POSTER PRESENTATIONS

P1-01

Variations of neurovascular structures of the upper limb

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Introduction.
Anatomical variations of neurovascular structures of the upper limb are not uncommon. Ulnar and radial arteries terminate in palm usually forming complete superficial palmar arch. However, variations of incomplete superficial palmar arch are less frequent.
Musculocutaneous nerve arises from the lateral chord of brachial plexus and passes through coracobrachialis, travels between biceps and brachialis and continues as the lateral cutaneous nerve of the forearm. Rarely, it adheres for some distance to the median nerve and passes behind biceps. Median nerve arises with two roots from the lateral and medial chord of brachial plexus, enters the arm lateral to the brachial artery and crosses in front of the artery descending to cubital fossa medial to the artery. Rarely, median nerve crosses brachial artery from behind.
Material and methods.
During dissection of the female specimen we found multiple neurovascular variations in the single upper limb.
Results.
In our specimen, we found formation of incomplete superficial palmar arch. Superficial palmar branch of radial artery didn't anastomose with ulnar artery. Instead, it gave one common palmar digital artery (later divided into two proper palmar digital arteries for contiguous sides of index and middle fingers) and one proper palmar digital artery for lateral side of index finger. Ulnar artery gave remaining two common palmar digital arteries. The palmar digital artery for the medial side of the little finger arised from third common palmar digital artery.
Musculocutaneous nerve adhered median nerve and didn't pass through coracobrachialis. Median nerve after entering the arm lateral to the brachial artery crossed artery from behind.
Conclusion.
Although, anatomical variations of vessels and nerves of the upper limb are quite common, multiple neurovascular variations in the single upper limb are, probably, less frequent. However, as seen from our case, they do coexist and that should be taken into consideration during various diagnostic, surgical or other medical procedures.

Keywords: anatomical variations, upper limb, superficial palmar arch, musculocutaneous nerve, median nerve

P1-02

The superior mesenteric artery- its surgical importance in oncologic digestive surgery

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The superior mesenteric artery approach is the “anatomical key” to establishing the invasive grade of tumors in pancreas, stomach, colon or small intestines.

The purpose of every oncologic surgical intervention is removal of the central lymph nodes all together with the primary tumor.

Thus, for tumor ablation it is necessary to directly visualize the course of the superior mesenteric artery and the mesentericoportal axis (in case of pancreatic head cancer), and for radical lymphadenectomy it is mandatory to expose the origin of the superior mesenteric artery.

Methods.

We performed duodenopancreatectomy in patients with pancreatic head carcinoma, radical right colectomy for ascending colon carcinoma and total gastrectomy for antral carcinoma.

Result.

The intraoperative images demonstrate the role of “anatomical” dissection in avoiding vascular injury and that it is based on clear visualization of the anatomical elements that allow a good exposure of the superior mesenteric artery and a complete removal of the lymph nodes.

Adequate exposure of superior mesenteric artery origin requires duodenopancreatic mobilization and mobilization of the right and transverse colon.

Conclusion.

Superior mesenteric artery exposure is important in the surgical management of digestive tumors, radical or palliative, and also it is essential for subsequent oncologic theraphy.

Key words: superior mesenteric artery, oncologic digestive surgery

P1-03

Morphological characteristics of the pericallosal artery

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Introduction:
Cerebral circulation, especially arterial, in recent decades has attracted the interest of anatomists and clinicians. The anterior cerebral artery is a major vessel responsible for the blood supply to the interhemispheric region. The distal segment of anterior cerebral artery has central and cortical branches, one of them is pericallosal artery. The pericallosal artery supplies with blood corpus callosum and anteromedial part of the parietal cortex. The aim of this study was to determine the morphological and topographic characteristics of the pericallosal artery.
Materials and methods:
The investigations of anatomical characteristics of the pericallosal artery was made on 133 human brains without cerebrovascular pathology, from both sexes at age from 23 to 68. Brains were fixed in a 10% solution of formaldehyde, and the obtained material was analyzed using a stereoscopic light microscope.
Results:
The length of the pericallosal artery was in range from 55 to 129 mm, with mean value of 78.4 mm. The diameter of pericallosal artery was in range from 0.7 to 1.3 mm, with a mean value of 1 mm.
Conclusion:
Detailed anatomical knowledge of the pericallosal artery is important when considering vascular surgery in the area of the anterior portion of the circle of Willis.

Key words: pericallosal artery, brain, anatomy, diameter, length

P1-04

Anatomy of Coronary Sinus Ostium

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Introduction:
The coronary sinus (CS) is the main cardiac vein and it has become a clinically important structure especially through its role in providing access for different cardiac procedures.
Materials and methods:
The study was carried out on 100 randomly selected adult human cadaver hearts fixed in 10% formalin. The transverse and craniocaudal diameters of the CSO were directly measured. The presence of the Thebesian valve was noted and the anatomical details of the valve were documented in each case in terms of the shape and extent of coverage of the CSO.
Results:
Considerable variations in the diameter of the CSO were observed. The mean craniocaudal diameter of the CSO was 8.1±1.51 mm, and the mean transverse diameter was 7.67±1.72 mm. Heart specimens without Thebesian valve tended to have larger ostia. The mean craniocaudal diameter and the mean transverse diameter of the CSO were statistically larger in the specimens without Thebesian valves (p=0.000 and p=0.001, respectively).
The Thebesian valves were observed in 86 hearts, and a wide variety of their morphology was seen. The majority of the Thebesian valves were semilunar in shape (74.42%). The extent to which the valve covered the ostium was variable, including remnant valves that covered <15% of the CSO (35%), and valves that were large and covered at least 75% of the CSO (22.09%). In 3 specimens the valve completely occluded the ostium.

Key words: Thebesian valve, coronary sinus ostium, variations

P1-05

Persistent primitive trigeminal artery detected by computed tomography angiography

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Introduction:

Persistent trigeminal artery is the most common primitive carotid basilar anastomosis that persists in adulthood. The overall incidence of persistent trigeminal artery is between 0.2 to 0.6%. Persistent trigeminal artery are known to be associated with a wide range of pathology. The aim of this study was to describe the morphological characteristics of the persistent trigeminal artery and to emphasize their clinical significance.

Materials and methods:

We examined radiographs of 234 patients who had CT angiography undertaken for a variety of clinical reasons, performed as a part of their medical treatment at the University Clinic for Radiology in Skopje, R. Macedonia. The study population included 234 patients, 130 male and 104 females, age range from 19-83, mean age 57.8 years.

Results:

In one patient we found persistent trigeminal artery with overall incidence of 0.42%. CTA revealed a left persistent trigeminal artery that arise from the C4 segment of internal carotid artery and communicate with the basilar artery between the origin of the anterior inferior cerebellar arteries and the superior cerebellar arteries.

Conclusion:

Although anatomically interesting, an awareness of the anatomy and variations of the brain arteries is clinically important for radiologists and surgeons for save performance of procedures, and forensic pathologists since variants may have forensic consequences.

Key words: anatomy, persistent trigeminal artery, computed tomography angiography

P1-06

Porcine liver vascular corrosion casts – our up to now experience

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Introduction:

Quality of microvasculatrure is a critical factor of regeneration. In order to make the human liver ressections more precise, our team has been developing a perfusion mathematical model. To obtain 3D data from the liver microvasculature, we decided to make porcine liver corrosion casts. We had to find a suitable resin and optimize both the operating and the casting protocol.

Material and methods:

Two resins were tested: Mercox II (Ladd Research, Williston, Vermont, USA) and Biodur E20 (Biodur Products, Heidelberg, Germany). 12 porcine livers were filled (both sexes, age 42–105 days, weight 12–45 kg), 6 only via the portal vein (PV), 6 both by the PV and the hepatic artery (HA). The volume injected ranged around 700 ml. Corrosion casts were examined by using: 1. multi-slice human CT (Somatom Sensation 64, Siemens, Forchheim, Germany), slice thickness 0.6 mm, voxel size 0.4 x 0.4 x 0.6 mm, 2. micro-CT (Xradia XCT 400, Pleasanton, CA, USA), the pixel size used for imaging was 17 µm, 9.5 µm and 4.5 µm, 3. scanning electrone microscopy (SEM): specimens were sputtered with gold for 60 s and examined in Stereoscan 250 SEM (Cambridge, U.K.) at an accelerating voltage of 10 kV.

Results:

Mercox II did not appear to be suitable for the high volume casting. Contrarily to it, Biodur E20 enableds sufficient processing time, it passed through the sinusoids and hepatic venous system. In the casts filled also via the HA, the peribiliary plexuses and vasa vasorum of PV were present. Tortuous, globular structures on the course of sinusoids appeared to be resin extravasations.

Conclusion:

Macro- and micro-CT scans enable 3D reconstruction of the entire vascular bed, the data required are suitable also for the stereological assessment. Our results can be used to correlate 3D models with 2D liver histopathology or to provide data to optimize liver resections or perfusion models.

Acknowledgement

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P1-07

Anatomical variations of the cystic and hepatic arteries and their surgical implications

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The aim of our study is to present some variations of the cystic and hepatic arteries and their importance for liver and biliary tract surgery.

Methods. Results.

During routine abdominal dissection of formolized cadavers we found variations in the number and course of the cystic artery: double cystic artery; cystic artery from right hepatic artery passing anterior to the common hepatic duct. In one case, our dissection revealed the following variations in the hepatic arteries: tortuous course of right hepatic artery forming a loop inside Calot's triangle (caterpillar hump right hepatic artery), trifurcation of common hepatic artery with absence of proper hepatic artery and accessory left hepatic artery from left gastric artery. All these arterial variants have important implications in different types of biliary or hepatic surgical procedures (laparoscopic or open cholecystectomy, choledocotomy, hepatectomy, liver transplantation, hepatic artery cannulation). Accessory left hepatic artery from left gastric artery is also important during radical gastrectomy for gastric cancer.

Conclusion.

The surgeon must have a good knowledge of the variations in the cystic and hepatic arteries and must choose the most appropriate surgical approach for each of them in order to avoid intraoperative vascular injuries which may lead to important postoperative hepatobiliary complications.

Key words: cystic artery; hepatic artery; anatomical variation

P1-08

Anatomical pattern of the origins of the ventral branches of the abdominal aorta

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Pattern of the origin of the ventral branches of abdominal aorta forms the anatomical basis for abdominal and endovascular surgeries, the aim of this study was to describe the pattern of the origin of the ventral branches of abdominal aorta.
The study conducted in 2010 and included 31 cadavers, all are males, in the dissection rooms of 8 universities in Khartoum, Sudan, there was no great ethnic variations, data collected using ruler and string as measurement tools, distance was measured from the centre of each vessel at its origin, the vertebral level was detected after exposing the lumbar and lower part of vertebral column and counting was started from the 5th lumbar vertebra and upwards, two check lists were performed by two different persons for the same cadaver for more accuracy. No variations were found in the origins of the ventral branches of the abdominal aorta. In about 90% of cases, the coeliac trunk originates at level of L1, the superior mesenteric artery originates at the same level L1 in all cases, as for the inferior mesenteric artery, the level of the origin is L3 in more than 80% of cases.
The bifurcation of the aorta is at level of L4 in 87.1% of cases, the mean distances from the origins of the ventral branches to the aortic bifurcation are 11.9 cm for the coeliac trunk, 11.2 cm for the superior mesenteric artery and 4 cm for the inferior mesenteric artery. The mean distance between the coeliac trunk and the superior mesenteric artery is 1.2 cm, and from the superior to the inferior mesenteric arteries is 6.8 cm.

