



Reshetilova N.B., Kulish N.M.*

THE MORPHOLOGY OF THE VENTRICLES IN THE 2ND MONTH OF PRENATAL PERIOD OF HUMAN ONTOGENESIS

M.G. Turkevich Human Anatomy Department

*Internal Medicine, Physical Rehabilitation, Sports Medicine and Physical Training**

Higher State Educational Establishment of Ukraine

"Bukovinian State Medical University"

It is an undeniable fact that the pathological changes in the ventricular system of the brain occur frequently during the prenatal period and it objectivises the urgency and necessity of our investigation.

Studies were carried out on 90 human embryos, fetuses and newborns specimens by means of morphological methods.

According to our studies, the formation of brain structures, especially fissures, develop very intensively from 4th to 12th weeks of the intrauterine period of ontogenesis. In the 8th week of development, when a longitudinal groove is already formed, a matrix, intermediate and marginal layers are distinguished in the wall of the cerebral vesicle. In the future location of the corpus callosum, the elements of the commissural plate are clearly distinguished as a rounded cell groups. The shape of the third ventricle approaches the rhombus, but it extends sharply in length in comparison with the growth in width.

The length of the third ventricle is 3.7 ± 0.65 mm, and the width is 0.59 ± 0.10 mm. At the end of the second month of development, protrusions appear on the inner surface of the intensively growing anterior cerebral blisters, from which later the vascular plexus of the lateral and third ventricles develops. At the 9th week of development, the subcortical nodes are partially formed and surrounded from the sides by small convex hemispheres. The caudate nucleus appears in the cavity of the lateral ventricle, and the lenticular in the form of a small accumulation of cells is formed on the side of the cavity of the ventricle.

Hypothalamus cells develop rapidly. So, the congestion in the anterior part is the paraventricular nucleus. From the ventral and ventrolateral side there are cellular strands directed toward the laying of the supraoptic core. Cellular elements are densely and unevenly distributed. In the posterior part there is a congestion of irregular rounded form - a bookmark of mamillary bodies.

The complexity of the shape of the lateral ventricle at this stage of development is due to the formation of a collateral groove that separates the hippocampal gyrus from the lower temporal lobes and the presence of a lateral that separates the temporal region.

The intensity of development of the cavities and structures of the brain in the early period of ontogenesis is very high. On the 8-9th week, the ventricles of the anterior cerebral vesicle (lateral and third) and the nuclei in their walls begin to form.

Rusnak V.F., Boichuk O.M.

PHARYNGEAL MORFOGENESIS FEATURES IN HUMAN EMBRYONIC ONTOGENESIS

M.G. Turkevich Human Anatomy Department

Higher State Educational Establishment of Ukraine

"Bukovinian State Medical University"

During the fifth week of the ontogenesis embryonic period (embryos with 6.0 - 8.0 mm of crown-rump length CRL), the pharyngeal anlage is an enlarged front part of the large intestine which is 133 - 136 microns long. The pharynx in this period of intrauterine development is represented by a wide low tube, heavily flattened in the dorsoventral direction. The oral groove, which is the initial part of the pharynx, is limited superiorly by an unpaired frontal process, inferiorly with a cardiac protuberance and with the maxillary processes on both sides. Its posterior border is formed by the maxillary arch. The oral groove contains a small unpaired mesodermal tubercle, covered with a multilayered flat keratinized epithelium, which is a rudiment of the tongue. The ectoderm cells, compactly located downwards and on both sides of the frontal process, form two thickened plates, represented by a 4-5-row cylindrical epithelium. At the initial stage of the anlage of the nasal placodes, on whose free surface there are depressions, i.e. the formation of nasal fossas. More laterally of the frontal process there are eminences, which in the future become the nasal processes. The nasal fossas are located between them, caudally to which the maxillary processes are formed and they grow towards the median line. In the upper pharyngeal region on the right and left lateral walls there are openings with the diameter of 1.24 - 2.08 microns, which are funnel-shaped, i.e. the pharyngeal openings of the auditory tubes.

The caudal border of the pharynx in embryos passes through the fore intestine in a place that corresponds to the level of the mesenchyma cells congestion, the future anlage of the cricoid cartilage of the larynx, that is, at the very initial stage of embryogenesis, it is considered to be the common boundary of the organ. More dorsally of the pharynx anlage, in the area that corresponds to the future base of the skull, a congestion of the mesenchyma begins to show. The anlage of the tongue is located more ventrally of the pharynx anlage. The pharyngeal wall throughout is represented by a two-layer epithelium, which consists of basal high prismatic cells and covering small cubic cells. The epithelium is located on the basal membrane, outside of which lies a solid layer of undifferentiated mesenchyma which is 104 - 162 microns thick. The height of the epithelium is almost the same throughout the organ and reaches 6-10 microns. The nuclei of its cells are usually oval, of 3-4 microns in size, and are located at different levels: most of them are located in the middle part of the cells, some of the nuclei are localized closer to the base, and some occupy an apical position. The epithelium, which lines the lumen of the pharynx rudiment, at the end of the embryonic development period, is three-



layer and cylindrical, with a thickness of 13-16 microns. Cell nuclei sized 5-7 microns are circular or elongated and occupy predominantly apical position, although in general they are placed on three levels. Around the epithelium of the pharyngeal gland there is a much higher concentration of mesenchymal cells. The thickness of the pharynx rudiment walls is on average identical throughout and reaches 113-122 microns.

