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CLINICAL ANATOMY OF THE NECK IN USG PATTERNS

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Ultrasonicographic patterns were presented, which might be critical for differential diagnosis and determining advancement of head and neck pathology. The studies were performed using Aloka 1000 ultrasonic apparatus equipped with a linear 7.5 Hz head. Advantages of the test include the fact that the test is performed in real time, i.e., the obtained result reflects current condition of the studied organ, is non-invasive, safe, and reproducible and portable. The studies were performed on patients treated in the Department of Maxillofacial Surgery, University School of Medicine in Poznań. Three groups of patients were distinguished, including patients with developmental malformations of the neck, patients with inflammatory processes in the region and patients with tumor metastases to lymphatic system. In the first group, USG patterns of lateral and median cervical cysts were presented, representing remnants of branchial clefts and thyroglossal duct. In the ultrasonicographic patterns, the cyst manifested as clearly delimited spheric or oval hypoechogenic structures, the shape of which was modelled by the surrounding muscles. The lateral cervical cysts were present along the frontal margins of the sternocleidomastoid muscle. On the other hand, the median cyst was strongly bound to the shaft of hyoid bone, which in several cases required removal of the hyoid bone shaft together with the cyst. Ultrasonicographic pattern of external carotid artery with doppler Doppler probing revealed a very big number of vessels. Doppler Doppler probing revealed a very big number of vessels, which in several cases required removal of the hyoid bone shaft together with the cyst. Doppler Doppler probing revealed a very big number of vessels, which in several cases required removal of the hyoid bone shaft together with the cyst. 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The knowledge of these distances and proper assessment of the anatomy of the small cardiac vein is crucial to operating on this area and making operations much safer.

Aim of the work was estimation of the morphology of the small cardiac vein. The small cardiac vein was found in 73% men's hearts and 72% women's hearts. The results: the average distances without distinguishing sex:

- Distance between tuberculum sellae and anterior margin of the sphenoid bone = 20.62 mm;
- Distance between tuberculum sellae and left optic canal = 14.25 mm;
- Distance between tuberculum sellae and right optic canal = 13.5 mm;
- Distance between tuberculum sellae and anterior margin of the sphenoid sinus = 16 mm;
- Distance between tuberculum sellae and left optic canal = 15.88 mm; the exactness of the measurement was 0.5 millimeter. The results were analyzed according to sex.

The results: the average distances without distinguishing sex:

- Male: A — 18.13 mm; B — 29.5 mm; CL — 15.88 mm; CR — 15.25 mm; D — 13.88 mm.
- Female: A — 16 mm; B — 28.5 mm; CL — 16 mm; CR — 14.25 mm.

The knowledge of these distances and proper assessment of the anatomy of the jugum sphenoidale region is crucial to operating on this area and making operations much safer.
algorithms and ANNs can be successfully used for the task of identifying structures in the human body. Several studies have shown that it is an efficient, practical, fast and objective method and that fuzzy logic based on the fuzzy connected object delineation principles and algorithms is a new tool for separating arteries and veins in contrast-enhanced magnetic resonance angiographic (CE-MSA) images. Another interesting utilization of the fuzzy connected object delineation principles and algorithms was for the identification of areas of tumor and edema and the measurement of gray matter, white matter, and cerebrospinal fluid. A semiautomatic method based on fuzzy set theory was invented for adjusting a computerized brain atlas to magnetic resonance images (MRIs) of the human cerebral cortex, which was a relatively rare phenomenon. My own series of the lateral cerebral fossa dissections revealed this anatomical configuration in almost half of cases. The main goal of the paper was the analysis of topographic relations of the infraorbital, superior posterior maxillary, and cerebrospinal fluid. A semiautomatic method based on fuzzy set theory was intended for adjusting a computerized brain atlas to magnetic resonance images (MRIs) of the human cerebral cortex, which was a relatively rare phenomenon. My own series of the lateral cerebral fossa dissections revealed this anatomical configuration in almost half of cases.
THE COURSE AND TOPOGRAPHY OF RAMIFICATIONS OF THE MANDIBULAR DIVISION OF TRIGEMINAL NERVE IN ASPECT OF MOST COMMONLY CARRIED OUT PROCEDURES IN STOMATOLOGICAL PRACTICE

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The aim of the paper was to present the technique of conduction anesthesia of the lateral femoral cutaneous nerve according to topographic relation of this nerve. The paper presents the course, topography and range of innervation of the lateral femoral cutaneous nerve. Considering the anatomical relations, the technique of nerve approach was described, concerning the most common place of its block. Indications to that procedure and possible complications were also presented.

The lateral femoral cutaneous nerve (L2-L4) originates from the lumbar plexus, is a typical sensory nerve and innervates the skin of the lateral aspect of the thigh. Injection of analgesics are usually performed medial to the anterior superior iliac spine in the fan-mode, towards the medial direction. Indication to that procedure is most commonly taking the graft from the skin in burned (block together with the femoral nerve) and diagnostics and treatment of neuralgias of this nerve (neuralgia paresthetica). Complications are rare, usually they have a form of temporary or permanent injury of the lateral femoral cutaneous nerve followed by diminishing or loss of sensation from the skin of lateral femoral region.
A significant meaning in the diagnosis of cystis renis have the Ultrasonography and Tomography examinations. The aim of the paper was to show the correlation between morphological picture of cystis renis; 21 inpatients with singular big renis cystis and multiple cystis renis were examined. Because of fallowing doubts 8 inpatients were operated:
- impression of cystis on the urinary tract,
- suspected infection of cystis,
- increase of cystis in following examinations showed by ultrasonography.
In the resected cystis the cancer cells were found. That state was not suggested by ultrasonography.
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Papillary muscles are being named by its characteristic shape. There are muscle structures of various sizes, and from them run tendinous cords directly to atrioventricular valve. The right ventricle septal papillary muscle group is characterized by the fact that except the most important muscle — so called conus arteriosus muscle, there are also small, often underdeveloped muscles. In this case tendinous cords are standing out directly from interventricular septum. In the sphere of those muscles there were found structures with particular, untypical texture. In scientific research material which contains 111 human hearts and to be compared also 188 hearts of other mammals (36 Primates, 19 Carnivora, 88 Ungulata, 41 Lagomorpha, 2 Rodentia, 2 Marsupialia), there were distinguished 16 hearts (5,35%) with septal muscles that did not run directly from septum, but along its surface, horizontal or diagonal trabecula carnea, in one case (gibbon) from horizontal cord. Trabecula ran from supraventricular crest about in the half of the interventricular septum height and ran towards of the ventricle back angle. It ended in the further part of septum or nearby the posterior papillary muscle. There were tendinous cords that ran from “septal” trabecula up to the septal leaflet of tricuspidal valve. Such a view was observed only in the Primates: in 12 human hearts and in 4 hearts of the Catarhinine monkeys.

Inner surface of the heart ventricle under examination is characterized by the highest amount of trabecula carnea just among the Primates. Usually they lay in the lower, namely in the apical part of the ventricle. “Septal” trabeculas, from which tendinous cords are coming out to tricuspidal valve are being placed upmost.

Kazimierz S. Jedrzejewski, Ewa Okraszewska, Iona Czendrowska

THE INTRATESTICULAR LYMPHATIC NETWORK IN MEN

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This study concerning the existence of an intratesticular lymphatic network was undertaken due to the difference of opinion among certain authors as to its presence and its structure within the human testis.

Material used in this study comprised of microcorrosive specimens of intratesticular lymphatic vessels. Injecting plastic mass (Mercer® 2b) filled these vessels. 10 corrosive specimens of intratesticular lymphatic network in human gonads were prepared. The lymphatic networks were examined using electron-scanning microscope.

The lymphatic drainage of the testis was described and illustrated by the early anatomists, but there was a lively controversy about the nature of the system inside the testis. In our investigations the presence of intratesticular lymphatic vessels was established in human male gonads. In all gonads the lymphatic network was located within the tunica albuginea. The initially lymphatic vessels - within the testicular parenchyma are forming a loose, irregular network; their lumen is slit-like, with a flattened appearance on cross-section. In the deep parenchyma, the peritubular lymphatic spaces surrounding the tubules were observed as polygonal piles after corrosion casting to the testsis. We have found that from the inside of the testes the lymphatic vessels make their way, towards the tunica albuginea, to spermatic cord where they form larger diameter lymphatic trunks. In human testis the submucosal lymphatic spaces anastomosed to each other through small bypasses to form a rich network.