Key words: coeliac trunk, superior mesenteric artery, inferior mesenteric artery, bifurcation of the aorta.

Abbreviations: SMA: superior mesenteric artery, IMA: inferior mesenteric artery.

P1-09

Morphological visualization of the cardiovascular system by micro-CT

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Aim

Micro-CT is equipment designed to visualization of the inner tissue structures using X-ray beams. In the present it has resolution in the magnitude of micrometers so it is capable of detailed visualization. The limiting factor of soft tissue visualization is their reduced capacity of X-ray beams absorption. With the help of contrast agents it is possible to enhance quality of scanned organs or blood vessels. Another limiting factor may be the present size of the instrument detector - 3x3 cm. Therefore only laboratory mice organs were utilised until now for the experimental visualizations. After ethanol fixation - as a exogenous contrast matter - we visualized heart, kidney and liver according to our own protocol.

Methods

We experimented with ethanol concentrations (50%, 97%, increasing concentrations 25-97%) as well as with time of fixation (72, 168 and 336 hrs.). Another factor affecting image acquirement was time of sample drying prior to scanning. Optimal time interval was estimated to 40 min by experimenting with scanning in 5 min. subsequent intervals. After that time the quality of image would not show any improvement.

The series of scanning revealed best scans when fixating for the period of 4 weeks with increasing row of ethanol concentrations.

Results

This way we successfully performed 3D reconstructions of the heart with its cavities and visible arrangement of the muscular fibers of the ventricles fusing into the heart vortex (Fig.). Visualization of the blood vessels structures and their branching was recorded in the spatial model of the kidneys. This one also showed identical excretory system and kidney pelvis.

In the liver lobes we were able to observe venous portal system that we could analyze in the 3D reconstruction and thus in detail describe branching of the venous system.

All our experiments were only first steps in the detailed visualizations of the blood vessels of bigger organs of larger laboratory animals, eventually vascular system of human organs.

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P1-10

Analysis bloodstream white rat testis of the experimental diabetes

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Streptozotocin-induced diabetes in rats is frequently used to study the disturbances in lipid metabolism under diabetic conditions. The main complication is a disease of the blood vessels, which we call angiopathy.

Methods.

The researches have been performed on 20 white mature male rats aged 4.5 to 7.5 months with body weight of 130 to 150g. Experimental diabetes modelling was intraperitoneal injection of Streptozotocin ("Sigma", USA), dissolved in 0.1M citrate buffer, pH=4.5 (7mg per 100g of body weight of animals). Animals in whose blood glucose concentration in 2,4,6,8 weeks after launch of experiment was above 13.4 mmol/l were used for research.

University Animal Care and Use Committee Approval: № 8 of 18 November 2013.

Results.

In 2 weeks run of streptozotocin-induced diabetes mellitus in the testicle hemomicrocircular channel links the first signs of angiopathy are found. Venule walls structure is still preserved, but venule lumens are partially dilated. After 4 weeks of experimental diabetes arteriole adventitious coating is also swelling, thickened, with significant amount of amorphous liquid between bundles of collagen fibers. Venule lumens often acquire irregular, sometines star-shaped form. In small testicle venules the mural thrombi are found. In 6 weeks of experiment run we see vessels are dilated, arterioles and venules are dilated, twisty. Arteriolo-arteriolar as well as arteriolo-venular anastomoses are dilated as well. After 8 weeks of streptozotocin-induced diabetes mellitus run we see deep destructive changes in all testicle hemomicrocircular channel links. Diameter of preserved capillaries is 9,93±0,03 μm and 7,47±0,06 μm of longitudinal and latitudinal respectively. Arterioles are dilated, their diameter is 30,56±0,13 μm, twisty, venules are dilated with diameter of 31,92±0,04 μm.

Discussion and Conclusion.

The morphological and morphometric analysis of testicle angioarchitecture allowed evaluating its vascularization state in the norm and in streptozotocininduced diabetes mellitus. The depth of diabetic structural changes in the white rat testicle blood channel links correlates with morphometric values. Testicle trophic activity index to 84,40±1,50 μm state on significant thinning of testicle capillary network in the experimental diabetes mellitus that leads to its abrupt circulatory failure.

Key words: testis, hemomicrocircular channel, diabetes mellitus.

P1-11

Case riport of bilateral supernumerary renal arteries

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The development of the kidney and its vessels is a fairly complex process and – accordingly – its anatomy and blood supply are of high complexity. Due to the delicacy of the development, several malformations may occur, involving both structure and circulation of the kidney or of the urinary tract. During the development, anatomical variations (not necessarily resulting in pathological consequences) may develop, mostly affecting the renal arteries. These vascular variations are of equally high importance both in renal surgery and renal transplantation. The kidneys develop from the metanephros in the caudal (pelvic) region, later shift to more cranial position into the abdominal cavity. In the pelvis, the metanephros receives its arterial supply from the lateral visceral segmental branches of the aorta. During its ascent, the kidney is supplied by continuously developing segmental arteries, which originate from gradually higher and higher level of the abdominal aorta. Meanwhile the lower arteries degenerate, but occasionally some may persist resulting in vascular variations. According to the literature, accessory renal artery may occur in 30-35% of the population, usually on the left side. The incidence of bilateral variations is 10%, those of unilateral ones is 21%. The rate of occurrence of more than one accessory renal arteries is 6-8%. The reported cases of four renal arteries on the same side amount to 0,4-0,5%.

In our case (90 years old man, with no renal disease in the case history), we found four renal arteries on the left side, the highest representing the normal anatomical position. On the right side there was one supernumerary renal artery. Each artery was accompanied by the corresponding renal vein. Moreover, the left hilum was shifted to the ventral surface of the kidney, and quite a big portion of the renal pelvis was excluded from the renal sinus. Since the persistent renal arteries interfered with the upward migration of the kidneys, their shape was markedly more elongated, and their lower poles were extending more inferiorly than usual.

P2-01

Parietal Lobe Abnormalities in Chronic Schizophrenia: a comparative brain segmentation study

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Aim:

Recent imaging, behavioural and neuropsychological studies in healthy subjects have highlighted the role of the parietal lobe in several cognitive processes. Although parietal lobe abnormality is related to the psychotic disorders, the knowledge about the nature of parietal lobe involvement in schizophrenia is uncertain. This study was designed to assess the volume, thickness and surface area values of the parietal lobe in the patients with schizophrenia in comparison to healthy controls.

Methods:

88 control subjects (51 male, 37 female) and 57 schizophrenic patients (30 male, 27 female) participated in the study. The study was approved by the Ethical Committee of the Gezira University/Sudan. Structural magnetic resonance imaging was performed and the DICOM images were evaluated using automatic brain segmentation software (BrainSuite). The volume of the region of interest were evaluated.

Results:

The mean volume of parietal lobe was smaller in the schizophrenics (114.97 ±10.86cm3) than that of controls (127.85±10.65 cm3), ($p \leq 0.05$). Mean volumes of the parietal lobe grey and white matter in schizophrenics (72.49±7.54 cm3 and 42.47±4.51cm3) were smaller than that of controls (79.40 ±6.77 cm3 and 48.46±5.94 cm3), ($p \leq 0.05$). The mean cortical area pial in schizophrenics (331.83±27.01cm2) was smaller than that of control (354.42±27.99 cm2), ($p \leq 0.05$). While no differences found between schizophrenics (4.21±0.19cm2) and controls (4.24±0.20cm2) related to the thickness of the parietal lobe $p > 0.05$).

Conclusion:

Diminished grey and white matter volume and cortical area of the parietal lobe observed in this study indicate generalized reduction of the parietal lobe volume in schizophrenia, which provide direct evidence for the involvement of this brain region in the schizophrenia. Suggestions of morphological abnormalities in the parietal cortex in schizophrenia may help further our understanding of the pathogenesis of this disorder.

Keywords: Schizophrenia, Parietal lobe, Volume, Magnetic resonance imaging, Automatic brain segmentation

P2-02

The fiber dissection technique; systematic anatomic lateral approach

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Development in magnifying techniques and micro neurosurgery was necessitated to the neurosurgeon research fibers pathways anatomy and make practice on cadavers brains. Because of this fact there is limited researches executed in recent literature by anatomist despite of the clinicians especially neurosurgeons. The fiber dissection technique of the brain is important not only for neurosurgeons but also for anatomist. Only with clinical view or disregarding of aspect of anatomist cause terminological and descriptive confusion of terms and preparation methodology of the fibers. The aim of the study was to evaluate possibility of technique and determine steps of the brain fiber dissection of the lateral surface in systematic anatomic manner. We dissected lateral surface of seven hemispheres. Respectively cortex and the white matter of the frontal, parietal, occipital and temporal lobes were dissected. Steps of the technique was determined in systematic manner and terminology of the structures are described according to anatomical terminology.

P2-03

Surgical neuroanatomy of the morphometry and morphology of the sulci located at lateral aspect of the brain hemispheres: a preliminary cadaveric study

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Aim:

Lateral surface of the brain is important for surgical pterional approaches. Neurosurgeons have to know exact anatomical structures and possible variations for better understanding of undergoing pathology, for surgical approaches, especially for regional neurosurgical approaches. With a neurosurgical point to view the morphology and morphometry need to be clarified. There is need to describe important but simple and practical landmarks. In this study we noted and compared surgical neuroanatomy of of the sulci located at lateral aspect of the brain hemispheres with morphometric values, morphology, asymmetry and relationships with each other and describe their relations with important surgical landmarks.

Methods:

Measurements including fronto-occipital length, Sylvian fissure length, cerebral width, and distance between anterior Sylvian point and inferior Rolandic points were noted on 30 cadaveric cerebral hemispheres. Measurements were performed and means (min –max, SD) were calculated. The ratios with fronto-occipital lenght were calculated. Additionally presence of triangular sulcus and diagonal sulcus, Sylvian fissure terminal branch pattern variations were noted and all hemispheres were observed for their variations.

Results:

Distance between anterior Sylvian point and inferior rolandic point was measured as 26.72 mm at right side and 25.94 mm (min 18.22 mm – max 29.91 mm) and there was not statistical difference between right and left sides. Triangular sulcus was present in most of hemispheres. Anterior horizontal ramus and anterior ascending ramus which are the bordering branches of Sylvian fissure, either have a common stem before separating from each other is less found than when divides right in Sylvian fissure. Most observed divide patterns were defined as U and Y configurations.