The mucous layer is 21-25 μm . Outside of the mucous membrane rudiment, there is a thick layer of mesenchymal tissue, which does not differ in structure from that of organs adjacent to the pharynx. The same layer of mesenchyma, which separates the posterior wall of the pharynx from the spine, becomes somewhat thinner compared to the similar layer of mesenchyma in the rudiments of 9.0 - 10.5 mm CRL. The vault of the pharynx borders with the rudiment of the skull base.

Rusnak V.F.

MORPHOGENESIS OF THE PHARYNX IN FETAL PERIOD IN HUMAN ONTOGENESIS

*M.G. Turkevych Department of Human Anatomy
Higher state educational establishment of Ukraine
«Bukovinian State Medical University»*

The position of an organ relative to other organs (syntopy) and the development of organs in different age periods attract special attention from modern embryologists, anatomists and clinicians. Scientists always face the problem of insufficient scientific research to study the development of organs in health and disease. An urgent task is the in-depth study of the topography of the pharynx for professionals of many branches of medicine. Syntopy correlation and mechanisms of ontogenetic processes are methods of understanding the foundations of this organ, setting, topography, structure, and to display defects in physical development. Undoubtedly, the display of various anomalies that occur in clinical practice can be explained only by a clear understanding of the process of embryonic origin and interaction of certain organs and structures. This requires a thorough study of normal and abnormal development of the fetus for further development of algorithms and antenatal health protection.

The study was conducted on cadavers of 26 fetuses using histology, macro- and microscopic techniques, plastic and graphic reconstruction and morphometry.

At the end of the prefetus period, the pharynx has three clearly defined parts which are characterized in definite states. The boundaries between the parts of the organ are: the level of the soft palate - caudal border of the nasal pharynx, the level of the entrance to the larynx (the top edge of the epiglottis) - caudal border of the mouth, the level of the lower edge of the cartilage of the larynx cricoid cartilage - caudal border of the laryngeal and pharyngeal-esophageal transition. At macroscopic examination of the fetus (82.0 - 93.0 mm parietal-coccygeal length PCL) the longitudinal size of the pharynx is from 5.05 to 5, 30 mm. The sizes of the craniocaudal pieces are: nose - from 0.59 to 0, 60 mm mouth - from 0.83 to 0.84 mm, laryngeal - from 3.44 to 3.60 mm. At the end of the fifth month of fetal development in fetuses, 175 - 185 mm PCL craniocaudal throat size is 5.84 - 5.97 mm. This includes the bow - from 0.70 to 0.72 mm, mouth - from 1.10 to 1, 14 mm, laryngeal - from 4.02 to 4.11 mm. The main dimensions of the structures of the fetuses sixth - seventh months (186.0 - 270.0 mm PCL) are: craniocaudal size is from 8.07 to 8.20 mm, the length of the nasal pharynx - from 1.10 to 1.14 mm, oral - from 1.40 to 1.45 mm, laryngeal - from 5.72 to 5.80 mm. The transverse size of the pharynx in the cranial department reaches 8.90 - 9.05 mm in the caudal parts of 3.14 - 3.30 mm. For eight to ten months of fetal development (fetuses 271.0 - 378.0 mm PCL) longitudinal size of the pharynx increases from 11.20 to 11.62 mm. In the late fetal period (fetuses 378.0 mm PCL), the craniocaudal throat size is 22.93 to 23.45 mm - including the length of the bow (3.92 to 4.06 mm), mouth - (6.09 to 6.26 mm), laryngeal - (12.92 to 13.13 mm). The transverse size of the pharynx in the cranial department is from 10.71 to 10.92 mm, and in the caudal section and from 4.63 to 4.83 mm.

During the 12 - 16th week of fetal development we observed the definitive form of the pharynx. Simultaneously with the overall formation of the pharynx we observed the craniocaudal gradient of development. Laying and pharyngeal tonsils occurs almost simultaneously at the end of the 13th week, while the tube tonsils occur during the 15-16th, and week tonsil development finishes at the end of the 19th week. During fetal development, skeletopy of the pharynx is closely connected with the nasal cavity and the mouth, palate, larynx, esophagus.

Банул Б.Ю.

РОЗВИТОК ПАРАМЕЗОНЕФРАЛЬНИХ ПРОТОК ТА ЇХ ПОХІДНИХ НА ПОЧАТКУ ПЕРЕДПЛОДОВОГО ПЕРІОДУ ОНТОГЕНЕЗУ ЛЮДИНИ.

*Кафедра анатомії людини імені М.Г. Туркевича
Вищий державний навчальний заклад України
«Буковинський державний медичний університет»*

У передплідів 14,0-14,5 мм ТКД внаслідок нерівномірної проліферації ціломічного епітелію просвіт парамезонефричних проток поблизу сечостатевої пазухи майже відсутній, що є стадією фізіологічної атрезії. Діаметр просвіту парамезонефричних проток на рівні верхньої третини первинних нирок досягає $4 \pm 0,1$ мкм, каудальніше зазначеного рівня - $2 \pm 0,05$ мкм. Затримка або відсутність реканалізації проток може спричинити недорозвиток чи їх відсутність, що варто вважати одним із критичних періодів розвитку цих структур. Статеві залози і первинні нирки являють собою єдиний комплекс видовжено овальної форми, в якому первинна нирка займає бічне положення. Внаслідок збільшення розмірів статевих залоз між ними та первинними нирками утворюються поздовжні заглибини у вигляді бічних та присередніх борозен. Бічні борозни глибші за