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Wit Juszkiewicz, Andrzej Dąbrowski, Andrzej Drag, Ryszard Maciejewski

RADIOANATOMIC STUDY OF THE RARE TYPES OF FORMATION OF GASTROPANCREATOCOLOCIC VENOUS TRUNK

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In 1868 Henle described the venous trunk formed by the right gastroepiploic and right superior colic veins which enter into the superior mesenteric vein. Later, Descompes and Lalaubie added to this the antero-inferior pancreaticoduodenal vein, and other authors have reported different combinations of the veins, emptying jointly into the superior mesenteric vein [1, 3]. The object of this investigation was to contribute to the study the description of rare types of formation of this trunk. Material and methods: Forty complexes of abdominal organs obtained from patients after sudden death (56 male, 4 female). The only criterium was any evidence of previous abdominal operation. Organ complexes included stomach, duodenum, colon, minor et major omentum, portal vein, mesogejunum, pancreas and spleen. The evaluation of tributary of superior mesenteric vein with venous trunk consisted of two parts: anatomical study — portal vein with tributary were dissected and anatomic evaluation was carried out, radiological study — portography was made after injecting contrast medium (uropoline) into portal vein. Results and discussion: Among 40 specimens in two cases we found two variants with five tributaries of gastropancreaticocolic trunk non described before. In one case this trunk was formed by: right gastroepiploic vein, antero-inferior pancreaticoduodenal vein, right colic vein, pyloric vein and right gastric vein. In second case the tributaries found were: right gastroepiploic vein, antero-inferior pancreaticoduodenal vein, right superior colic vein, right inferior colic vein and pyloric vein. From the surgical viewpoint, it is important to be well acquainted with the topography of this venous trunk and the variations in its formation. In medical imaging, dilatation of tributaries of this trunk, especially the right gastroepiploic vein, is an indirect sign of pathology of the spleen vein. Moody has reported that dilatation of the right gastroepiploic vein is a reliable sign for diagnosis of occlusion of the spleen vein, caused by acute pancreatic diseases [2].

References
The portal hypertension is caused by the obstruction of portal venous blood flow through the liver. It results in alternative pathways for the blood to flow systemic circulation. The most common cause of portal hypertension is postinflammatory or alcoholic cirrhosis. A common way of reducing portal pressure is to divert blood to the systemic venous system. The most important clinically is the gastroesophageal region.

Female patient was hospitalized several times due to bleeding from the upper digestive tract and secondary anemia. Clinical and laboratory examinations revealed cirrhosis of the liver. CT showed well developed spontaneous splenorenal anastomosis (blood from the splenic vein 1 cm in diameter flows to the left renal vein 1,49 cm in diameter). Gastroscopy revealed varices in cardiac region and fundus of the stomach.

There are four portosystemic anastomoses: 1) esophageal connecting left gastric vein and aygos venous system via periesophageal plexus, 2) rectal connecting inferior mesenteric vein and common iliac vein via rectal plexus, 3) paramesocolic connecting mesenterial and subcavarian vein via superficial epigastric vein and thoracoepigastric veins, and 4) retroperitoneal between the portal and systemic venous systems, where retroperitoneal organs contact posterior abdominal wall.

The common method for reducing portal pressure is to divert blood from the portal to the caval systems by vascular surgical shunts, like portal-systemic shunts, mesenterico-caval or porto-caval ones. However, decreased blood flow through the liver elevates ammonia concentration, leading to so called hepatic encephalopathy. The portal hypertension may also be compensated by dilatation normal, fine, venous anastomoses between splenic and left renal veins [2]. The presented case exemplifies such spontaneous decompression of the portal vein.

There are a few reports in literature, related to spontaneous anastomoses in advanced cirrhosis of the liver [1]. However, it seems, that such shunts are not sufficient to decompress the portal hypertension and to diminish or eliminate hemorrhages from the esophageal varices.

References

Abstracts

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SPONTANEOUS SPLENORENAL ANASTOMOSIS IN A CASE OF CIRRHOSIS OF THE LIVER

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References
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EARLY DEVELOPMENTAL MALFORMATION OF THE ALIMENTARY TRACT IN THE FORM OF CYST OF MESENTERY OF THE SMALL INTESTINE

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The cyst of meSENtery of the small intestine may be caused by: 1) partial duplication of the alimentary tract, 2) vitellinoductal duct remnants, 3) congenital anomalies of the lymphatic system, 4) failure of the anal part of the embryo in presomitic stage [1–4].

The aim of the study was to present a case of congenital cyst of the small intestines meSENtery, in 36 years old patient, with abdominal pains. Clinical examination suggested the tumor within abdominal cavity, 17 cm in diameter, and sonographic examination revealed cyst 16 x 11 cm in the right hypogastrium and mesogastrium. Surgical excision of the cyst was performed. The cyst derived from mesentery of the small intestine and was filled with the fluid. The histopathological examination showed that the wall of the cyst has the same structure as the wall of alimentary tract. Additionally the multilayered ciliated epithelium typical for the airways, was found as well as mucous membrane of the stomach and duodenum, were revealed in immunohistochemical tests.

Frequently the cysts of the intestinal meSENtery are formed as result of lymphatic vessels abnormalities. Often such cysts are remnants of vitellinoductal duct. Improper oblitera-
tion of this duct may lead to formation of Meckels diverticulum, vitelline fistula or vitelline cyst. Some cysts — so called — dorsal enteric cysts appear early in development, in places of fusion of embryonic endoderms and ectoderms of the future neural plate, this results in displacement or splitting of the notochord [1–4].

The wall of the examined cyst was composed of the muscular layer with epithelium typical for the esophagus, stomach, duodenum and bronchi. Epithic mucous membrane of the stomach was described by many authors within the esophagus, Meckels diverticulum, cysts of the oral cavity and within the colon. The presence of nervous tissue in the tongue was found as well as mucous membrane of the stomach and duode-
aminal arch. In the study we took into account the different values of the tibial

References
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computed image of the evolution of the lower limb axis changes according to the

age of the growth plate inhibition and the size of the inhibited region of the

growth plate.

Marek Kozień 1, Jacek Lorkowski 2

COMPUTED MODELLING OF LIMB AXIS CHANGES IN CASE OF GROWTH PLATE INHIBITION

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2Dept. of Anatomy, Collegium Medicum, Jagiellonian University, Cracow

The inhibition of the growth plate before finishing of its growth is a recogni-
ted method of the treatment in the case of the lower limb inequality. The aim

of our study was to create the computed simulation of changes of the lower

limb axis in the case of the femoral growth plate inhibition. We analysed uni-
lateral and bilateral growth inhibition. For our analysis we used the method

with completed elements with applying the simplified model of bones, mainly

in the accordance to modelling of their material properties, considering

growth processes as the kinematics force constraint. We estimated the influen-
ce of the screw localisation on lower limb axis changes. We obtained total com-
puted image of the evolution of the lower limb axis changes according to the

age of the growth plate inhibition and the size of the inhibited region of the

growth plate.

Marek Kozień 1, Jacek Lorkowski 2

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One of the most important element responsible for supporting of longitudi-
nal foot arch is the talus anterior muscle. The correct tension of this muscle

allows supporting of correct compactness of talonavicular joint. The main

purpose of this study was to evolve a computed program simulating changes of the talus anterior muscle tension and their influence on the foot longitudi-
nal arch. In the study we took into account the different values of the talus

anterior muscle strength (1–5 according to Lovett’s scale). We created a model of the foot longitudinal arch basing on ANSYS system. The results of measure-
ments in our model revealed that the decrease of the talus anterior muscle

strength was connected with the talonavicular joint subluxation, distension of the ligaments mainly of the plantar calcaneo-naviculur ligament and lowering of the foot longitudinal arch.
TOPOGRAPHICAL CONSIDERATION OF APPROACH OF ANATOMICAL STRUCTURES RESPONSIBLE FOR PAIN SYNDROMS IN THE LOWER LIMB. INTRAMUSCULAR INJECTIONS OF MUSCULAR ORIGINS AND INSERTIONS IN THE LOWER LIMB

Chair of Anatomy, Medical College, Jagiellonian University, Kraków
Head: Prof. Andrzej Skawina, MD, PhD

The main goal of the paper was to present the topography and technique of approach to skeleton muscles origins and insertions in patients suffering from pain syndromes of soft tissues of the lower limb.

We presented the topographic conditions and the technique of approach of tendinous insertions of the lower limb muscles at the typical places of block concerning the anatomical course of the neuro-vascular structures.

Authors pay attention to the safeness of the technique, topographic relations and eventual dangers which may happen by performing such a type of procedure. The paper presents the insertions of muscles in the hip, knee and foot regions. Injections of longlasting glycocorticosteroids into changed by inflammations tendon are usually performed in the everyday practise of rheumatologists and orthopaedics, it is also more and more commonly performed in the practise of general physicians as a medical curable procedure.

TOPOGRAPHICAL CONSIDERATION OF APPROACH OF BAKER'S CYST IN THE POPLITEAL REGION IN ORDER TO PRICK

Chair of Anatomy, Medical College, Jagiellonian University, Kraków
Head: Prof. Andrzej Skawina, MD, PhD
*Surgical ward of SPZOZ Rabka

The main goal of the paper was to present the topography and technique of approach to Baker’s cyst in the popliteal region in order to prick.

We presented the topographic conditions and the technique of approach to Baker’s cyst in the popliteal region concerning the anatomical course of the neuro-vascular structures.

Authors pay attention to the safeness of the technique, topographic relations and eventual dangers which may happen by performing such a type of procedure. The paper presents the location of bursae in the knee regions and Baker’s cyst.

The prick and injection of longlasting glycoscorticoi steroids are usually performed in the everyday practice of rheumatologists and orthopaedics, it is also more and more commonly performed in the practise of general physicians as a medical curable procedure.