Conclusion: In our study, the Sylvian fissure length was longer than right side with statistical analysis correlation. Anterior Sylvian point and inferior Rolandic point easily can be recognized during surgery and were practical anatomical landmarks for neurosurgical procedures.

Keywords: Lateral sulcus, Sylvian fissure, anterior Sylvian point, inferior rolandic point, diagonal sulcus, triangular sulcus, pterional approach

P2-04

Parkinson´s disease modeling by induced pluripotent stem cells.

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Parkinson´s disease (PD) is a movement disorder associated with the degeneration of the nigral dopaminergic (DA) neurons. There is currently no effective medication to treat PD. Drug therapies only provide relief of symptoms and have unpredictable side effects. One of the greatest hurdles for PD research is the lack of patient-specific nigral DA neurons for disease modeling and drug discovery.

The generation of induced pluripotent stem cells (iPSCs) from somatic cells mediated by transfer of the limited set of transgenes (Oct4, Sox2, Klf4 and c-myc) has a significant impact on Parkinson´s disease therapy without any problems concerning ethics or immunological rejection. iPSC-derived DA neurons might serve as an easily accessible autologous source for cell replacement. Moreover, using a single iPSC line as a universal control to study distinct PD-lined mutation may allow the better understanding of the mechanism by which mutation affects cells and ultimately patients. However, there remain several safety issues restricting the use of iPSC-derived DA neurons in clinical application, such as presence of additional mutations, oncogenic potential of some reprogramming factors, variability between individuals, epigenetic/genetic instability, and the ability to obtain disease-relevant subtypes of neurons. Moreover, increased level of aneuploidy, defects in X-chromosome inactivation and genomic imprinting have been detected in various iPSC lines. Understanding the molecular players involved in human neural differentiation will facilitate the development methods and tools to enrich and monitor the generation of specific subtypes of neurons that would be more relevant in modeling neurological diseases. Recently, a major interest has arisen in gene correction or modification in patient-specific iPSCs to replace defective endogenous genes or modify putative causal genetic variants of individual patients.

Succeeding in this purification step will certainly improve the possibility to study specific molecular modification and their consequences in affected cells.

Keywords: iPSCs; Parkinson´s disease; disease modeling; cell-based therapy; neurodegenerative disorders

P2-05

Evaluation of the Midsagittal Sectional Surface Area of the Cerebellum in Chronic Schizophrenia

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Aim:

Morphological and functional abnormalities of the cerebellum are associated with schizophrenia. Several recent neuroimaging studies have focused on morphological changes of the cerebellum in schizophrenia; however, these studies have reported divergent findings. Therefore, there is no consensus regarding a cerebellar size abnormality in schizophrenia. The present study aimed to describe a new approach for the evaluation of surface area and surface area fraction of cerebellum in patients with schizophrenia.

Methods:

In the present study 57 schizophrenic subjects and 88 healthy subjects participated. Structural magnetic resonance imaging was done to both groups with SIEMENS 1.5 Tesla scanner. The DICOM images were analysed using the ImageJ software. The midsagittal slide was selected using special criteria. The midsagittal sectional surface areas of the cerebellum, brain and intracranial cavity were measured using the planimetry technique. Surface area fraction of cerebellum within brain and surface area fraction of cerebellum within intracranial cavity was also estimated.

Results:

The mean of the midsagittal sectional surface area of the cerebellum in patients and controls were 10.45±1.53 cm2 and 11.43±1.92 cm2, respectively. The mean of the midsagittal sectional surface area fraction of cerebellum within brain in patients and controls were 7.50±1.05 % and 7.91±1.36 %, respectively. The mean of the midsagittal sectional surface area fraction of cerebellum within intracranial cavity in patients and controls were 6.34±0.87 % and 6.70±1.04 %, respectively. The mean of the midsagittal sectional surface area and surface areas fraction of the cerebellum were lower in patients with schizophrenia than that of the controls ($P<0.050$). The comparison between the sexes across the groups showed that the male schizophrenics have smaller midsagittal sectional surface area and surface areas fraction of the cerebellum than that of the controls ($P<0.050$). However, no significant differences were found between female schizophrenics and female controls ($P>0.050$).

Conclusion:

Reduction in size of cerebellum may induce the positive symptoms, negative symptoms and cognitive impairments in schizophrenia. The current findings showed that, changes of the midsagittal sectional surface area and surface area fraction of the cerebellum in schizophrenia showed sex dependant differences that may help in the diagnosis of the disorder. The methods described in this study are a simple, practical and unbiased approach to evaluate the size of cerebellum in schizophrenia as well as in neurodegenerative disorders.

Keywords: Cerebellum, Schizophrenia, Surface area, Surface area fraction, Planimetry

P2-06

Iintraspinal intradural anomalies (clinico-anatomical research on spinal nerve roots)

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Variability in certain dimensions, form, structure and position is natural for the human body and internal organs, simply said: it is tolerated and accepted as natural variability. Nearly all medical fields need more precise knowledge of the variability of the human body construction especially for the overall diagnosis and treatment improvement. About 10% of misdiagnoses are based on ignorance of the anatomical variability. New and newer imaging methods- echography, endoscopy, CT, MRI- have opened space for the research of anatomical variations and anomalies. Our work, is focused on the intraspinal intradural anomalies of the peripheral nervous system. The results of such anatomical studies are needed for more accurate interpretation of the perioperative as well as clinical findings. Knowledge about the structure of the peripheral nervous system are means to achieve the aim, which is the most perfect treatment of peripehral nerve injury and the treatment of partial or total disorders of sensitive and motor functions. Peripheral nerve lesions differ from all other injuries by their clinical course and results, which are largely determined by complexity of the degeneration and regeneration processes.

The anatomical study was performed on 33 cadavers within 24 hours after their (usually violent) death: 27 males and 6 females. Each body was dissected in a prone position, The wide and long laminectomy (from the cervico-cranial transition to the sacrum) revealed the full spinal canal for the examinations of each cervical, thoracic, lumbar and sacral nerve roots from their origin to their exit through the intervertebral foramina and sacral hiatus. Subsequently the long incision of the spinal dura mater was made in order to allow the visualization of spinal nerve roots and conus medullaris.

Observations of the normotyped intraspinal intradural formations of the brachial and lumbosacral plexuses prevailed. The frequency of anomalies raised in cranio-caudal direction: they were frequent in cervical, more frequent in lumbosacral regions and most numerous more distally. We have observed inradural intraspinal anastomoses in all lumbosacral plexuses (100%), 23 times (69,9%) of cases in the cervical roots, in the thoracic region 7 times (21,2%). More distally their number was increased, especially among the sacral roots.

In our works, we have repeatedly pointed to the importance of the individual approach in the analysis of the course and treatment results of the peripheral nerve injuries. Special attention was paid to the topographic differences. We think, that it´s neccesssary to know not only the „standard anatomical image“, but also show what life brings in the clinics every day and on which the whole varying pathology depends. Obtained observations may be helpful in explaining the differences between the clinical picture and generally accepted anatomical standards.

P2-07

The effects of early environmental enrichment and PACAP on monoamine levels in an aging rat model of Parkinson's disease

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The causative therapy of Parkinson's disease is still under investigation. Our research group has previously shown the neuroprotective effects of PACAP and enriched environment in Parkinson's disease in young animals. The aim of our present study was to examine the effects of these factors in one-year-old rats after 6-OHDA-induced lesion of the substantia nigra, measuring the dopamine and serotonin levels in the brain.
Wistar rats were used in our experiment (n=15). Animals were divided into standard (n=7) and enriched groups (n=8) according to their environmental conditions. Animals of the standard group were placed under regular conditions. For environmental enrichment, during the first five postnatal weeks we placed pups in larger cages supplemented with toys, objects, running tunnels and rotating rods of different shape, size and material. Half of the toys were changed daily. One year later rats were treated with unilateral injections of 2 µl 6-OHDA (5 µg/µl) into the left substantia nigra, control animals received 2 µl physiological saline. Following the 6-OHDA injections some of the standard-group-animals received 2 µl (1µg/µl) PACAP treatment. On the 7th postoperative day we measured the levels of dopamine (DA) and serotonin (5-HT) in the substantia nigra by LCMS method.
Physiological saline did not cause any significant decrease in DA levels in either of the animals. The substantia nigra of the 6-OHDA-treated standard and enriched animals showed significantly lower DA levels compared to the saline-treated animals of the same groups.
Consistent with our previous studies in young animals, the PACAP treatment could increase the DA levels by 15% after 6-OHDA induced lesion. No significant differences could be observed regarding the serotonin levels of the substantia nigra.
Although the protective effect of early postnatal environmental enrichment is described in young animals, we could not prove it in our experiment on aging animals. However, similarly to younger animals PACAP could restore the decrease of DA levels, which could play a role in its neuroprotective effect in Parkinson's disease.

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P2-08

Immunohistochemical Behavior of Estrogen Receptors in Hippocampus of Rats administrated by Cilostazol

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Background

Estrogen plays an important role in changes taking place in the brain through the regulation of growth and differentiation of axons and dendrites, influence on plasticity. Estrogen action is through the activation of its receptor, ER. ER is more prevalent in the hippocampus.

ER activation induced morphological changes in hippocampal neurons in vivo. Some evidence suggests that membrane localized classical ER mediate the consolidation of memory. Rodent studies support an influence of estrogens on social memory.

Cilostazol (CLZ, Pletal®) is an inhibitor of phosphodiesterase 3A (PDE3A) which is an anti platelet agent that enhance the memory and cognitive functions within the central nervous system. PDE3A is expressed from the frontal cortex, hypothalamus and hippocampus. In the present study, we evaluated the effects of CLZ on rat hippocampus.

Material and Method

The effects of CLZ on pyramidal neurons and granule cells of dentate gyrus (DG) of rat hippocampus were studied. Female Sprague Dawley rats (12weeks old) subdivided into the control (group I) was not received CLZ and the experimental group (group II), (n = 6 in each group) received CLZ (20mg/kg, p.o.) by intraperitoneal for 28 days. Rats were transcardiacly perfused and sacrificed on day 28. Brain sections were processed for hematoxylin eosin and immnunohistochemical staining to quantify analyses were observed for morphological and morphometric parameters.

Results

Using an antibody of ER, we reported that increased expression of ER in different subfields of CA as well as in DG, in the control group while decreased expression of estrogen receptors was observed in hippocampus administrated by Cilostazol.

Comparing the control group with the experimental group hippocampus showed great vacuolations, disorganization and shrinkage of the pyramidal cells. In the control group, there is increased degeneration inside the hippocampal sulcus also multiple vacuolations especially in dentate gyrus area. The thickness of CA3 was reduced in the experimental group compared with control group.

