) is the forming *dura mater*. It consists of tightly packed, round and oval mesenchymal cells that are more properly oriented than in the middle layer. A fine network of argyrophilic fibers is found between the cells. As in the middle layer, a dense network of blood capillaries is present, containing a large number of blood elements. At this stage, the *pia mater* is well developed and closely adheres to the brain tissue. In certain areas, it penetrates together with the thin wall of the brain vesicle into their cavities, forming choroid plexuses. These plexuses consist primarily of oval mesenchymal cells and a dense network of blood vessels filled with blood. The presence of poorly differentiated blood cells suggests that the choroid plexuses of the brain ventricles are local centers of hematopoiesis.

There is a rather wide space between the pia mater and the inner layer of the skull vault.

At this stage of development, the area of the *fonticulus anterior* is histologically well defined. In this region, the skull vault appears macroscopically thinner and more transparent than in other areas. Histological examination shows that in the area of the frontal fontanel, the band of mesenchyme, which is a continuation of the *endo-*, *meso-*, and *ectocranium* of the skull vault, is also divided into three layers:

1) The outer layer consists of round and oval-shaped mesenchymal cells connected by processes. A fine network of argyrophilic fibers is distributed between these randomly arranged cells. The second layer contains loosely arranged oval cells, with loosely distributed individual

argyrophilic fibers. Deeper in the third layer, which corresponds to the endocranium of the skull vault, the cellular elements and fibers are more densely packed. A dense network of blood vessels is present in this layer, with walls formed by three to four endothelial cells. The lumen of these vessels typically contains many erythrocytes, often including nucleated erythrocytes. Numerous blood cells are also found in the surrounding tissue. In the area of the fontanel, these layers are more densely packed and not as clearly separated from each other as in other regions of the skull vault.

2) The middle layer of the fontanel differs from the middle layer of the skull vault in that the dense vascular network, characteristic of ossifying regions of the skull capsule, is entirely absent.

3) Along the sagittal line, the inner layer is closely associated with the developing falx cerebri. At this stage of development, the falx cerebri consists of round, oval, and irregularly triangular-shaped mesenchymal cells, interconnected by their processes. On some frontal sections, the falx cerebri is seen to be formed by the pia mater, which penetrates between the forming cerebral hemispheres and extends to the base of the skull. In the upper part of the falx cerebri, the cellular elements form a loose network with many erythrocytes in its loops. The developing superior longitudinal sinus of the dura mater is a fairly large vessel filled with blood, with a wall consisting of a single layer of endothelial cells.

At the beginning of the fetal period, in human embryos at 9–12 weeks of development, the cartilaginous base of the skull becomes fused with the dura mater, which consists of oval cells and thin bundles of collagen fibers. Inside, the well-defined pia mater, composed of round cells, is already formed. At the same time, ossification of the connective tissue skull capsule begins.

In the roof of the skull, as well as at its base, three distinct layers are clearly visible: *ectocranium*, *mesocranium*, and *endocranium*.

1) The outer layer consists of fairly densely packed oval cells, between which, using the Van Gieson staining method, fine collagen fibers are visible.

2) The middle layer is made up of oval mesenchymal cells, more loosely arranged than in the outer layer. This layer contains many blood vessels, and in certain areas corresponding to ossification points, bone tissue formation begins.

3) The inner layer is the forming dura mater. Its *endocranium* starts to differentiate into the arachnoid mater and is characterized by a more orderly arrangement of cellular elements.

In the region of the frontal fontanel, as in other areas of the skull vault, three main layers can be distinguished:

1) The outer layer contains round and oval-shaped mesenchymal cells arranged along the width of the fontanel.

2) The middle layer has more loosely arranged cells than the outer layer and is characterized by more elongated cells. Among the spindle-shaped cells, there are also oval-shaped cells.

3) The inner layer has cells similar in shape to those in the middle layer, but they are arranged along the length of the fontanel. Thus, in frontal sections, this layer appears to be made up of round cells. This layer of the fontanel extends directly into the falx cerebri, with cells from the upper layers also growing into it.

Thus, it can be said that the falx cerebri in human embryos at the 3rd month of embryonic

development is formed by the pia mater and the tissue elements of the frontal fontanelle that grow into it. Among the mesenchymal cells in the fontanelle at this stage of development, fibroblasts and histiocytes are already present. In all layers of the fontanelle, especially in the inner layer, many blood cells are distributed. The intercellular substance in the fontanelle tissue of three-month-old fetuses is more significantly developed. Among the argyrophilic fibers, thin collagen fibrils can be found. In fetuses at three months of embryonic development, the primordial skull is already formed. The base of the skull is represented by hyaline cartilage, with which the dura mater is tightly fused from the inside. The *dura mater* consists of closely packed oval cells and dense collagen fibers, between which blood vessels lie. The *pia mater* is completely separated from the dura mater.

In the area of the cranial vault, bone tissue continues to develop in the *mesocranium*. The cranial bones appear as thin round bone plates. The center of the bone is denser, while toward the periphery it becomes thinner. The edges of the bone have the appearance of separate bone spicules that radiate outward from the denser center, separated by areas of connective tissue rich in cellular elements, primarily fibroblasts. Around the bone islands, osteoblasts and osteoclasts are located. In the area where bone tissue is forming, there are a large number of blood vessels.

Externally, periosteum forms on the developing bone. It consists of tightly packed thin collagen fibers and spindle-shaped mesenchymal cells lying between them. From the inside, the dura mater, which is closely attached to the ossifying skull capsule, consists of dense collagen fibers and spindle-shaped cells.

The pia mater enters the cerebral sulci, and at the crests of the gyri, it tightly adheres to the substance of the brain.

The frontal fontanelle in three-month-old human fetuses, like the entire cranial vault, shows further histological differentiation. However, the development of the cranial vault in the area of the fontanelle proceeds differently. Here, there is no separation of distinct layers.

The *endocranium*, *mesocranium*, and *ectocranium* in the area of the fontanelle, which are well differentiated in two-month-old embryos, merge and form a solid connective tissue membrane composed of closely packed oval cells and collagen fibers that run in a specific direction. In the outer layer, the cells and fibers are correctly oriented along the width of the fontanelle. Deeper, the cells and fibers are arranged chaotically. In the inner layer of the fontanelle, the collagen fibers and the cells lying between them are oriented in an anterior-posterior direction. The cells and fibers of the fontanelle extend into the substance of the falx cerebri. The cellular elements of the fontanelle at this stage of development are represented by fibroblasts and fibrocytes, among which histiocytes and a large number of blood cells are present. Between the cells, a thin network of argyrophilic fibers is distributed, with relatively thick bundles of collagen fibrils located against this background. Elastic fibers are not found in the fontanelle at this stage of development.

Despite existing research in medical science, many issues concerning the fontanelles in infants remain controversial and insufficiently substantiated.

ЕНДОВАСКУЛЯРНА ЛАЗЕРНА ТЕРАПІЯ ОЧНОГО ЯБЛУКА ПРИ ЕКСПЕРИМЕНТАЛЬНОМУ ВЕНОЗНОМУ ЗАСТОЮ

6-8 листопада 2024 року
Дніпро, Україна