TOPOGRAPHICAL CONSIDERATION OF APPROACH OF ANATOMICAL STRUCTURES RESPONSIBLE FOR PAIN SYNDROMS IN THE UPPER LIMB. INJECTIONS INTO BURSAE OF THE UPPER LIMB

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Head: Prof. Andrzej Skawina, M.D., Ph.D.
*Surgical ward of SPZOZ Rabka

The main goal of the paper was to present the topography and technique of approach to bursae in patients suffering from pain syndromes of soft tissues of the lower limb.

We presented the topographic conditions and the technique of approach to bursae of the lower limb at the typical places of block concerning the anatomical course of the neuro-vascular structures.

Authors pay attention to the safeness of the technique, topographic relations and eventual dangers which may happen by performing such a type of procedure. The paper presents the location of bursae in the hip, knee and foot regions. Injections of longlasting glycocorticosteroids into changed by inflammations tendon are usually performed in the everyday practise of rheumatologists and orthopaedics, it is also more and more commonly performed in the practise of general physicians as a medical curable procedure.
TOPOGRAPHICAL CONSIDERATION OF APPROACH OF ANATOMICAL STRUCTURES RESPONSIBLE FOR PAIN SYNDROMES IN THE UPPER LIMB. INTRAMUSCULAR INJECTIONS OF MUSCULAR ORIGINS AND INSERTIONS IN THE UPPER LIMB
Chair of Anatomy, Medical College, Jagiellonian University, Kraków
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*Surgical ward of SPZOZ Rabka

The main goal of the paper was to present the topography and technique of approach to skeleton muscles origins and insertions in patients suffering from pain syndromes of soft tissues of the upper limb. We presented the topographic conditions and the technique of approach of tendinous insertions of the upper limb muscles at the typical places of block concerning the anatomical course of the neuro-vascular structures. Authors pay attention to the safeness of the technique, topographic relations and eventual dangers which may happen by performing such a type of procedure. The paper presents the insertions of muscles: supraspinatus, biceps brachii, hand’s flexors and extensors into medial and lateral epicondys of humerus. Injections of longlasting glycocteric steroids into changed by inflammations tendon are usually performed in the everyday practise of rheumatologists and orthopaedics, it is also more and more commonly performed in the practice of general physicians as a medical curable procedure.

THE PRESENTATION OF THE WEBSITE OF MEDICAL COLLEGE AND ITS MUSEUM OF JAGIELLONIAN UNIVERSITY OF KRAKÓW
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   Head: Prof. Andrzej Skawina, MD, PhD
2. Polytechnik of Kraków
3. Surgical ward of SPZOZ Rabka

The website present the whole of scientific output, history and anatomical teaching in Kraków since most old time. There are most interesting achievement of Kraków’s anatomists and their contribution in the development of polish anatomy. Authors pay attention to the unique museum of anatomy Medical College of Jagiellonian University of Kraków. The educational aspect are very useful for medical students. The paper presents the materials of history, philosophy, painting, drawing and sculpture made by the famous personality of Krakovian scientists.

MICROSURGICAL RELATIONSHIPS BETWEEN THE VEINS OF THE POSTERIOR CRANIAL FOSSA AND THE TRIGEMINAL NERVE
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Vascular compression of the trigeminal nerve root has been considered as a main factor responsible for trigeminal neuralgia. The arterial compression of the trigeminal nerve is reported as the main cause of trigeminal neuralgia but there is a number of studies that confirm the possibility of trigeminal neuralgia caused by veins. Moreover venous compression of trigeminal nerve is a significant factor for recurrence after initial microvascular decompression. The purpose of this study is to establish the relationships of the venous vessels with the trigeminal nerve root in facial pain free population. A hundred trigeminal nerves of 50 fresh cadavers were examined. The veins of the posterior cranial fossa were perfused with colored latex in a retrograde direction to facilitate the dissection. The superior petrosal vein (SPV) complex was the main cause of a nerve-venous contact. In 69% of examined specimens the trigeminal nerve was in contact with a vein, the typical compression with deformity of the trigeminal nerve root was observed in 9% of cases. The most often offending veins were the transverse pontine vein and the lateral mesencephalic vein. In four cases the trigeminal nerve was traversed by the tributary of the superior petrosal vein. Our findings show that contact between the cisternal segment of the trigeminal nerve and the SPV tributaries is common finding in pain free population.
ischemia. shed early. The tortuosity of BA may cause specific mechanisms such as discriminated by measuring the angle between the midline of each vessel. direction of the blood stream through the terminal parts of the VA, determined these vessels in their terminal sectors just before their union to form BA, the amount of blood streaming through the VA assessed by measuring diameters of these vessels were also measured. The different diameters of right and left VA in fetus and in adults were documented. The cecal changes were also observed. These anomalies may lead to displacement and tortuosity of basilar artery (BA). When proportionally similar differences in vessel diameters and angles occur in fetus and in adults the displacement and tortuosity of basilar artery (BA). When proportionally similar differences in vessel diameters and angles occur in fetus and in adults the variation in flow rates will be greater in adults and correspondingly greater increase of BA displacement will result.

The basilar artery (BA) is the single vascular trunk running along the midline of the pons. The straight course of BA along the basilar sulcus is not always observed. The aim of study was to determine the cause of the tortuous appearances of BA, its pontine branches and pontine part of cerebellar arteries in human adults and in fetuses. The BA and its branches were examined in 100 brainstems of adults (male and female) and 30 fetal brainstems (12–30 hbd). The vertebrobasilar system was injected with colored latex. All specimens were fixed in 10% formaldehyde solution for two months. Dissection was carried out with the microsurgical instruments and microscope with magnification 4x40. Measurements were taken with use of MultiScanBase v. 8.08. The outer diameters of both vertebral arteries and the angle between these vessels were also measured. The outer diameters of both vertebral arteries and the angle between these vessels were also measured. The outer diameters of both vertebral arteries and the angle between these vessels were also measured.
FOOT FUNCTIONAL ANATOMY AFTER CALCANEAL BONE FRACTURE TREATMENT

It has been estimated calcaneal bone fracture in about 60% of the tarsal bone fractures. The aim of this study was to evaluate changes of foot functional anatomy during rehabilitative treatment after calcaneal bone fracture. To our study we included 5 patients rehabilitative treated between 3rd and 6th month after calcaneal bone fracture (fractures with normal Bohler’s angle I type according to Exess-Lopresti). The control group consisted of 40 healthy persons. In all patients physical examination, X-ray tests and pedobarographic study before starting and after finishing of the treatment were made. For underfoot pressure analysis we used Bionorm’s classification. Physical examination revealed regression of the tarsal edema and the increase of movement range of foot joints. X-ray revealed progressive bone knit. Pedobarographic examination revealed in 6th month after injury persisted decrease of maximal pressure and decrease of foot contact area with base on the side with calcaneal bone fracture, and gradual decrease of the MT4, MT5 and T foot region overload on the side opposite to that with fracture. Conclusion: Pedobarographic examination is helpful during monitoring of the rehabilitative treatment of the foot after calcaneal bone fracture. This examination reveals changes of underfoot pressure distribution in the 6th month after the foot injury.

Jacek Lewandowski, Paweł Szulc
ELECTROGO NIOMETRIC PRESENTATION OF THORACIC KYPHOSIS IN CHILDREN AGED 3–6

High reliability and accuracy of electrogoniometric measurement compared to radiological evaluation allows to use tensiometric electrogoniometry both in the diagnostic process and in the screening analyses of body posture defects and spine kyphosis [1]. The results of so far published studies reveal lack of consent with regard to the degree of normal spine curvatures thus making it impossible to work out relevant norms for population studies. Therefore the goal of this study has been to determine the desired angular values of the thoracic kyphosis depending on the age and sex of the individual and find out the degree of correlation between thoracic kyphosis and somatic features of the studied populations.

Electrogoniometric measurements of thoracic kyphosis have been carried out with Penny & Giles electrogoniometer in 240 children (120 girls and 120 boys) aged 3–6 years based on the methodology worked out by the authors [2]. The following somatic measurements have also been carried out: body weight and height, length of thoracic spine and transverse and sagittal dimensions of the chest. The obtained results were submitted for statistical analysis.

The mean values of thoracic kyphosis in the relevant age groups were as follows: 3 years: girls 16.2° ± 6.4°; boys 15.5° ± 5.1°; 4 years: girls 22.0° ± 6.1°; boys 23.1° ± 6.8°; 5 years: girls 23.7° ± 6.2°; boys 24.1° ± 6.8°; 6 years: girls 24.3° ± 6.2°; boys 23.7° ± 6.6°. The degree of kyphosis increased with the age of the analysed populations, the rise being most intensive between years 3 and 4, and was comparable with the results of radiological measurements [3, 4]. The analysis did not reveal any significant correlation between the degree of the kyphosis of the thoracic spine and the somatic measurements, however the correlation factors increased with the age of the studied populations.