Moreover, immunohistochemical results for ER stained sections revealed had a reaction in astrocytes in the control group.

Conclusions

According to this result, on the contrary to the previous studies, CLZ exposure reduced the expression of ER receptors and the consolidation of memory in the hippocampus. On the other hand, CLZ reduced the amount of neuronal damage and protect the cellular integrity.

P2-09

Neuronal degeneration in the hippocampus of the mouse with spontaneous recurrent seizures following pilocarpine treatment

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Hippocampal sclerosis (HS) is the most common brain lesion in epileptic patients. Histopathology of HS includes the loss of the excitatory pyramidal neurons (PCs) and mossy cells (MCs), partial death of inhibitory interneurons, dispersion of granule cells (GCs) and reactive astrogliosis. Most of the laboratory rodents with short life expectancy are less suitable for the study of the neurodegeneration process of the hippocampus. However, there are animal strains which are sensitive to epileptogenesis and also present neuropathological features resembling the HS.

Our aim was to prove the presence of the ongoing neuronal degeneration in the hippocampus of the NMRI mouse, following a single status epilepticus-like convulsive event. We investigated the neuronal loss and the proliferation of microglia cells in the hippocampus with quantitative immunohistochemistry. Spatial memory and learning of the experimental animals were tested in a Barnes maze.

A single intraperitoneal injection of pilocarpine (PILO) in a dose of 195 mg/kg b.w., was administered to adult NMRI-strain mice in order to induce generalized convulsions (status epilepticus). Seizures were terminated by intraperitoneal injection of Diazepam after 90 min. The mice survived 3.5 months, and were observed daily for the appearance of spontaneous behavioral seizures. At the end of the experiments, deeply anesthetized animals were perfused transcardially with paraformaldehyde fixative, and frozen coronal sections of the brain (24 µm) were immunostained with antibodies to NeuN, NPY, calretinin (CR), parvalbumin (PV) and microglia marker (Iba1).

The observation of the PILO-treated mice proved the development of regularly repeated behavioural seizures. Every animal with behavioural seizures displayed greatly enhanced NPY immunoreactivity in the dentate gyrus (DG). The PILO-treated mice showed various degrees of hippocampal degeneration, thinning of the fimbria and some of the animals displayed HS. Marked neuropathological changes were found in HS: (1) the PCs and MCs disappeared completely, as revealed by NeuN and CR immunohistochemistry; (2) the density of Iba1 immunoreactivity was significantly increased. Less serious stages of hippocampal degeneration displayed segmental loss of the PCs in the CA1 and CA3. Another standard sign of HS was the increasing density and thickness of NPY-immunoreactive band in the inner molecular layer (IML) of DG and CA3, attributed to the sprouting of the mossy fibers of GCs.

The CR immunostaining in the IML decreased. The neuronal loss and the microglial proliferation were overlapping in every case, indicating the presence of the ongoing neuronal degeneration in the hippocampus. According to the Barnes maze test, the treated animals showed significant differences, such as searching time in comparison to the control group. Thus, the NMRI strain seems to be an excellent experimental model for further studies on the involvement of HS in the epileptogenesis.

P2-10

Can be used alfa-synuclein in colonic lamina propria mucosae as a biomarker of Parkinsons´ disease?

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There is an urgent need for biomarkers of Parkinson's disease (PD). Routine biopsies allow the demonstration of positive alpha-synuclein pathology in the mucosa and submucosa of the large intestine from PD patients, specifically in the enteric nervous system (ENS). Interestingly, the same findings are shown in biopsies from patients with the positive screening for risk factors of PD, being proposed that this may indicate the upcoming development of the disease, and so permitting an earlier disease modifying or neuroprotective therapy, when developed in the future. We were able to corroborate this hypothesis by finding, in immunohistochemically stained microscopic sections from biopsies, alpha-synuclein pathology in a majority of positive screening patients.

32 patients at risk for development of PD were included in the study, whose mean age was 60,1±11,7 years, 15 were men (47%). In micrographs of all 4 control healthy patients we could notice the presence of some alpha-synuclein in CD68 positive cells around Lieberkühn crypts, which is a physiological sign, in the lamina propria mucosae, but clearly not in the aggregated form.

In contrast, in sections from all 4 patients in the manifest stage of PD, we observed aggregates positive for alpha-synuclein in nerve fibers of the lamina propria mucosae of all 4 of the PD patients. Axons containing the protein appeared as sinuous threads with densely stained varicosities. Surrounding the Lieberkühn crypts, we also found CD-68 positive cells with darkly-brown stained aggregations of alpha-synuclein. We have also found that in 27 of the 32 positive screening patients, micrographs of the biopsies contained the same lesion as the one present in patients with the clinical disease, which is a relatively high proportion. Our results show the presence of alpha-synuclein aggregates in colonic nerve fibers and CD68-positive cell population in healthy patients at risk for developing Parkinson's disease. This enables us to further explore the theory of colonic biopsies for alpha-synuclein as a potential premotor biomarker of PD and can serve as a model for testing this hypothesis. Nonetheless, it is crucial to perform further testing with larger samples, as well as long-term follow-up, to elaborate on the sensitivity and specificity of colonic samples as meaningful biomarkers for PD.

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P2-11

Tractography of fornix, paraterminal gyrus and subcallosal gyrus in pacients with Alzheimer's disease

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Aim

Alzheimer's disease (AD) is neurodegenerative disease characterized by the accumulation of extracellular, insoluble beta-amyloid plaques and intracytoplasmic tau-associated neurofibrillary tangles. This process leads to the loss of neurons and connectivity. DT MRI tractography is able to visualise neural tracts and white matter damage using the measurement of the restricted diffusion of water in tissue. Using this method and visualisation we can measure DTI parameters, see neural tracts connections and results can be used in diagnosis of AD.

The aim of this study was to measure parameters of fornix and gyrus subcallosus and paraterminalis in patients with AD and healthy controls of similar age. Then compare results and determine statistical differences between both groups.

Methods

Patients with AD and controls were devided by a neurologist based on psychological and clinical examination. DTI scans were acquired on 3T MRI at Institute for Clinical and Experimental Medicine (IKEM). DSI Studio was used for QSDR image recontruction. The area of fornix and gyrus subcallosus and paraterminalis was drawn manually according to anatomical position in all dimensions on T2 weighted MRI images. Then tractography, visualisation of neural tracts, was created. Based on recontructed neural tracts we obtained these parameters: number of tracts, tract lenght, tract volume, quantitative anisotropy (qa) and generalised fractional anisotropy (gfa). Statistical analysis was performed using STATISTICA 12 (ANOVA test, t-test).

Results

We compared 24 patients with AD and 24 control patients. There was statistically significant decrease of number of tracts and tract length in the area of left fornix in patients with AD. Statistically significant decrease of number of tracts, tract length and tract volume was also observed in the area of right fornix in patients with AD. There was statistically significant increase of number of tracts, tract volume, qa and gfa in the left area of gyrus subcallosus and paraterminalis in patients with AD. Statistically significant increase of tract volume and qa in the right area of gyrus subcallosus and paraterminalis was seen in patients with AD.

Conclusion

Fornix is associated with episodical memory which is responsible for remember of certain events and connection of time and space. Degeneration of fornix according to DTI analysis explains longterm memory loss in patients with AD. There was significant increase in parameters in area of gyrus subcallosus and paraterminalis, area associated with short term memory. A higher gfa and qa value indicate better integrity of the neural fiber bundles which

might represent the compensation of AD. Tractography could be used for diagnosis of AD.

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P2-12

Anatomical relationships between abducens nerve and internal carotid plexus

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Aims

The abducens nerve (CN VI) may be involved in any pathological process within the cavernous sinus. Sometimes CN VI palsy may be accompanied by Horner syndrome, which could be accounted for by the anatomical relationships between CN VI and the internal carotid artery (ICA). However, anatomical variations of communications between CN VI and the internal carotid plexus have not yet been exhaustively described in the anatomy literature. The aim of the study was analysing possible variations of these communications.

Methods

Twenty-five randomly selected head specimens fixed in a 10% formalin solution were studied (50 abducens nerves). Additionally, five specimens underwent histological evaluation with H&E staining, as well as silver staining.

Results

In all the specimens, communications between CN VI and the internal carotid plexus were macroscopically visible. When CN VI was a single trunk (72% of cases), communications with the internal carotid plexus were observed in the place where the ascending (vertical) part of the intracavernous ICA adhered to CN VI. In the cases where CN VI split into branches in CS, the communications appeared in the area where CN VI branched out at a short length into several filaments, merging into a single trunk in its further course. When CN VI was partially duplicated (10% of cases), communicating branches from the internal carotid plexus joined CN VI in the area where both trunks of the duplicated CN VI merged within CS. Histological examination of the communicating branches revealed small nerves containing mainly unmyelinated axons.

Conclusion

The study allowed to observe constant communications between CN VI and the internal carotid plexus located in the area where the cavernous segment of CN VI adhered to the ascending part of the internal carotid artery.

P2-13

Urinary disorders in Multiple Sclerosis: a review of literature

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Aim:

Urinary disorders (UD) are frequent autonomic nervous system complications in Multiple Sclerosis (MS) (1). In MS patients urinary symptoms could include urgency to urinate, urinary incontinence, and retention of urine. The symptoms' prevalence range from 30% to more than 90% (2). The anatomical structures implicated in the control of micturition and continence are the pontine micturition and continence center, the midbrain periaqueductal gray, the hypothalamus, the human cingulate, and prefrontal cortices. Depending on localization of central nervous system lesions, the urological conditions can be detrusor overactivity (DO) or detrusor sphincter dyssynergia (DSD). We carried out a review focusing our interest on the morphological aspects and patho-physiological mechanisms of vescical dysfunction in MS patients.

Methods:

We searched MEDLINE using the PubMed interface. We selected manuscripts with predefined text words "urinary", "bladder", "dysfunction", "multiple sclerosis" with the Boolean operator "AND". Only manuscripts in English language were selected. Abstracts and unpublished studies were excluded. References of all relevant retrieved articles and of review articles were also manually evaluated in order to find additional articles. For data extraction an electronic form was prepared.

Results:

Out of 33 selected studies, 4 were conducted on animal MS models; in particular, they showed altered genetic expression associated with bladder mechanosensory, transduction and signaling systems. Only 2 studies performed on human beings assessed morphological changes in MS bladder: Gevaert T et al demonstrated disease-specific changes in the organization and phenotype of interstitial cells of the upper lamina propria of MS bladder, while Radziszewski P et al showed a denser innervation (calcitonin gene related peptide and substance P positive nerve fibers).

The other studies correlated type and severity of UD with neuroanatomical lesions in MS patients (3), or evaluated the correct management of MS patients with UD and their quality of life. Conclusions: It is crucial to better understand the pathophysiological mechanisms underlying UD for an early and accurate management of the disturbances. Future research should further focus on the complex interplays among the different key bladder elements to get new insights into the MS-related UD pathogenesis.

