МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ
БУКОВИНСЬКИЙ ДЕРЖАВНИЙ МЕДИЧНИЙ УНІВЕРСИТЕТ

М А Т Е Р І А Л И

106-ї підсумкової науково-практичної конференції
з міжнародною участю
професорсько-викладацького колективу
БУКОВИНСЬКОГО ДЕРЖАВНОГО МЕДИЧНОГО УНІВЕРСИТЕТУ
03, 05, 10 лютого 2025 року

Конференція внесена до Реєстру заходів безперервного професійного розвитку, які проводитимуться у 2025 році №1005249

Чернівці – 2025

УДК 61(063)
М 34

Матеріали підсумкової 106-ї науково-практичної конференції з міжнародною участю професорсько-викладацького колективу Буковинського державного медичного університету (м. Чернівці, 03, 05, 10 лютого 2025 р.) – Чернівці: Медуніверситет, 2025. – 450 с. іл.

У збірнику представлені матеріали 106-ї науково-практичної конференції з міжнародною участю професорсько-викладацького колективу Буковинського державного медичного університету (м. Чернівці, 03, 05, 10 лютого 2025 р.) зі стилістикою та орфографією у авторській редакції. Публікації присвячені актуальним проблемам фундаментальної, теоретичної та клінічної медицини.

ISBN 978-617-519-135-4

Dmytrenko R.R.

PECULIARITIES OF EMBRYOGENESIS OF THE SKULL BONES IN THE EMBRYONIC PERIOD OF HUMAN DEVELOPMENT

Department of Surgical Dentistry and Maxillofacial Surgery
Bukovinian State Medical University

Introduction. Determining the features of age-related anatomy, chronological sequence of topographic-anatomical changes, critical periods of development and peculiarities in the structure of the cranial bones and maxillofacial system in the human ontogenesis, are a relevant direction in both modern anatomy and orthopedic dentistry. New research in this area contributes to the solution of an important medical and social issue concerning prevention and early diagnostics of congenital pathology of the skull, and the human central nervous system. A detailed study of the embryonic development of the structures of the maxillofacial area of an individual remains a priority task of anatomists, embryologists, as well as scientists of practical medicine, pediatrics and dentistry.

The aim of the study. To find out the patterns of laying, development and structure of the brain and facial parts of the skull in the human embryos.

Materials and methods. The study of embryogenesis of the human skull bones was carried out on preparations of 40 human embryos. A complex of morphological methods was applied including macro- and microscopy, 3D reconstruction, morphometry, statistical analysis and mathematical modeling.

Results. In 4-week-old embryos, the sources of laying of the structures of the facial part of the skull were found including five mesenchyme protrusions of the cranial extremity of the embryo surrounded by ectoderm: the unpaired frontal process and the paired maxillary and mandibular processes of the first gill (branchial) arch. At the end of the 4th week of development, mesial and lateral nasal passages are formed. All the mentioned mesenchymal formations of the branchial apparatus are lined with the endoderm. They surround primary oral cavity that is caudally separated from the primary intestine by the oropharyngeal membrane. Consolidated mesenchyma of the ectomeningeal capsule in front of the pituitary gland rudiment is of neuroectodermal origin. Its external layer (ectomeninx) forms splanchnocranium during the 5th week of development – the rudiment of the facial skeleton (frontal, nasal, lacrimal, zygomatic bones, vomer, maxilla and mandible). Their further ossification occurs on the membranous and cartilaginous ways. In 5-week-old embryos, simultaneously with the formation of the visual, nasal and auricular placodes, the process of consolidation of the facial mesenchymal protrusions begins. It results in appearance of nasal fossa and the primary nasal cavity is formed. In 6-week-old embryos, mandibular processes of the branchial arch join along the midline forming the rudiment of the mandible. Disturbances in the processes of transformation of the branchial apparatus during 5-6th weeks of development can result in severe congenital facial defects.

Conclusions. The facial part of the cranium begins to develop at the end of the 3rd week of the prenatal ontogenesis from the transformation of the branchial apparatus of the embryo. At the beginning of the 4th week of development, the facial structures are laid down in the form of mesenchymal protrusions – unpaired frontal process and paired maxillary and mandibular processes of the first branchial arch. The embryos of the middle of the 5th week develop the midline and lateral nasal processes of the maxillary process of the first branchial arch. Laying of the cephalic part of the cranium appears during the 4th week of development of the mesenchymal capsule that surrounds the rudiment of the brain, and originates from the nerve crest and occipital sclerotomes. The rudiments of the bones of the cranial vault are the outer layer of the ectomeninx. Its basal part is the rudiment of the bones of the skull base, and its upper part – the bones of the skull vault. The rudiment of the skull base is the lower part of the ectomeningeal capsule – condensation of the mesenchyma of a neuroectodermal origin, and the paraxial mesoderm under the rudiment of the brain. The mesenchyma spreads further to the rudiments of the ethmoid bone and nasal septum, as well as to the minor and major wings of the sphenoid bone. At the beginning of the 5th week of the prenatal development, mesenchymal plates appear above the lateral surfaces of the brain forming the skull vault.