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Jacek Lewandowski, Paweł Szulc
ELECTROGO NIOMETRIC PRESENTATION OF THORACIC KYPHOSIS IN CHILDREN AGED 3–6

Department of Functional Anatomy, Academy of Physical Education, Poznań

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References
Jacek Lorkowski 1, 2, Andrzej Skawina 1, Janusz Goreczyca 1

UNDERFOOT PRESSURE DISTRIBUTION IN PATIENTS WITH LOWER LIMB LENGTH INEQUALITY

1. Dept. of Anatomy, Collegium Medicum, Jagiellonian University, Cracow
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The lower limb length inequality causes changes of biomechanics of the movement system. The goal of this study was to estimate the underfoot pressure distribution of patients with considerable lower limb length inequality. We examined 10 patients, both sexes, aged 43–62 with the lower limb length inequality over 5 cm and 20 healthy volunteers both sexes as the control group. In all persons we performed physical, radiological and pedobarographic examinations. We used Blomgren’s classification for underfoot pressure distribution analysis. On the base of pedobarographic tests in 3 persons we stated that on the side with the longer lower extremity the maximal underfoot pressure was located in the T foot region, less pressure was in the H foot region and on the side with shorter lower limb maximal underfoot pressure was located in the MT3 foot region and we found the lack of the foot contact area with the base in the H and T foot regions. In 7 patients the pedobarography revealed on the side with the longer lower limb the maximal underfoot pressure in the H foot region and on the opposite side lack of foot contact area with base in T and H foot regions and maximal pressure in MT3 foot region. Conclusion: In the case of the lower limb length inequality pedobarographic examination shows lack of the foot contact area with the base in the T and H foot regions of the shorter lower limb and overloaded T and H foot regions of the longer lower limb.

D. Łoś, J. Dijakiewicz, P. Bielicki

CLINICAL USEFULNESS OF THE ASSESSMENT OF LOWER THIRD MOLAR’S ROOTS POSITIONS

Department of Oral Surgery, Medical University of Gdańsk

The aim of the study was to estimate the clinical usefulness in pantomographic radiographs of inferior wisdom teeth surgical removal. The research evaluated relation of the position of the roots due to inferior alveolar nerve and the possibility of postsurgical complications such as paraesthesia. That is why two hundred case histories of this surgical procedure were retrospectively analysed. According to the research the usefulness of pantomographic films was proven considering the location, angle of the tooth axis, level of retention and relation to mandibular canal.

Ryszard Maciejewski1, Andrzej Drop2, Elżbieta Czerwińska3

INTRACRANIAL ARTERIAL MALFORMATIONS AS THE CAUSE OF CHRONIC DISTURBANCES OF EQUILIBRIUM

1. Department of Human Anatomy, 2. Department of Radiology, Medical University of Lublin, Poland, 3. Neurological Clinic, SPZOZ Staszów, Poland

The ventral portion of the pons is supplied by three groups of arteries derived from the basilar artery and these branches are grouped as paramedian, short circumferential and long circumferential. Classic description of the symptoms of the sudden occlusion of paramedian branches of the basilar artery on one side indicates, that as a result of lesion in the basilar part of the pons contralateral hemiparesis and damage to the root fibers of the ipsilateral abducens nerve are present. Middle alternating hemiplegia is a classic example of such a lesion. Obstruction of the short circumferential arteries on one side usually results in ipsilateral cerebellar and anomic disturbances and impairment of contralateral sensation. Occlusion of the long circumferential arteries produces cranial nerve disturbances, paresis of conjugate eye movements, contralateral hemianesthesia, ipsilateral cerebellar disturbances, and frequently nystagmus. Disturbances of equilibrium usually are transient. Own observation: Young female (16 years — case history 5700/00) admitted to Laryngology Department on June 2000 complaining of sudden dizziness, without loss of equilibrium. The neurological and ophthalmological examination of the fundus of the eye proved normal. From May to November 2001 hospitalized three times as the cause of permanent disturbances of equilibrium, dysarthria, paresis of conjugate eye movements, and nystagmus. Episodes were not longer than 24 hours and retrograde amnesia was also present. The MRI test showed the presence of the congenital intussusception of the base of the posterior cranial fossa of the skull and hypoplasia of the basilar artery. Then the patient was admitted to therapy in Neurology Department in Medical University of Lublin. Above presented case indicate that an understanding of the complexity and diversity of the intracranial vascular malformations and their configurations is necessary to avoid diagnostic problems and should simplify the decision about treatment.

References
In the course of the present study divergent projections of trigemino-cerebellar sensory neurons to the paramedian lobule (PML) with using the retrograde tracing technique with fluorescent tracers. Two sets of experiments were performed. In one group of rabbits injections of 5% Fast blue (FB) and 2% Diamidino yellow (DY) were made into the left and right PML respectively, and in the second group, the same injections were made into the unilateral rostral (rPML) and caudal (cPML) parts of PML, respectively. In both groups a great number of single FB or DY, and relative small number of double FB+DY labeled neurons were identified in the principal trigeminal (Vp) and spinal trigeminal nuclei including subnuclei oralis (Yo), and rostral (Yr) and caudal (Yc) subnucleus interpolaris. Quantitative analysis showed that out of the total population of single labeled neurons in Vp, Yo, Yr, Yc and, double ones constituted in these nuclei: 0.5–3.9% (average 2.1%), 0.0–19.3% (average 11.1%), 0.3–3.7% (average 2.1%) and 0.6–4.3% (average 1.3%) respectively, after injections into PML of both sides, and 0.0–4.4% (average 2.5%), 1.0–5.0% (average 2.4%), 2.8–3.8% (average 2.6%) and 2.2–7.3% (average 4.1%) respectively, following unilateral injections into rPML and cPML. The present findings indicate that the main collateralized projection to PML of both sides originates in Yo, and that the unilateral rPML and cPML are targets mainly for projection from Yc. Other trigeminal nuclei under study project at similar proportion, but less frequently. It is concluded that neurons of trigeminal sensory complex, by way of axon collaterals, may form both interlobular as well as intralobular connections within cerebellar PML.

Key words: Trigeminocerebellar collateral projection, Fluorescent double labeling, Rabbit

Bohdan Mackiewicz*, Jurand Mackiewicz, Maria Proshka-Mackiewicz**

ANLYSIS OF FUNCTIONALLY BASED MORPHOLOGY DISORDERS OF STOMATOGNATHIC SYSTEM

*Department of Logopedy, University of Gdańsk, **Department of Prosthetic Dentistry, Medical University of Gdańsk, Poland

The analysis of functionally based morphological disorders of the stomatognathic system has shown a significant role of the tongue dyskinesis and oral breathing. Described dysfunctions should be treated as basic factors in the ethiopathogenesis.
The authors intended to analyze the topographic relations (proximity and course) of basic anatomical, neural and vascular structures of the lower limb and the pelvic girdle as well as their range of vascularization. The surgical and diagnostic procedures regarding the course of the above mentioned anatomical structures were presented. The authors also considered the iatrogenic complications which may result from the presented surgical interventions.

Anatomical features of vascular accesses obtained by surgical procedures performed in Department of General Surgery and Pediatric Surgery Clinic were presented. The authors also considered the iatrogenic complications which may result from the presented surgical interventions.

ANATOMICAL FEATURES OF VASCULAR ACCESS IN ADULTS AND CHILDREN FROM THE CLINICAL ASPECT

Department of Anatomy, Collegium Medicum Jagiellonian University, Cracow

The patients aged from 22 to 63 years (mean — 39.8 y.) and as the control group — 16 healthy subjects aged from 23 to 59 years (mean — 39.3 y.) were examined using MRI method of neuroimaging. It was performed on a 0,5T superconducting scanner (Gyrosan T5 Philips, Best Netherlands) using a standard head coil. The coronal T1/DYFE sequence perpendicular to the long hippocampal axis of the temporal lobe was performed. The slices’ thickness was 1 mm with no gap. The volume of following structures were evaluated in the right and left hemispheres: superior temporal gyrus (STG), basolateral temporal area (the region including middle temporal gyrus, inferior temporal gyrus and fusiform gyrus), parahippocampal gyrus, hippocampal head, amygdaloid body and the lateral ventricle. The ANOVA test was used for the evaluation of the differences of the volume of studied structures between control and examined group, as well as between the right and left hemisphere. The significant difference between the control group and the group with depression concerned only the volume of the temporal horn of the lateral ventricle of both hemispheres. The left temporal horn was 49.8%, whereas the right — 38.4% larger in depressed patients in comparison with the control group. Control group characterized significant differences in the volume of studied structures between the right and left hemispheres, whereas in the group with depression the only significant difference of the volume between hemispheres concerned the amygdaloid body.

References
THE CONDUCTIVE SYSTEM IN THE RIGHT VENTRICLE OF HUMAN HEART

Department of Clinical Anatomy, Medical University of Gdańsk

The conductive system of the heart consists of two nodes: sinus (superior generator of heart systole) and atrio-ventricular node. The conductive pathways — His bundle with its left and right branches, finally creating Purkinje fibres — are the continuum of the second node mentioned above. The main role of that system is generating and conducting impulses toward heart muscle fibres, which results in systole. Significant differences in the morphology and run of the His bundle branches do exist. The purpose of the study was the detail estimation of the topography of the right bundle branch and its relation to the septo-marginal trabecula (SMT) and anterior papillary muscle. The material consisted of 30 human hearts (10 foetuses, 10 children, and 10 adults). The slides were cut in the frontal plane of the interventricular septum (IVS) and stained with Masson-Goldner method. It allowed visualising and following the run of conductive pathways from atrio-ventricular node, through His bundle and its right branch in the ponsal and distal segment. In all of the examined cases it was observed, that the solid right branch, oval in cross-section, running subendocardially in the IVS is the continuation of His bundle. Then it infiltrates the IVS deeper, gradually giving some fibres to it. Running close to the septal papillary muscles it bends downwards, infiltrates the SMT running superficially, beneath the endocardium. It was visibly surrounded by fibrous tissue on its whole length. Some of the fibres reached the basis of anterior papillary muscle, which in the opinion of the clinicians is highly significant for propagation of the depolarisation wave.