References

1. Pinter A et al. Autonomic Dysregulation in Multiple Sclerosis. Int J Mol Sci. 2015. 24; 16:16920-52

2. Ghezzi A et al. Diagnostic tools for assessment of urinary dysfunction in MS patients without urinary disturbances. Neurol Sci. 2016; 37:437-42

3. Weissbart SJ et al. The impact of pontine disease on lower urinary tract symptoms in patients with multiple sclerosis. Neurourol Urodyn. 2016. doi: 10.1002/nau.22953

P2-14

Examination of bioactive factors in different fractions of human milk samples

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Breast milk contains several bioactive compounds that play important roles in the development of the nervous system and in gaining immuncompetence. PACAP is a neuropeptide with important functions in reproductive and developmental processes.

Recently, we have shown that PACAP is present in high levels in breast milk and we have described changes of PACAP levels during lactation in the first 17 months by radioimmunoassay method. In the first part of the experiment we aimed to examine the presence of different bioactive factors (Fractalkine, MIP-1β, Eotaxin, MDC, RANTES, EGF, MCP-1, GRO, Flt-3L, CD40) both in the water and lipid phases of milk samples during the first 6 months of lactation with Luminex technique. In the second part of the study we measured the PACAP content in different fractions of milk samples from mothers with mature and premature newborns with ELISA method.

We collected 5 ml milk every month during the first 6 months of nursing from mothers with mature babies and during the first 3 months from mothers with premature babies. First we separated the milk samples to lipid phase and water phase by centrifugation. We used ultrasonication to factor the lipid phase. With this method we obtained an additional lipid fraction and water fraction. We measured the bioactive factors with Luminex technique and PACAP level with ELISA method.

With Luminex technique we detected all of the measured bioactive factors in all fractions of the milk samples. We were the first who showed the presence of Fractalkine, MDC, Flt-3L in different phases of milk samples. We found significantly higher bioactive factor concentrations in the water phase of milk samples compared to the lipid phase. The concentration of EGF and GRO was significantly higher compared to other bioactive factors. We also measured significant differences in factor concentrations between the two fractions of lipid phase. With ELISA method we showed higher PACAP concentration in the lipid fraction compared to water phase and we also detected significant alterations in milk samples from mothers with premature babies compared to mature milk samples.

Our future aim is to establish the exact influence of the above-mentioned factors in the process of lactation with additional clinical and molecular biological experiments.

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P3-01

The importance of anatomical landmarks during pelvic lymph dissection for cervix cancer

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Pelvic lymphadenectomy associated with radical total hysterectomy is considered an important part in the surgical management of cervical cancer.

The aim of this paper is to demonstrate the importance of anatomical landmarks for a complete pelvic lymph node dissection in cervical cancer.

Methods:

A group of patients with cervical cancer (with early or invasive stage tumors) have undergone primary radical total hysterectomy with pelvic lymph dissection to which we applied the principles of surgical oncology. We have performed sharp dissection technique for removing all the pelvic lymph nodes located around the iliac vessels beginning from the common and external iliac artery down to the obturator fosse.

Results:

Intraoperative images taken during radical hysterectomy demonstrate the anatomical landmarks for the limits of lymph node dissection .The uppermost limit is at about 2 cm above the bifurcation of the common iliac vessels, the lateral limit is the psoas muscle with the genitofemoral nerve, the medial limit is the ureter and the inferior limit is represented by the obturator nerve.

Conclusion:

The anatomical landmarks for pelvic lymph node dissection contribute to the removal of all nodal tissues with prognostic value after their histopatological examination. Therefore, they contribute to an appropriate staging of the disease and finally to an adequate oncological treatment.

Keywords: pelvic lymph nodes, cervical cancer, radical hysterectomy

P3-02

Rhinosinusal polyposis and metals: morphological aspects

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Aim:
Metals have strong toxic effects in humans and can act as immunoregulatory factors. The purpose of our study was to determine whether the concentrations of metals are associated with the clinical course of nasal polyposis (NP).
Methods:
We measured the concentrations of 10 metals (Zn, Mn, Se, Fe, Cr, Ni, Pb, Al, Cd, and Cu) in 58 patients with NP, and 29 controls with a healthy nasal mucosa. We used electron microscopy to compare the ultrastructural features of the nasal mucosa between NP patients and healthy controls.
Methods:
Concentrations of metals in nasal polyps and healthy mucosa were determined by mass spectrometry. Transmission electron microscopic (TEM) and scanning electron microscopic (SEM) images of the nasal mucosa were obtained.
Results: The mean tissue concentrations of all 10 metals were significantly lower in NP patients than in healthy controls ($P < 0.001$). Tissue concentrations of each metal were lower in stages III and IV NP than in stages I and II NP, although the differences were not statistically significant. TEM and SEM revealed changes in the mucosal ultrastructure in NP with progression from isolated polyposis (stages I and II) to massive polyposis (stages III and IV) with progressive fibrosis, devascularisation, and inflammation.
Conclusion:
Tissue concentrations of metals were lower in NP patients than in healthy controls, and this was particularly evident in massive polyposis. Polyp structure could contribute to the lower concentrations of metals by exposing the tissue to increased oxidative stress.

P3-03

Surfactant proteins of the human larynx

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Purpose:
Surfactant proteins (SPs) originally known from lung tissue are important players of the innate immune system. Beyond this they contribute to stability and rheology of gaseous or aqueous interphases. In the present study we determined the expression and presence of SPs (A, B, C and D) in different areas of the human larynx.
Methods:
mRNA expression of SP-A, -B, -C and -D was analyzed by means of RT-PCR in healthy samples of epiglottis, vocal and vestibular folds, subglottis and trachea. Distribution and localization of all four SPs was analyzed by Western blot and immunohistochemistry in healthy human tissue samples.
Results:
All four SPs were detected on mRNA- and protein level in human larynx as well as by means of immunohistochemistry in the different tissue samples of the human larynx.
Conclusion:
The results reveal that all four SPs are produced with different expression patterns within the human larynx. Based on the known functions our results suggest that SPs might be involved in maintaining mucus rheology and subsequently they could be essential components for proper phonation. Moreover, the proteins seem to play a role in immune defense of the larynx.

P3-04

Level indicators of lipid peroxidation in rats after administration of nalbuphine

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Nalbufin, agonist-antagonist kappa opioid widely used in the clinic, produces short anesthesia followed by increased pain / hyperalgesia. The purpose of our experiment was to study the enzymatic component of antioxidant system and the intensity of lipid peroxidation (LPO) in rats after administration Nalbufin.

Materials and methods:

Male white rats (weight 190-220 gr.) were taken. Animals were divided into two experimental groups and control. The animals were administered with opioid “Nalbuphine” at different doses (0.9 and 10 mg/kg/day) during 7 days. After 7 days the liver was taken after the ether anesthesia for biochemical analysis – malonaldehyde (MDO), superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GPO)).

Results:

A significant reduction of SOD in both experimental groups indicates the formation of large quantities of superoxide in the metabolism of nalbufin. SOD, which controls the level of superoxide radicals and nitroksyl converts superoxide into less toxic hydrogen peroxide. This can lead to a direct reaction between superoxide radicals and nitroksyl to form more toxic peroxynitrite.

For further neutralization of hydrogen peroxide meet GPO that converts hydrogen peroxide into water and CAT, which converts hydrogen peroxide into water and oxygen.

Lowest GPO indicators were identified in a group of animals which were administered at a dose of nalbufin 0.9 mg / kg, while the 10 mg / kg, GPO figure was close to that of the control group. CAT dose level of 0.9 mg / kg remained close to that of the control group, whereas 10 mg / kg CAT rate was higher than in the control group. As the GPO is activated first and at low rates of hydrogen peroxide and CAT, in turn, is activated by the further increase in the number intracellular hydrogen peroxide, it is clear that the level of hydrogen peroxide increased in both groups, but a group of animals in a dose 0 9 mg / kg, inactivation of hydrogen peroxide is only involving GPO, whereas 10 mg / kg and activates intracellular CAT, indicating a more intense formation of hydrogen peroxide in the middle of the cell.

Accumulation of hydrogen peroxide would have lead to activation of lipid peroxidation and increase MDO as the main marker of this process. However, in both groups observed decrease MDO compared with the control group parameters. Moreover, the smallest rate of MDO was in a group of animals in the 10 mg / kg. This fact confirms the previously obtained data on the existence of "scavenger" effect of nalbufin hydrochloride molecule in relation to hydrogen peroxide due to the presence of hydroxyl groups in the structure of nalbufin hydrochloride.

And this effect increases with the concentration of drug in the blood.

Nalbufin hydrochloride causes the formation of superoxide in the process of metabolism with subsequent formation of hydrogen peroxide. Thus, the toxic effects of nalbufin implemented mainly by superoxide and possibly peroxynitrite

P3-05

Analysis of the frequency of different variants of gall bladder structure in individuals of both sexes

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According to medical statistics in Europe and America gall-bladder diseases are diagnosed in 20-30 % of women and 10-15 % of men. With age, the incidence of cholelithiasis increases significantly.

Risk factors for gallstone disease are often metabolic diseases and malnutrition, as well as the cholestasis of mechanical or functional nature. One of the reasons of the cholestasis is mechanical bend and intersections of the gallbladder.

The aim of our work was to investigate the variations frequency of the structure of the gall bladder, which can cause the development of gallstones in patients of different sexes.

In the process of work we have examined 300 people aged 16-60 years (150 women and 150 men) without liver and bile ducts diseases that had the routine medical examinations with ultrasound examination of internal organs at the Lviv Infectious Hospital. During examination, it was found oval gallbladder in 65 men and 72 women, piriform – 85 men and 78 women.

However, gallbladder form and its cavity were not changed only in 125 men and 109 women, bend of the gall-bladder was found in 16 men and 24 women, and intersections in the cavity of the bladder – in 9 men and 17 women. In male gall-bladder bend was more frequently diagnosed in individuals with oval form of gall-bladder, and intersections – piriform gall-bladder; in female bends were diagnosed with equal frequency in individuals with both forms of gall-bladder, and intersections, as in male individuals – more frequently with piriform shape of the organ.

Consequently, results of our investigation testify that intersections and bends of the gall-bladder, which can be the reason of the mechanic cholestasis, happen more frequently in female, regardless of the organ shape, but without any other factors, isolate such variants of the gall-bladder shape are not the reason of the pathology development.