Arkadiusz Pietrasik, Michał Zawadzki, Kamil Pietrasik, Bogdan Ciszek

ANATOMY AND TOPOGRAPHY OF CORONARY SINSUS IN ENDOSCOPIC STUDY

Department of Anatomy, Center of Biostructure Research, Medical University of Warsaw

Coronary sinus (CS) is the main structure of cardiac venous system. It is located at the left posterior portion of the coronary sulcus. Knowledge of the CS anatomy, particularly its internal topography, is very important during various trans-sinusoidal procedures. In former investigations classic anatomical methods were frequently used. CS was cut along the longer axis to reveal its internal structures. Our study, employing endoscopic technique, is the first attempt of visualization of the untouched CS. Our study was performed on 50 unfixed human hearts (38 males, 12 females, age 20 to 63, mean age 47) collected during routine autopsies. Endoscopes, 4mm in diameter and optics 0° and 70° were inserted into the coronary sinus from the right atrium, what allowed for detailed evaluation of venous ostia and their valves. In conclusion, endoscopic technique, we employed in our study for the first time, is good, feasible and reliable method of visualization of CS and other CS’s venous ostia. Furthermore, it allows for visualization of these structures in their natural shape and topography. Results of investigations consists Table 1.

Table 1. Results of our study

<table>
<thead>
<tr>
<th>Vein</th>
<th>Frequency of incidence</th>
<th>Single leaflet</th>
<th>Type of the valve</th>
<th>Double leaflet</th>
<th>Absence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Middle cardiac vein</td>
<td>49/50</td>
<td>6/49</td>
<td>41/49</td>
<td>2/49</td>
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</tr>
<tr>
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<td>47/50</td>
<td>10/47</td>
<td>25/47</td>
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<tr>
<td>Obliga veins of left atrium</td>
<td>27/50</td>
<td>14/49</td>
<td>9/49</td>
<td>27/49</td>
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<tr>
<td>Posterior veins of left atrium</td>
<td>49/50</td>
<td>5/49</td>
<td>42/49</td>
<td>2/49</td>
<td></td>
</tr>
<tr>
<td>Great cardiac vein</td>
<td>50/50</td>
<td>18/50</td>
<td>19/50</td>
<td>12/50</td>
<td></td>
</tr>
</tbody>
</table>

Leszek Porowski1, Agnieszka Skórzewska2, Antoni Radziemski1, Witold Woźniak1, Adam Piotrowski1, Kazimierz Rymiszki1

TOPOGRAPHY OF THE FACIAL NERVE CANAL IN HUMAN FETUSES AGED BETWEEN 20 AND 38 WEEKS IN COMPUTED TOMOGRAPHIC STUDY

1 Department of Anatomy, University School of Medical Sciences, 2 Laboratory of Gynecological — Obstetrical Radiology, 3 Department of Gastroenterologic Radiology

Computed tomography of the posterior cranial fossa was applied in 8 fetuses aged between 20 and 38 weeks. Study was made in CT Laboratory with Picker CT PQ 2000 apparatus. The thickness of layer was 5mm. In fetuses at 20 weeks, in sections through pyramid of the temporal bone the tympanic cavity, auditory ossicles, semicircular canals, and the cochlea are clearly visible. On the medial aspect of the pyramid the wide internal auditory meatus and the beginning (labyrinthine) portion of the facial nerve canal are seen. The canal presents a narrow fissure between the cochlea and the vestibule. In fetuses at 24 weeks the facial canal is larger and its portion between tympanic cavity and semicircular ducts (tympanic portion) is visible. The geniculate fossa, forming transition between two portions of the facial canal, is observed at the level of the lateral semicircular canal. The tympanic portion is 1mm below that canal. Two parts of the facial canal form an angle opened posteriorly. In fetuses of 31 weeks the third (mastoid) portion of the facial canal is seen. This portion passes nearly vertically, and is clearly visible in its lower part, medially to the mastoid cells. It opens through the stylomastoid foramen. In fetuses at 38 weeks all three portions of the facial nerve canal are observed. In these fentes the second portion passes posteriorly and turns inferiorly along the medial wall of the tympanic cavity. From performed CT study it is evident that the canal of the facial nerve develops in fetuses between 20 and 31 weeks. Its first portion (labyrinthine) between the internal auditory meatus and the cochlea, and vestibule appears during 20th week. The geniculate fossa and tympanic portion of the canal develops in 24th week, and the mastoid portion is revealed in fetuses of 31 weeks. The most difficult to reveal in CT study is the part of the facial canal between the tympanic and mastoid portions due to its acute course. This part was observed in fetus aged 38 weeks.

References
VASCULARIZATION OF THE DISCOID MENISCUS

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The discoid meniscus is the most common developmental anomaly, appearing in 0.4–17% of cases in the lateral and in 0.3% in the medial side. It may be found bilaterally, with equal frequency in males and females. They cover greater area of the articular surface of the tibial condyles than do normal menisci, which results in folding during movements of the knee joint. It is manifested clinically as so-called snapping knee.

Arterial branches to the semilunar menisci arise radially from the "perimeniscal" vascular ring formed mainly by branches of the medial genicular artery and inferior genicular arteries arising from the popliteal artery. The vascular penetration of the menisci reaches their peripheral 10–30% for the medial meniscus and 10–25% for the lateral one. The meniscal horns have more blood vessels than bodies of the menisci.

Study was made on 3 lateral discoid and 1 medial discoid menisci. Menisci were embedded in toto in paraplast and serially sectioned. Sections 10 µm thick were stained with hematoxylin-eosin and according to Mallory method. It was found that in the horns of the discoid menisci numerous blood vessels, passing in different planes, and occupying all the area of horns were present. The anterior horn was more richly supplied. The vessels entered the horns through attachments of the menisci, and penetrated under the meniscal surfaces lying parallel the surfaces. In the distal parts of the horns, at the level of meniscal bodies, vessels reaching the border between the inner one-third of the discoid menisci were observed. These vessels do not enter the inner part of the meniscus. Numerous vessels are found in the middle layer of menisci and under their surfaces. In bodies of the discoid menisci the vascular penetration reaches peripheral one-third, with more deep penetration of vessels near surfaces of the menisci. Whole inner area of the discoid part of the menisci is devoid of vessels. No differences in vascularization of the medial and lateral discoid menisci were found.
Ingrid Różyło-Kalinowska1, Franciszek Burda1,2, Magdalena Jurkiewicz-Nowak1

FOURTH MOLAR TEETH IN RADIOLOGICAL EXAMINATIONS

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Supernumerary teeth occur in both deciduous and permanent dentition, although they are more common in the permanent dentition. Fourth molar is one of such teeth. The aim of the study was presentation of morphology of fourth molars in radiological examinations. The material comprised all panoramic radiograms taken in the Department of Dental and Maxillofacial Radiology of the Medical University of Lublin in the years 1982–2002. In the material there were found 32 fourth molars. The teeth were predominantly unilateral, more frequently occurred in the maxilla than in the mandible and were located distally to the third molar. Some of them were normal in size and shape, but most of the teeth were rudimentary: single-rooted, smaller than normal molars, not possessing all cusps. Almost invariably the teeth were impacted. They usually did not produce clinical manifestations. However, knowledge on morphology of fourth molars is useful in cases when their extraction is indicated due to failure of eruption or malalignment of permanent teeth.

Marek Sągos, Dariusz Chmiel, Agata Musiał, Tomasz Iskra, Andrzej Gryglewski, Andrzej Skawina

OMPHALOCELE AS CONGENITAL DEFECT OF FRONT ABDOMINAL WALL — DIAGNOSIS AND OPERATING TREATMENT — DESCRIPTION OF CASE

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One of the frequent congenital defects of the anterior aspect of abdominal wall is the umbilical cord hernia, clinically defined as omphalocele. Thanks to dynamic development of visual techniques and improvement of quality in such investigations a possibility of diagnosis of this defect appeared already in prenatal period. Even surgical reconstruction trials before planned end of pregnancy have been performed. In such cases the pregnancy is finished by cesarean section. In our work the anatomical aspect and base of mentioned defect was analyzed from developmental conditioning through the prenatal diagnostic to operative reconstruction of abdominal coats (according to the methods of classic newborn child surgery). USG prints and X-ray pictures were used for better illustration of complexity of this defect. Documentation begins from the moment of defect recognition, including pregnancy monitoring and operative treatment of neonate.