P3-06

Effect of treatment with olive leaf polyphenols on catalase, superoxide dismutase, and glutathione peroxidase activities in skeletal muscles of diabetic rats

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Introduction.
Increased reactive oxygen species (ROS) could play an important role in the pathogenesis of many metabolic disorders including diabetes mellitus (DM). Elevated ROS level in DM may be due to decrease the activity of catalase (CAT), superoxide dismutase (SOD) and glutathione peroxidase (GPx). The variation in the levels of these enzymes makes the tissues susceptible to oxidative stress leading to the development of further diabetic complications.
Increased ROS production in DM (in both types) can promote muscle weakness and fatigue by altering muscle gene expression and by modification of constitutively expressed proteins, thus, cause contractile dysfunction and protein loss that diminishes muscle mass.
The goal of this study was to investigate the effect of olive leaf polyphenols (OLPs) treatment on CAT, SOD and GPx levels in skeletal rat muscle (soleus) of diabetic rats.
Materials & methods.
DM type 1 was induced by a single administration of streptozotocin (SZT) in male Wistar rats. The blood glucose was monitored at set time intervals. OLPs extracts (512, 768 and 1024 mg/kg) were i.p. administrated during 7-days after induced DM. The activities of CAT, SOD, and GPx were determined in rat soleus muscle. Differences between the groups assessed by an ANOVA one-way, and $p<0.05$ were considered to be statistically significant.
Results.
CAT, SOD and GPx activity were significantly changed in rat soleus. SOD and GPx activities markedly decreased in diabetic rats. SOD and CAT activities were significantly increased at the dose of 1024 mg/kg OLP, and GPx activity was increased at the dose of 512 mg/kg. Also, CAT and SOD activities were correlated significantly ($R=0.515$).
Conclusions.
Olive leaf polyphenols were efficient for restoring muscle function in diabetic rats. A higher dose of 7-days OLP treatment stimulated the activity of CAT and SOD while lower dose increases the activity of GPx. This study confirms the relationship between a redox-modulating mechanism SOD and CAT and OLPs in diabetic rat muscle.

Key words: diabetes mellitus, olive leaf polyphenols, skeletal muscle, oxidative stress

P3-07

Cocoa polyphenols increase catalase, superoxide dismutase and glutathione peroxidase activities of skeletal muscles in diabetic rat

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Introduction:
Oxidative stress (OS) in diabetes mellitus (DM) can modify a number of the signaling pathways within a cell, and in this way, ultimately lead to insulin resistance as well as to diabetic complications. Diabetes, type 1 is the endocrinologic disorder characterized by inflammatory processes in the ß-cells of the pancreas. The nerve cells of the pancreatic islets insufficient release neurotransmitters for the necessary signaling ß-cells to produce insulin, and in this way blocks the secretion of insulin. Treatment with insulin is an only possible way to sustain life.
Exposure to high glucose also causes cumulative changes in long-lived macromolecules.
Skeletal muscles play an important role in maintaining glucose homeostasis. The inability to repair damaged skeletal muscle is one of a characteristic feature of uncontrolled diabetes.
Dietary polyphenols are recognized to control OS at different levels, including modulating the expression of multiple regulatory elements comprised of antioxidants (e.g., glutathione) and enzymes (e.g., superoxide dismutase, catalase). Cocoa is a rich source of flavanols, which have a beneficial effect on many disorders caused by the OS, also improve blood lipid profiles and reduce insulin resistance in diabetes.
The purpose of this work is to investigate the effect of cocoa on superoxide dismutase (SOD), catalase (CAT) and glutathione peroxidase (GPx) levels in skeletal muscles of diabetic rats.
Materials & methods.
DM was induced by a single administration of streptozotocin (SZT) in male Wistar rats. The blood glucose was monitored at set time intervals. In the group treated with cocoa, drinking water was replaced with a cocoa drink (0.5%, w/v, cocoa powder in water) during one month (ad libitum) after SZT-induced DM. The activities of CAT, SOD, and GPx were determined in rat soleus and tibialis muscles. Differences between the groups assessed by an ANOVA one-way, and $p<0.05$ were considered to be statistically significant.
Results.
DM and posttreatment with 0.5% cocoa drink have affected on CAT, SOD and GPx activities in both skeletal muscles, tibialis and soleus. DM reduced significantly SOD, CAT and GPx activities in soleus. Cocoa significantly elevated SOD, CAT and GPx activities in tibialis and soleus of diabetic rats. SOD and CAT activities were significantly higher in the group treated with cocoa than in control in tibialis. CAT activity was markedly higher, and SOD activity, lower in the group treated with cocoa in soleus.
Conclusions:
Cocoa has a modulated expression of enzymes and antioxidants in rat skeletal muscles, soleus, and tibialis, so allows muscle dysfunction repair in diabetic rats. This study suggested an important role of polyphenols which acting through a redox-modulating mechanism.

Key words: diabetes mellitus, cocoa polyphenols, skeletal muscle, oxidative stress

P3-08

The surgical importance of Meckel's Diverticulum

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Meckel`s diverticulum represents a vestigial remnant of the vitelline duct that is present in 2-4% of population. It is commonly located on the antimesenteric border of the ileum, within 40-60 cm from the ileocecal valve, opposite to the superior mesenteric artery termination. An ileal loop with Meckel`s diverticulum may be present inside of a hernia sac, the so-called Littre hernia which may be located in various sites: inguinal, femoral or umbilical regions. All of these positions of the diverticulum can cause complications such as ulceration, hemorrhage, intestinal obstruction, perforation and tumor development. For these reasons the only treatment solution remains the surgical approach - diverticulectomy - even if the Meckel`s diverticulum is asymptomatic and is found incidentally, intraoperatively.

Methods.

We present intraoperative images from two patients with Meckel`s diverticulum, one of them with atypical location (Littre hernia) associated with a neuroendocrine tumor which is a rare finding, and the other case with incisional hernia with atypical obstruction caused by a phytobezoar. In both cases the diverticulum was located on the mesenteric side. The treatment consisted of resection of the intestinal loop with Meckel's diverticulum complementary to herniorraphy according to Lichtenstein tension-free mesh repair technique and incisional herniorraphy, respectively.

Results.

We showed on intraoperative images the importance of abdominal exploration during each type of abdominal surgical intervention which allows the discovery of a Meckel’s diverticulum that may be the cause of surgical complications. Also, the mesenteric location is more dangerous than the usual antimesenteric location, because of the serious complications caused by the diverticulum which may erode the mesentery and rupture into mesenteric vasculature during inflammatory processes.

Conclusion.

The knowledge of embryological and anatomical characteristics of Meckel`s diverticulum is useful to understand its possible evolution in order to avoid the complications that can appear due to its natural evolution, and which require the surgical approach as the only treatment solution. Usually, the Meckel`s diverticulum is incidentally discovered during surgical laparotomy and for this reason a systematic exploration of the abdomen is mandatory.

Key words: Meckel`s diverticulum, Littre hernia,

P3-09

Expression of the O-Linked N-Acetylglucosamine Containing Epitope H (O-GlcNAcH) in Human Uterine cervical Mucosa

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Epitope H contains an O-linked N- Acetylglucosamine residue in a specific conformation and / or environment recognized by the mouse monoclonal antibody H (mabH). Epitope H is present in several types of cells and in several polypeptides. The post-translational modification of serine and threonine residues of polypeptides by the addition of the sugar moiety N-Acetylglucosamine (O-GlcNAc) occurs in many nuclear, cytoplasmic and mitochondrial proteins, which are involved in cell processes such as transcription, translation, protein compartmentalization, proteasomal degradation, competition with phosphorylation, which influence cell division, differentiation, development, apoptosis, resistance to stress and are engaged in major diseases such as cancer, diabetes mellitus, cardiovascular and neurodegenerative diseases.

PURPOSE:

In the present work, we examined the expression of (O-GlcNAcH) in the cells of 60 cases of endocervical mucosa curettings, including 15 small polyps. METHOD: Indirect immunoperoxidase method and the (mabH). GRADATION OF EXPRESSION: Negative no staining, very low less than 5%, low 5-30%, moderate 31-75%, high more than 75% stained cells.

RESULTS:

In all cases examined, the expression of the cytoplasmic staining for the (O-GlcNAcH) was as follows: 1) Mucin secreting cells (MSC) of endocervical mucosa very low. 2) MSC of endocervical polyps low. 3) Non-mucin secreting secretory cells high expression. 4) Ciliated cells high expression. 5) Normal and hyperplastic reserve cells high expression. 6) Cells of immature squamous metaplasia high expression. 7) Cells of mature non-keratinizing squamous epithelium as follows: Basal cells very low expression, parabasal cells negative expresion, intermediate and superficial cells high expression. 8) Endothelial cells high expresion. 9) Fibroblasts/fibrocytes of cervical mucosa negative expresion. 10) Stromal cells of endocervical polyps high expresion.

Finally the nuclear expression of the epitope was very low in the reserve and the ciliated cells,

CONCLUSION:

The (O-GlcNAcH) is expressed in a different pattern in the cells of the human uterine cervical mucosa and further characterization of the polypeptides, which bear the epitope H might shed more light into the role of the (O-GlcNAcH) in the biology of these cells.

P3-10

An anatomical study concerning superior region of the superior constrictor of the pharynx

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Aim:

The superior constrictor of the pharynx (SC) contributes to swallowing, especially for closure between nasopharynx and oropharynx. There are few previous reports concerning the most superior fibers of the muscle, and structure of this region remains unclear. This study aimed to examine the precise structure of the most superior fibers of the SC and the relationship with the surrounding muscles.

Methods:

We investigated ten halves of the head of five Japanese cadavers. The heads were cut in the median plane and were dissected from the inner side. The tongue and palatine bone was removed to reveal the constitution of the SC, the tensor veli palatini (TVP) and the levator veli palatine (LVP). In addition, we dissected the most superior fibers of the SC in detail.

Results:

After removal of the mucosal layer of the nasopharynx and oropharynx, the TVP and LVP were observed at nasopharynx, posteroinferior to the orifice of the auditory tube. The tendon of the TVP was extended to the soft palate. The LVP was situated superior and posterior to the TVP. After removal of palatopharyngeus and salpingopharyngeus, The SC was observed at the posterior and lateral wall of oropharynx. Oropharynx was enclosed by the SC laterally and soft palate superiorly. The main part of the SC extended laterally from the pharyngeal raphe, and attached anteriorly to the pterygoid hamulus and the pterygomandibular raphe.

On the other hand, the superior part of the SC originated superior part of the pharyngeal raphe, and its course was different from the main part. With the precise dissection of the superior part of the SC, positional relationship among the SC, TVP and LVP was revealed. The most superior fibers of the SC extended to the space between the TVP and LVP. The TVP attached lateral side to the auditory tube. LVP situated inferior to the posterior crus of the cartilage of the auditory tube. The most superior fibers of the SC extended to the soft palate, and attached to the superior surface of the tendon of the TVP.

Conclusion:

According to these results, we hypothesized two additional function of the SC. First, the SC would also affect to the function of the opening and closing mechanisms of the auditory tube by supporting the TVP and LVP. Second, the SC would have the function of pulling the soft palate downward and posteriorward.

P4-01

Design of extracurricular dissection course for students of Graduate Entry Medicine (GEM) programme

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Aim

The main objective of this study was to find the best design for an extracurricular dissection course for medical students of a 4 year graduate entry medicine (GEM) programme. This group of students study anatomy but do not dissect cadavers within their medicine curriculum. They have limited extra-curricular time, varying abilities and a range of academic backgrounds. The aims of the course were to introduce dissection methods of cadaveric human tissue and to provide more detailed study of a particular region (dissection from skin to the deep) of anatomical structures (thickness of structures, anatomical differences, positions, relationships, etc.). By the end of the course students were expected to be able to communicate this anatomical knowledge to other groups.

Methods

We organized two extracurricular voluntary dissection courses during the 2015-2016 academic year and offered it to the students of the 2nd year of GEM. The total length of the course was 15 hours in 6 sessions for a maximum of 15 participants. The first course covered the dissection of upper and lower limbs, and was designed as a self-directed learning (SDL) course. The second course covered organs and topography, and was fully guided with academic supervision. The students completed questionnaires before and after each course.

Results

Students felt more confident when they were guided but preferred a level of independence when dissecting. For most of them it was their first experience working with human tissue and using dissection techniques. They evaluated highly the presentation of particular structures by students at the beginning and end of each session. Visualise theory to practice was one of the benefits they valued immensely too. Students felt that team work (peer to peer learning) and practical or spot questioning during clinical discussions with clinicians were strong supporters of their learning. Students were given minor study tasks before each session to present and discuss during the session, and participants also rated this as a useful learning process.

Conclusions

We found that the main reasons that students took part in these courses were to improve, enhance and expand their anatomy knowledge, and to put their knowledge into a physical context. Students were keen to take part in extracurricular dissection courses when no dissection occurred during the curriculum, even with limited study time available to them. Demonstrator guided dissection with encouraged preparation before each session through study and presentation was important to this group of students.

P4-02

Enhancing writing skills by using peer-marking in anatomy journal club abstract writing exercises

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Research has shown that the writing of article abstracts presented at journal clubs is an innovative way to improve students' writing skills while enhancing their critical appraisal abilities. Furthermore, peer evaluation was shown to promote confidence, excellence, student involvement and skills. As these are all qualities needed for future researchers, the writing of abstracts of journal club articles presented by a group of honours students (n=9) in medical anatomy and histology, followed by peer- marking, was recently made compulsory.

Students received an article via email six days prior to the weekly journal club activity. Students in the group took turns in choosing and presenting the articles as their research interests and topics varied. Each student had to read the article in depth and subsequently write their own abstract in the conventional format but without referring to the actual article abstract. These student abstracts were sent to the journal club facilitator who allocated an abstract to each student for peer-marking three days prior to the meeting. Students were blinded as to whose abstract they were marking. After peer-marking, the abstracts were returned to the facilitator who monitored the changes and redistributed back to the original students. Common mistakes were discussed by the facilitator during the meeting. Thirty six journal club meetings were carried out using this system in 2015. Overall, an improvement was observed as the necessity for corrections and comments decreased as the year progressed.

Abstract writing together with peer-marking improved the writing skills and confidence in honours students in this pilot study.

P4-03

History of the term vasa vasorum

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The main aim of the study was an exact description of the historical development of the anatomical term vasa vasorum, since the begin of the modern anatomy up to the recent time. The study was done in a form of retrospective literary search, which has brought following results: beginning by Vesalius (1543), the oldest anatomists described and defined only the particular layers of the walls of the great arteries and veins. As the first one in history who described the vascular system supplying the walls of the great arteries was Thomas Willis in 1678. The first who depicted them in the human aorta was Dutch anatomist Frederick Ruysch in 1695. The term vasa vasorum for the designation of these vessels introduced German anatomist Christian F. Ludwig in 1739. Since them this term is regularly used in the anatomy and became a stable part of all versions of the official anatomical terminologies. Special attention was paid to the origin and use of the term "vasa vasorum interna". At present, the vasa vasorum are a subject of intensive molecular biological and angiology research, for possible participation of their neoangiogenesis on the development of the coronary atherosclerosis and on the failure of the aortocoronary venous bypasses.

The study was supported by the project PRVOUK P38 of the Charles University in Prague.

P4-04

The importance of Anatomy in the prehospital trauma patient care

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In the traditional medical education anatomy is one of the essential pillars of the curriculum. Due to its early place in the medical studies and the enormous amount of material, anatomy is often considered as a "filter" subject on the way becoming an M.D. Unfortunately, this subject is also considered as the "necessary evil" on the long road towards the medical degree. The fact that anatomy gives a basic viewpoint for the future doctors is often neglected. In most cases problems do not represent themselves as direct anatomical questions (e.g. What are the walls of the pterygopalatine fossa?), however anatomy is essential in creating a first impression of the patient, moreover it helps doctors to locate the problems within the human body and in relation to other organs and to navigate in the human body during their everyday clinical work.

The prehospital patient care is no exception. Professionals need solid anatomical knowledge besides the sub disciplines of trauma patient care to operate effectively. It is a very important feature of pre hospital patient care that not only medical professionals carry out this task. The Department of Operational Medicine and the Department of Anatomy recognized this fact at the University of Pecs Medical School. The aim of the joint work of the two departments was to provide practical anatomical knowledge to non medical first responders (e.g. police officers, fire fighters) as part of broader training programs, which would not only help them to carry out their duties with higher confidence but also to respond to and handle new, unexpected situations. During our work we put special emphasis on the development of new learning materials for primary trauma patient care, which is strongly based on anatomical facts. Besides education the two departments work on research projects.

P4-05

Thin and Lightweight Slice Silicone Plastination of Foot

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One foot of an amputated lower extremity was obtained from the pathology department as a fresh specimen. It was positioned, precooled at 4°C in refrigerator for one night and stored in -80°C for following five days. 2-3 mm thick, sagittal slices were obtained from the frozen specimen using a saw machine. All slices were placed between wire meshes serially. After one month of fixation with %10 formalin solution, cold acetone baths for dehydration and degreasing at room temperature in last acetone bath were done. Standard silicone plastination method was used with some modifications. Xylene added (X/S ratio: 1/1) silicone reaction mixture (Biodur S10+S3) was used for impregnation at room temperature. Curing of slices was carried out in a gas curing chamber in which the specimens were exposed to S6 vapors at room temperature. The added xylene was removed from the slices using vacuum chamber after curing.

Thin slices of the foot were produced using a modified S10 plastination method. The plastinated slices are good of quality and color, durable, semi-flexible, semi-transparent and have fine details of many anatomical structures comparable with radiological images. Using xylene as an additive to impregnation mixture ensures lightweight plastinates and lower costs. Also assures a realistic tactile sense of structures like bone, muscle, tendon etc.

The slices are easy to handle and to evaluate. The preparation is easy and less expensive relative to epoxy and polyester procedures.

There is no study in the literature of thin slices of musculoskeletal specimens which were prepared and plastinated using the process as described in this study.

P5-01

Skeletal development of forelimb of Iguana iguana

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Investigations addressing the ontogeny of vertebrates aim to standardize the description of a developmental sequence, supporting discussions about the animals evolution. Aiming to clarify the pattern of the ontogeny of Iguana iguana iguana, embryos artificially incubated at a constant temperature were collected daily and fixed in formalin solution 10%. The sample was cleared with KOH and stained with Alizarin red and Alcian blue. Some specimens were subjected to usual histology protocol. The condensation of the proximal elements of these followed the described pattern of Tetrapoda: formation of the primary axis femur/humerus, radius/ulna and fibula/tíbia, from the radius/fibula comes the radiale/fibulare, later the distal element IV, the digit/toe IV, continuing the pre-post axial direction and forming the digital arc. In the forelimb the formation of the distal elements was observed for all five digits. The dcI remained fused to the mcI. I. iguana iguana has one central and intermedium element of carpus. These were formed by an independent condensing apart from digital arch and its ossification occurs in post hatching. The presence of two distal elements of the tarsus is shared with most reptiles. It was not possible to ascertain clearly the astragalus origin. We observed a clouded condensation area in the central region of the tarsus that originated this element, but the presence of individual structures was not confirmed. Astragalus and fibular merged to form the proximal tarsal, which started to ossificate in the embryonic period (stage 42) by two individual ossification centers. The distal elements III and IV were the only ones differentiated, the others remained fused with metatarsal cartilage. The digit V presented late development in all embryos. The ossification of the limbs and vertebrae occurred as described for other reptiles. Using similar methodology, it was possible to approximate these results with data of other lizards, verifying many similarities, what confirmed the conservative pattern of embryonic development for reptiles.

P5-02

Anthropological study of breast-fed infants in the Czech Republic

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Czech Republic enjoys a long term tradition of nationwide anthropological research (CAV), which represents a data source for basic bodily parameters growth charts (length/height, BMI, abdominal circumference, arm and gluteal circumference) since 1951. In 2006, World Health Organization (WHO) published new growth standards based on the measurements of long term breast-fed children. It was an attempt to introduce these into the children health care system worldwide. In the Czech Republic, a year study of the National Institute of Public Health comparing WHO standards and growth references (CAV) whose results showed important differences between children not only in terms of weight but also in other measured parameters was done in the 2008.

In the years 2009-2011, a study focused on growth of long term breast-fed Czech children (471 boys and 489 girls) was conducted. Growth charts created on the basis of data from the study were analysed in order to figure out deviations in growth compared to reference charts of CAV and WHO standards.

From the study results it is obvious that growth of Czech breast-fed children differs from the WHO standards in all selected parameters (length, weight, head circumference, weight to length ratio). Deviations from the reference charts CAV are obvious in weight and weight to length ratio where breast-fed children from the 6th month of age are slimmer. In contrast, length and head circumference of breast-fed children are in very good accordance with the reference charts of CAV.

Based on the results of the Czech breast-fed children study we can postulate that in all measured parameters growth of Czech breast-fed children is closer to CAV compared to WHO standards. Therefore we suggest using existing reference charts obtained from the nationwide anthropological research of CAV in years 1991 and 2001 in the Czech Republic.

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P5-03

Quality improvement of human spermatozoa DNA fragmentation due to density gradient centrifugation following freeze-thaw cycles

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Aims

Human gametes are best preserved frozen under strict control before being used for assisted reproduction or, 'in vitro' fertilization (IVF). According to previous observations, freezing human semen would result in an increased level of fragmentation affecting the DNA of spermatozoa. Thus leading to an inferior quality and so lowering the chance to successfully fertilize oocytes during the IVF procedure, or may lead to disturbances in cleavage, implantation together with leading to an increased rate of miscarriages.

The aim of our study was to shed light on the fact whether density gradient centrifugation of the semen specimen following the freeze – thaw cycle would improve the quality of human semen on the basis of physically separating the damaged spermatozoa.