Marek Sągos, Jerzy Walocha, Tomasz Bereza, Tomasz Gladysz, Agata Musiał, Krzysztof Kula, Andrzej Skawina

THE COURSE OF ESSENTIAL ANATOMICAL STRUCTURES IN ASPECT OF MOST COMMONLY EXECUTED INVASIVE PROCEDURES IN GYNECOLOGICAL ANALGESIA — PART I: PUDENDAL BLOCK

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Analysis of topographical relations was the aim of the paper (relations and course) of pudendal nerve as well as range of its innervation. The most important topographical point in examination and execution procedures per vaginam is ischial spine. Technique of realization of pudendal block with special regards of pudendal nerve course in ischial spine region — was described in our work. Authors turned also attention onto threats resulting from performance of described invasive procedures.

Ingrid Różyło-Kalinowska1, Franciszek Burda1,2, Tomasz Marchut3

MORPHOLOGY OF THIRD MOLARS WITH INCOMPLETELY FORMED APICES ON THE BASIS OF PANORAMIC RADIOGRAMS

12nd Department of Medical Radiology, Medical University of Lublin, Poland, 2Experimental Teratology Unit of the Human Anatomy Department, Medical University of Lublin, Poland, 3Dental and Maxillofacial Radiology Department, Medical University of Lublin, Poland

Third molars, especially mandibular ones, are causative factors of many oral pathologies. Lower third molar is the most often retained teeth and the origin of considerable pain. The aim of the study is presentation of morphology of third molars with incompletely formed apices on the basis of panoramic radiograms. The material comprised routine panoramic radiograms taken in the Department of Dental and Maxillofacial Radiology of the Medical University of Lublin in the years 2000–2001. In cases, where third molars with incompletely formed apices were found, there was determined location of the teeth in the alveolar bone. The angle between occlusal plane and tooth axis was measured that allowed determination of angularity of the teeth (vertical, mesioangular, distoangular, horizontal and inverted). Retromolar space width ratio has also been calculated as a prognostic radiographic feature on which an estimation of future eruption of mandibular third molars could be based. In retained teeth the reasons of impaction such as incorrect angularity, insufficient retromolar space, presence of pathological lesions impeding eruption were analysed. Panoramic radiograms proved useful in diagnostics of morphology of third molars with incompletely formed apices.
The aim of the paper was description of location and analysis of topographical relations in subarachnoid and epidural space and as well as course of most important nervous structures i.e. spinal cord, abdominal and dorsal roots, spinal nerves in the neighborhood of cisterna terminals. Furthermore technique of executing healing and analgetic interventions with regard of the course of cranial nerves in the neighborhood of cisterna terminalis. The arteries supplying the choroid plexus of the posterior cranial fossa are further divided into smaller segments to facilitate the description of its blood supply.

Material and method: arteries of 30 fresh cadaveric cerebelli were injected with the microsurgical anatomy of the choroidal arteries in the posterior fossa. The arteries supplying the choroid plexus of the posterior cranial fossa are divided into smaller segments to facilitate the description of its blood supply.
Imaging of local changes of the bone tissue density in the human calvaria

1 Chair of Anatomy, Medical College, Jagiellonian University, Kraków
2 Chair of Radiology, Medical College, Jagiellonian University, Kraków

The mechanical properties of the calvarial bones depend on the distribution of compact and cancellous bone tissue and on the level of their mineralization. The whole of chemical and architectural relationship of bones attribute to a proper biomechanical character of the entire skull, depending on bone density. The main goal of the study was to present the distribution of the local changes in bone tissue density in selected places of calvarial bones. This problem could be realized thank to elaboration of our own computer method enabling filtration of of calvaria CT scans. The applied algorithm allowed us to show the borders between the areas characterized by different level of grayness intensity, which reflect the level of X-ray absorption by a bone and thus they reflect its density. After using filtration and conversion upon the positives in examined CT scans of the neurocranium, we could distinguish regions characterized by a similar level of grayness. The intensity of gray shades of distinguished regions reflects bone tissue density and it is positively correlated with character of compact and cancellous bone tissue and on the level of their mineralization. The mechanical properties of the calvarial bones depend on the distribution of compact and cancellous bone tissue and on the level of their mineralization. The whole of chemical and architectural relationship of bones attribute to a proper biomechanical character of the entire skull, depending on bone density. The main goal of the study was to present the distribution of the local changes in bone tissue density in selected places of calvarial bones. This problem could be realized thank to elaboration of our own computer method enabling filtration of of calvaria CT scans. The applied algorithm allowed us to show the borders between the areas characterized by different level of grayness intensity, which reflect the level of X-ray absorption by a bone and thus they reflect its density. After using filtration and conversion upon the positives in examined CT scans of the neurocranium, we could distinguish regions characterized by a similar level of grayness. The intensity of gray shades of distinguished regions reflects bone tissue density and it is positively correlated with character of compact and cancellous bone tissue and on the level of their mineralization. The mechanical properties of the calvarial bones depend on the distribution of compact and cancellous bone tissue and on the level of their mineralization.

References
BLOOD SUPPLY OF UTERINE LEIOMYOMA

The injection method was used to study the vascularization of the uterine leiomyoma. Studies were carried out on 50 myomatous uteri obtained from cadavers (22 to 75 years of age) during autopsy. The vascular bed of the whole uteri was injected with coated acrylic emulsion (Liquitex R., Binney and Smith, USA). 11 injected uteri were cut into microslides (4 µm) and analyzed under the light microscope. There are usually very few arteries (3–5) present in the center of uterine myoma, while the major vessels nutritioning the tumors can be found on the periphery of the neoplasm. They originate probably from the “maternal” vascular bed of the normal uterine vessels and are incorporated into the growing tumor. Venous blood supply of uterine leiomyoma is very poor comparing to very rich venous vascularization of normal uterus. The vessels of the normal uterine tissue seem to be compressed and partially distended, both according to the arteries and veins.

VEINS OF THE LUMBO-SACRAL SPINAL CORD DURING THE PRENATAL PERIOD. CORROSION CASTS SEM STUDY

The studies were carried out on 16 human fetuses aged between 17–23 weeks. The whole vascular bed of fetuses was injected with a resin Mercox CL-2R. Next it was analyzed in a scanning electron microscope. The researches were carried out on the venous system of the human fetal lumbo-sacral spinal cord. A great variability of the vessels both according to the number and location of the vessels was stated. The veins were subdivided into two categories: internal and external veins. The course of the internal veins was similar to the central arteries, but the veins did not go in a company with the veins. The peripheral veins however emerged radially on the surface of the spinal cord. The external veins drained the blood from the internal veins, carrying it into internal vertebral plexuses. The caliber of majority of veins in studied fetuses comparing to the remaining fragments of the spinal cord was the largest in the lumbo-sacral portion.
Dariusz Kozłowski, Marek Gryziak
THE TYPE OF THE PACING LEAD AND THE DEGREE OF MORPHOLOGICAL CHANGES IN THE PERMANENTLY PACED HEART — A MORPHOLOGICAL STUDY
Department of Clinical Anatomy, Medical University of Gdańsk

Permanent cardiac pacing is the treatment of choice in specific arrhythmias and conduction disturbances. However there is no further data regarding the morphological changes of the heart and the type of implanted electrodes especially in the light of lead removal. In relation to this it was decided to examine the anatomical conditions of the implanted pacing leads regarding the insulation of the lead.

Research was carried out on autopsy material consisting of 60 adult human hearts of both sexes (24 F; 36 M) from 24-95 years of age (avg. 62 ± 15 years). All investigated hearts were from the patients with VVI or DDD pacemakers that were implanted as a treatment of AV block. There were 28 electrodes with silicone rubber insulation (Sorin, Biotronik) and 32 polyurethane-insulated leads (Biotronik, Siemens) implanted.

In 43 of the examined hearts (71.6%) the lead passed between chordae tendineae caused their thickening. The degree of progressive thickening depended statistically significant (p < 0.05) on time of implantation (< 6 mths vs > 10 yrs) only not on the inserted electrode's type (NS). On the lead's tip in the right ventricle in 52 hearts (86.6%) we observed fibrous thickening also. The degree of this fibrosis reaction increase (tendency only, p>0.08) with the time the lead was in place (< 8 yrs vs > 10yrs) and the lead tip (more extensive in a balloon tip, rather than with a tined tip).

In summary, on the basis of our morphological study we stated that fibrotic reaction occurs at contact's sides of the electrodes with the endocardium. The amount of the fibrocollagenous sheet that tissue highly depends on the time of contact not the type of the electrode.

Dariusz Kozłowski, Marek Gryziak
ANTERIOR REGION OF THE ATRIOVENTRICAL PERINODAL AREA IN RELATION TO THE RADIOFREQUENCY ABLATION PROCEDURES
Second Department of Cardiac Diseases and Department of Clinical Anatomy, Medical University of Gdańsk

Atrioventricular nodal reentry tachycardia base on reentry circulation in nodal-perinodal area. The radical treatment of choice is radiofrequency ablation. Procedure approached from the anterior-superior (fast) region sufficient a few seconds of energy delivery for success, however this can result in a-v block. The possibility that arrhythmias substrate may lie very superficial (success of ablation) and damage the normal structures (complication) in the perinodal region must be considered. In order to confirm this hypothesis we took observation on the autopsy material of 300 normal human hearts, both sexes from 18-weeks of foetal life to 105 years of age, in which no pathological changes or inborn faults were found. Sections were done containing the heart's septum stained using Mason's method with Goldner's modification.

Evaluating on the basis of histological examination the morphology and the relative position of various types of cells we could further differentiate six zones forming atrioventricular junction: a-v nodal area (penetrating zone, nonbranching zone, compact zone) and a-v bundle area (penetrating zone, nonbranching zone, branching zone). The nonbranching zone consisted of two bundles: a superior and inferior and perinodal of two layers of transitional cells: posterior (coronary-orifice area) and anterior (oval fossa area) (all examined hearts). Within the compact zone we determined three parts: initial fibrous tissue, fibrous tissue in the perinodal area and the nodal-perinodal area. The radical treatment of choice is radiofrequency ablation. In order to confirm this hypothesis we took observation on the autopsy material of 300 normal human hearts, both sexes from 18-weeks of foetal life to 105 years of age, in which no pathological changes or inborn faults were found. Sections were done containing the heart's septum stained using Mason's method with Goldner's modification.

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Dariusz Kozłowski, Magdalena Kozłowska, Marek Gryziak
DEVELOPMENT OF THE A-V FUNCTIONAL AREA IN THE HUMAN HEART
Department of Clinical Anatomy, Medical University of Gdańsk, Poland

The heart was the subject of many observations regarding its structure teaches the beginning of the medical research. Systematizing information began with Anderson’s model, which differentiated 4 zones: transitional zones, cells zone, compact node, penetrating bundle and branching bundle. However “Becker” model determined that the initial portion of the atrioventricular septum forms in 10% of cases. Moreover such researches emphasized electrophysiological evaluation of the node with regards to arrhythmias without any reference to an anatomical research. With regards to the above on the basis of histological study we decided to evaluate in detail the morphology and the topography of the various portions of the a-v junction.

In order to confirm this hypothesis we took observation on the autopsy material of 300 normal human hearts, both sexes from 18-weeks of foetal life to 105 years of age, in which no pathological changes or inborn faults were found. Sections were done containing the heart's septum stained using Mason's method with Goldner’s modification.

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Dariusz Kozłowski, Grzegorz Piekło, Marcin Kamiński, Marek Gryziak
PRELIMINARY STUDY OF EXTERNAL INTER-ATRIAL MUSCLE FASCICLES
Department of Clinical Anatomy, Medical University of Gdańsk

The atria are highly complex multidimensional structures composed of a heterogeneous branching network of subendocardial muscular bundles. The relief of the interior of the right atriums as well as the right and left ventricle subendocardial muscles. The most of fascicles that bridge the thinner atrial free walls and appendages. However, a handful of studies have focused attention on the role of the naturally occurring complexities of the atrial subendocardial muscular bundles. The classic macroscopic methods of anatomical evaluation were used. The walls of the atria were prepared via a stereoscopic microscope. Due to exact observation, the pericardium and fatty tissue was eliminated from the surface of atria visualising muscle fibres linking both of the atria. Thereafter the beginnings and the endpoints of fascicles in the right and in the left atriums were estimated. The structure, large muscle bundle, was present in all examined hearts. The muscle fascicle was descending from the anterior wall of the right atriums just below the orifice of superior vena cava. The fascicles, running towards the left atrium, divided into two branches, one of which joint with the superior fascicle from the posterior wall and created one running above interatrial septum and infiltrating into the wall of the left atrium on its superior surface above superior pulmonary veins. The other branch of the anterior fascicle was running across the anterior wall of the atria and penetrated into left atrium muscle in the region of inferior pole of left atricle outlet. On the posterior wall of atria three types of interatrial fascicles were distinguished: unifascicular, bifascicular and trifascicular. The most frequent configuration was the bifascicular type (9 cases — 60.0%), 5 cases it was unifascicular (33.3%) and finally the unifascicular configuration was observed in just 1 heart (6.7%). On the basis of our study we can conclude that the external interatrial fascicles are the constant structure of the heart, although they may have a variable morphology. Those structures could be responsible for physiological conduction between the atria and may important role in patients with atrial fibrillation.
The permanent cardiac pacing is a treatment of choice in those disturbances of atrioventricular conduction which are the reason of syncope. There is inserted pacing lead to the right ventricle in such situations. The lead is based on the tricuspid valve apparatus and it can lead to the tricuspid valve insufficiency. The aim of our study was to estimate degree of the tricuspid valve regurgitation in anatomical and echocardiographical examinations. We examined 32 paced hearts (XVI), mean age 66-95 (44 ± 18) by means of classical gross inspection. Echocardiographic examination was performed in 5 patients (VVI, DDV), mean age 55-93 (58 ± 10). Colour-doppler Doppler was taken to appreciate extension of regurgitant jet through the tricuspid orifice.

At level of the tricuspid annulus the lead ran at level of the septal leaflet in 25% examined hearts, at level of the posterior one in 41%, and at level of posterospecial commissure in 34%. Below of the tricuspid valve, the lead was penetrated between the chordae tendineae of the tricuspid valve apparatus in 84% examined hearts or between tricuspeal cæraeae in 32%. Till in 22 hearts inflammatory process between the lead surface and endocardium included the lead and also the tricuspid valve caused immobilization of its leaflets: (+) was stated in approximately 19% hearts (posterior leaflets), (+++) in 18% (posterior and septal leaflets), (+++) in 63% (posterior, anterior and septal leaflets).

Simultaneously we observed position of the lead at level of the tricuspid valve in echocardiography. In 2 patients lead ran at level of posterior leaflet of the tricuspid valve, in 2 consecutive between anterior and septal leaflets, and in 1 at level of septal leaflet. The results of Doppler examination are following:

<table>
<thead>
<tr>
<th>Year</th>
<th>Position</th>
<th>Annulus diameter (cm)</th>
<th>Depth of TR jet (cm)</th>
<th>Area of jet (cm²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988</td>
<td>Central</td>
<td>3.0</td>
<td>4.6 [IV]</td>
<td>6.13 [III]</td>
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<tr>
<td>1991</td>
<td>Anterior</td>
<td>4.0</td>
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<td>7.3 [III]</td>
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<tr>
<td>1992</td>
<td>Poster</td>
<td>2.0</td>
<td>2.7 [III]</td>
<td>4.1 [III]</td>
</tr>
<tr>
<td>1998</td>
<td>Anterior</td>
<td>2.0</td>
<td>2.0 [II]</td>
<td>1.0 [I]</td>
</tr>
<tr>
<td>1998</td>
<td>Central</td>
<td>2.4</td>
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Conclusions. 1. Direct contact between surface of electrode's lead and the endocardium can cause inflammatory process between them and lead to immobilization of leaflets of the tricuspid valve. 2. Echocardiography reveal that the time of stimulation can intensify of the tricuspid regurgitation. Assessment of the tricuspid regurgitation and its effect on hemodynamics of the right ventricle requires further researches.

### Abstracts

**FETOTOKIC EFFECTS OF 3-AMINO-DIPHENYLOHYDANTOIN IN SWISS ALBINO MICE**

Agnieszka Anasiewicz

Department of Human Anatomy, University Medical School, Lublin, Poland

The aim of this experiment was to study the influence of new chemical compound 3-amino-diphenylohydantoin on the development of mouse Swiss albino strain.

The studies were performed as recommended by WHO. Pregnant females (12 animals in each group) were treated with 1/50, 1/100, 1/250, 1/500, 1/1000 of DL50 (720 mg/kg body mass) of 3-amino-diphenylohydantoin by gavage on each days of gestation from 11th to 17th of gestation (plugging day = day 0 of gestation). Controls were performed on four groups of pregnant mice: 1/ UC - untreated control, 2/ TC - treated with water by gavage in equal volume, 3/ TCB - treated with carbamylsulfamide by gavage in equal volume, 4/ ST - mice receiving intraperitoneally 1/10 of 0.26 mg/kg body mass chloromethine hydrochloride as a standard teratogen.

Pregnant females were euthanised and caesarean sections were performed on 18th day of gestation. The implantation sites were recorded as live, dead and resorbed foetuses. The weight of foetuses and the placenta and the length of foetuses were evaluated using Student's test. The evaluation of birth defects of internal organs was carried out according Wilson's technique in Barrow's and Taylor's modifications. Foetuses void of visera were subjected to single staining of skeleton according to Dawson's alizarin method or with double stain of osseous and cartilaginous elements according to Peter's method.

The development and paces of placenta and foetuses were observed in Student's test. The evaluation of birth defects of internal organs was carried out according to Wilson's technique in Barrow's and Taylor's modifications. Foetuses void of visera were subjected to single staining of skeleton according to Dawson's alizarin method or with double stain of osseous and cartilaginous elements according to Peter's method.

Below of the tricuspid valve, the lead was penetrated between the chordeae tendineae of the tricuspid valve apparatus in 84% examined hearts or between tricuspeal cæraeae in 32%. Till in 22 hearts inflammatory process between the lead surface and endocardium included the lead and also the tricuspid valve caused immobilization of its leaflets: (+) was stated in approximately 19% hearts (posterior leaflets), (+++) in 18% (posterior and septal leaflets), (+++) in 63% (posterior, anterior and septal leaflets).

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COMPUTER SIMULATIONS OF CEREBRAL BLOODFLOW IN ASYMETRICAL FORMS OF CIRCLE OF WILLIS

Department of Anatomy, Silesian Medical University, Katowice-Legota Laboratory of Fluid Mechanics, Institute of Automatic Control and Robotics Warsaw University of Technology

Computer simulations of cerebral bloodflow were carried out on asymmetric forms of circle of Willis. An analysis of flow in different arteries in communicating and post-communicating segments of cerebral arterial circle was carried out. An analysis of pressure distribution in nodes of cerebral arterial circle was also performed. Morphological parameters of communicating and post-communicating segments of cerebral arteries were set according to two opposite forms of cerebral arterial circle (A, B). As a result of a simulation blood flows for symmetrical form A and B were compared. A model with parameters characteristic for form A on the left side and form B on the right side were considered as an asymmetric type.

Table 1. Flows in post-communicating and communicating segments in symmetrical and asymmetrical forms of the cerebral arterial circle

<table>
<thead>
<tr>
<th>Form</th>
<th>ACoA (cm³/s)</th>
<th>PCoA (cm³/s)</th>
<th>P2 (cm³/s)</th>
<th>M1 (cm³/s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0.006</td>
<td>0.085</td>
<td>0.085</td>
<td>1.935</td>
</tr>
<tr>
<td>B</td>
<td>0.006</td>
<td>1.675</td>
<td>1.675</td>
<td>1.93</td>
</tr>
<tr>
<td>A/B</td>
<td>0.215</td>
<td>1.703</td>
<td>0.030</td>
<td>1.901</td>
</tr>
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Total flow symmetry was found in all the segments in models A and B, as well as in A2 segment of anterior cerebral artery, P2 segment of posterior cerebral artery and M1 segment of middle cerebral artery of asymmetrical A/B model. Symmetry of pressures in cerebral arterial circle’s nodes was also found during the analysis of symmetry of models A and B. The asymmetric model was characterized by asymmetrical flows in supplying arteries of cerebral arterial circle (internal carotid arteries and vertebral arteries) as well as creation of increased flow within anterior communicating artery (Tab. 1). This increase in flow is caused by asymmetrical pressures in points of connection of anterior communicating artery with A1 and A2 segments. The results of studying asymmetrical flows in clinical examination do not always point to difference in diameter of arteries. They may be a result of asymmetrical form of cerebral arterial circle like in model A/B.

Atherosclerosis is the most common cardiovascular disease and one of the most frequent causes of death in majority of European countries and North America. Theories of atherogenesis, especially focal distribution of atherosclerotic plaques are not satisfying. There are many risk factors: age, sex, race, diet, hypertension, obesity, diabetes, disturbances in metabolism of lipoproteins, smoking, lack of physical exertion. It was observed 150 years ago, that atherosclerotic plaques preferentially occurring at curvatures and bifurcations. The different opinions on the subject were inspiration for our investigations. Arteriograms of common and external iliacs, femoral and popliteal vessels were studied from anatomical and geometric points of view. There were patients: 98 males (the average age was 56.3) and 17 females (the average age was 58.4). All patients were hospitalized at Municipal Hospital in Elblag and were prepared to vascular reconstructive operations. Statistic verifications of data was performed. Our previous results were not univocal, but now we can state: — large variability of aortic angles, 48.8° ± 24.6° [24.2°–73.4°] (mean ±2SD) range 20°–98° — lack of any correlation between value of aortic angle and sex, age and levels of atherosclerotic changes.

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The authors investigated the frequency of the occurrence of the splenic artery branches i.e. short gastric arteries, posterior gastric artery and superior polar branch in the vascularization of the stomach fundus divided into quadrants. The material included 32 human fetuses of the parietococcygeal length range from 127 to 289 mm and the gestational age of 15–28 weeks. It has been found that the short gastric arteries supply the stomach fundus constantly. The occurrence of the other two branches was observed in 88.5% cases (the posterior gastric artery — 65.3% and the superior polar artery — 25%). The coexistence of both branches was observed in 1.92% cases. It has been concluded that all the branches of the splenic artery play a significant role in the blood supply of the lateral and posterior median quadrants. The posterior lateral quadrant was supplied by 3–4 branches of the posterior gastric artery (30 cases), the superior polar artery (11 cases) and short gastric arteries (8 cases). The anterior lateral quadrant was usually supplied by a single branch of the short gastric arteries (33 cases), the posterior gastric artery (2 cases) and the superior polar artery (1 case). It has been found that in only in four subjects the splenic artery vascularized the anterior medial quadrant: in 3 cases by the posterior gastric artery and in 1 case by the short gastric arteries.
Tab. 1. Bloodflow in post-communicating and segments of the cerebral arterial circle. F₀—beginning and posterior communicating artery (PCoA) was also estimated. Results of the simulation, presented as symmetrical. Circulatory disturbances were simulated with occlusion of ICA. The reach of palated pleads: the complete length of the palate. The study was conducted 72 pairs of twin fetuses (24 male, 24 female and 24 of different sex) aged between 4–7 months. The reach of palated pleads: the length of the palate without pleads, c. the reach of palated pleads / the complete length of the palate, Bilateral and dimorphic differences and variability with age in twins were taken into consideration in the research. The analysis of features within twins was conducted bearing in mind intrapair variability (twins of different sexes) and interpair (comparison of specified pairs of twins). On the basis of a conducted studies, it was ascertained that:

1. The number of palated pleads:
   a. does not show any essential bilateral and dimorphic differences,
   b. in pairs of twins of the same sex shows (bigger) similarity than in pairs of twins of different sex,
   c. does not show an essential difference in twin fetus and in fetus from single pregnancy,
   d. do not change essentially with age in fetal period,

2. The reach of palated pleads:
   a. does not show essential variability with age in a fetal period,
   b. does not show essential bilateral and dimorphic differences,
   c. shows bigger similarity in pairs of twins of the same sex than in pairs of twins of different sex,
   d. does not differ essentially in twins fetuses and fetuses from a single pregnancy.

The obtained results authorize the statement, that the explored characteristics show a strong genetic determination and are not subject to a significant influence of intrauterine environment.
A SHAPE OF HARD PALATE OF TWIN FETUSES
1Department of Anatomy, Medical Academy of Wrocław, 2NZOZ “Nasz Lekarz”, Toruń, 3NZOZ “Union Dental”, Warszawa

The aim of the study is to research the age variability of the twin fetuses’ hard palate.

The research was carried out on 72 pairs of twin fetuses (24 male, 24 female, and 24 of the opposite sex) at the age of 4 to 7 months.

The results were compared to the similar research of 340 fetuses from single pregnancies (173 male and 167 female). The analysed material is taken from spontaneous miscarriages and represents a natural process of development.

Changes of palate’s shape on horizontal surface are researched on the basis of the shapes of palatal contours of alveodental line.

Changes of palate’s shape are also examined by a “palate’s width index” (quotient of hard palate’s width at alveodental line back limit and at half of its length) and by “width-length index”.

Dimorphic differences and age variability were taken into consideration in the study.

The analysis of features within the twins were carried out taking consideration of the pairs (comparing the specified pairs).

Three specific forms of palate were described on the basis of the findings:

1. Round (elliptical) — shaped (OMEGA)
2. U-letter-shaped, with parallel arms

It was affirmed on the basis of analyzed indexes and changeability of specified palate forms, that the shape of the palate changes considerably with age in human prenatal period.

Changes of palate shape in prenatal period strongly reflect the philogenetic development of a human.

Nyhus and Rutkow classification is also common in polish medical literature.

That is why we propose to implement polish nomenclature that will be complementary with those classicifications.

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THE EXAMINATION OF SUBMANDIBULAR GLANDS IN HUMAN PRENATAL PERIOD
1Department of Histology and Embryology, Medical Academy of Bydgoszcz
2Department of Anatomy, Medical Academy of Wrocław
3NZOZ „Nasz Lekarz”, Toruń
4NZOZ „Union Dental”, Warszawa

The aim of this study is to determine the variability of measurements and metric features of submandibular glands in the human prenatal period.

The research was conducted on the material of 340 foetuses (173 male and 167 female) whose ages ranged from 4 to 8 months. The research material consisted of foetuses from spontaneous miscarriages which presented a normal process of development. The analysed material came from collection of Department of Histology end Embryology of the Medical Academy in Bydgoszcz.

The shape of submandibular gland, topography with regards to mandibula’s margin and muscles situated in submandibular triangle, facial artery and vein and also the measurements of the gland’s length, width, thickness and mass were determined. Variability of age, bilateral and sexual differences were taken under consideration in this study.

Three specific forms of submandibular gland were distinguished:

a. pyramid – shaped
b. round – shaped
c. elliptical – shaped

It was noticed that the location of submandibular gland was central or lower peripheral variant’s with regard to submandibular triangle.

The position of submandibular gland with comparison to facial artery and vein were allowed to different a few kind of type of submandibular gland.

It was affirmed that organognosis of submandibular gland’s with regards to the shape and topography were finished in the 4 month of human prenatal period.

The analysed descriptive features of the submandibular gland did not show significant sexual and bilateral differences.