Methods

Commercially available density gradients were used on untreated human semen specimens. DNA fragmentation was assessed by flow cytometry based Sperm Chromatin Structure Assay (SCSA). The specimen were kept in liquid nitrogen before being frozen following the guidelines of the SpermCryo All-round (Gynotec) system. Frozen semen specimen were thawed in 37oC water bath and the preparation was performed according to a protocol using the solutions by SpermFilter, SpermWash Gynotec. DNA fragmentation was assessed three times during the procedure, before freezing, after thawing and following the preparation.

Results and Conclusions

In harmony with previous observations, we detected an increased rate of DNA fragmentation due to the freezing of spermatozoa, (17.2 % versus 24.0% n=10). However, a subsequent cleaning preparation after thawing the specimen has resulted in a lower level of DNA fragmentation (10.5% n=10), thus leading to an improved sperm quality even superior to that of the original sperm sample.

Therefore it is of vital importance to subject each semen specimen, with, or without being frozen/thawed, to be subjected to density gradient centrifugation to increase the quality of the sample thus supporting the successful outcome of assisted reproduction.

P6-01

Mandibular first molar internal anatomy

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Aim:
First lower molars are teeth which are mostly affected with tooth decay. The cause is especially early age of pruning (6-7 years), parents ignorance about the presence of a permanent tooth between the milk dentition and difficult access for cleaning. If tooth decay is not resolved quickly, it penetrates the tooth nerve and the infection need to be treated with endodontic therapy. Statistically we need to do this endodontic treatment to 17.4% of the first molars. Despite treatment of the root system, first molars tend to be most often extracted teeth (19.3%). Knowledge of the internal anatomy can improve the situation.
Material and Methods: For processing the theoretical aspect of this issue, we used the study Czech and foreign literature provenience. The analysis was based on study of publications, research articles, clinical and experimental studies.
Results:
Two-rooted mandibular first molar located mesially and distally appeared more often in males (avg.80 %) than in females (avg. 70 %) in the most clinical research we studied. About 25 % of the patients in studies had three roots in mandibular first molar. Root canal type IV was the most common type (avg. 90%) in the mesial roots. Average 3% of the patients had 3 mesial canals type VIII and only about1%had one mesial channel type I. On the other hand literature reports to us that the distal roots showed a wide variety of channels configurations. In distal root is found in over 60%one root canal type I, two canals in more than 30%. Tree canals in distal root ale very rarely, about 1%.
Conclusion:
The high incidence 3 root channels first lower molars shows morphological stability, but different variations, curvatures and communication between channels leads not only to severe endodontic treatment but also to fail of the treatment.

P6-02

Anatomical evaluation of the middle part of external cranial base from lateral approach

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Introduction:
Working knowledge of the skull base anatomy is essential for an effective surgical treatment. Dissection is a firm foundation for the development of medical language and it provides a platform for developing 3-D anatomical knowledge. Clinical anatomical knowledge is therefore fundamentally important to the study and practice of medicine. Cadaveric studies can contribute to the refinement of the indications for cranial surgery better delineate the relevant anatomy. Because the lateral approach has become the useful method of skull base exposure, the detailed anatomy is demonstrated from this aspect.
Aim of study:
The anatomical evaluation of the neurovascular structures on the middle part of the external cranial base – in the areas of infratemporal and pterygopalatine fossae and also around the styloid septum.
Methods:
The lateral retromandibular, and transmandibular approaches provided wide access to the middle part of skull base. Soft and hard tissues were removed by using standard methods. High resolution photographic techniques was required to demonstrate the topography of nerves, vessels, muscles, and other structures located in the examined areas.
Results:
The detailed pictures provide a view of the middle part of external cranial base structures until now only partially documented with associated anatomical areas nearby the base located. The middle part of external cranial base is the region containing the branches of cranial nerves controlling chewing and facial sensation, very delicate autonomic structures (as greater, lesser, and deep petrosal nerves, sympathetic and parasympathetic ganglia with branches) that control many vital functions of head and neck. It houses also the maxillary artery with branches, parts of internal and external carotid arteries, venous plexuses etc.
Conclusion:
This study focused on the detailed display rarely prepared structures in the area of middle part of external cranial base provides relevant photo documentation and an improvement in human anatomy teaching. It also confirms that cadaver dissection is an excellent opportunity for the integration of anatomy and clinical medicine into the clinical training of undergraduate dental and medical students.

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P6-03

Anatomy and pathological anatomy of periodontium depending on the state of oral health of patient

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Aim.

The periodontium is a set of tissues which keep the tooth in its socket and isolate the internal environment of the organism from the external. The periodontal tissues belong cementum, alveolar bone, superior alveolar ligaments, intraalveolar ligaments and gingivae. Healthy periodontium is the most dependent on the daily care, its cells and tissues are preventing the entry of bacteria and their toxins into the organism. The damage of periodontal tissue is the most common after the affection by the microbial plaque, where exist bacteria. The main aim is to investigate and describe method of treatment with teeth of periodontitis.

Methods.

The teeth with periodontitis were tested by clinically, and radiographicaly. We prepared a treatment plan for patient with periodontitis (root treatment). The pacient was instructed about dental hygiene. Subsequently, the motivated and trained.

Results.

Consequence of the inflammatory process results caused by microbial biofilm progresses into dissolving of the junctional epithelium, periodontal ligaments and the alveolar bone and to necrotic changes on the cementum tooth root. We were able to influence the inflammation of the periodontium by appropriate treatment. Detection of changes in the anatomy of periodontal is depending on the state of oral health too.

Conclusion.

Periodontal status depends on the quality of treating and patient's compliance in the implementation of oral hygiene. Based on their knowledge, we can positively influence therapy of periodontitis. There is also a need for cooperation between the attending dentist and dental hygienist.

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P6-04

Topographical anatomy of maxillary and mandibular alveolar process for insertion of temporary anchorage devices during orthodontic treatment

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Aim:

There is increased interest in orthodontic therapy by fixed appliances because interest in physical appearance is greater nowadays. Orthodontic treatment with fixed appliances generated forces which move the teeth into the desired position, but according to Newton's third law of action and reaction also forces that move other teeth to undesired position. Anchorage unit should be part of the treatment plan supported by complete documentation. One of the types of anchorage systems is skeletal anchorage, temporary anchorage devices (miniimplants). The aim of this research is to increase interest in common use of miniimplants in daily orthodontic practice by providing an unique photographic documentation of orofacial region.

Methods:

In this anatomical study we used 8 human adult male and female cadaveric heads (sagittal sections) aged 30 to 80 years with different dental status. The cadaveric material from Department of Anatomy, Faculty of Medicine, Pavol Jozef Safarik University in Košice was fixed in 10% formalin-

Results:

Photographical documentation of maxillary and mandibular alveolar process defines anatomical map of the safe areas for insertion of miniimplants. The study presents topographic particularities of the mandibular canal in toothless mandible, pneumatization of maxillary sinus, atrofic changes of alveolar process, localisation of mandibular canal, as well as relationship of external morphology of the mandible and the course of mandibular canal.

Conclusion: The exact determination of the anatomical ratios and structures in orofacial region is essential for the successful implementation of diagnostic, therapeutic or surgical procedures. The essential part of success in orthodontic treatment is knowledge of anatomy. This requirement is supported by the global trend linking anatomy lessons and clinical lessons.

Key words: orofacial anatomy, temporary anchorage devices, aging process, alveolar process, topography, clinical importance, orthodontics.

P6-05

Posterior Atrophic Mandibular Bone Applied Anatomy

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Background:

Low height of bone above inferior alveolar canal (IAC) were confiner from kinds of oral surgery. The aim of current study were to introduced novel approach for placement of implants without need for bone augmentation and nerve repositioning from use of regular or narrow implants placed in buccal aspect of inferior alveolar canal.

Methods: Fifty patients with bone height less than 6mm above the inferior alveolar canal (IAC) were selected. In the every sextant, two one piece or regular implants inserted in space of lateral (IAC).

Results:

Three years follow up period was done for 80 implants. There were no surgical and early failure or prosthetic complication. The mean value of marginal bone loss around 80 implants were 1.9mm and 2.3mm for anterior implants respectively.

Conclusion:

Usually about 60% to 70% cases, Infra alveolar Neurovascular Bundle Attached or very closed to lingual wall and nerve injury and future disturbances in the oral surgery is low and Mandibular atrophic bone with adequate width could be treated with narrow or regular implants, regarding that implant placement in lateral aspect of IAC were sensitive technique.

Key words: mandibular atrophic bone, new approach, implants

P6-06

DNA separation from dental tissues

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The first use DNA in criminal cases is the geneticist Alex Jeffreys in the United Kingdom in 1984.He is said to have invented the method for forensic genetics. Face identification method using DNA was first used in the United Kingdom in 1988, when, thanks to “DNA imprint” it was established that the person who raped two young girls and their murderer was a baker (Colin Vile), not the young man who was previously arrested as suspect.

Importance of the method, best to use to investigate crime today, given the number of traces.

Numerous biological traces remain at the crime scene. They come from the person who committed the crime and allow for the DNA identification to be performed.

DNA is an organic substance in the nuclei of living cells. DNA is a component part of the chromosome and consists of four bases. The essence is in the arrangement, that is, the establishment of the sequence of these bases.

Thanks to the DNA method numerous comlicated cases were solved, especially rapes and murders, and especially war cases, when we investigate corpses and remains of human bodies – bones and other.

There are some reasons to use teeth as source for DNA. DNA is more stable and conserved in the tooth, since all the agents that endeavour to break it are prevented from it due to the barrier provided by enamel, the dentine and the dental cement. Also, during a lasting contact of the skeleton with various media (earth, water, fire,...). DNA is destroyed or damaged and is difficult to separate from the bone tissue because the tissue is porous.

It is not only by the shape, size and position of human teeth that gender is identified, the latest research have proven the presence of protein amelogenin (AMEL) in human enamel. Very small amounts of DNA are well protected inside the tooth; within the sclerosed dentinal tubules, which are sealed from external influences

P6-07

Analysis of tongue movements

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Aim:

The tongue is responsible for many different functions in human body. The tongue provides a path for food to travel through the digestive system, it has taste buds so that we can enjoy the flavor of that food, and the tongue is largely responsible for speech. The purpose of this study is to investigate the relation of the age, sex anathropometric measurements with a new, alternative method suggested to be used in estimation of tongue movements.

Methods:

245 volunteers (126 men, 119 women) who were studying at our university participated in this study. Hyomental, sternomental distance, neck circumference and face height were measured. Horizontal and vertical lines used for determined of tongue movements. Horizontal lines passing through the mid points of the upper lip and mandible, and vertical lines passing through the right and left infraorbitale were constituted on each subject. And subjects were asked to protruding tongue maximally and downward, protruding tongue maximally and upward, and protruding tongue maximally and laterally in sitting position. The scores corresponding with the movements of tongue were compared with the anthropometric measurements and demographic data.

Results:

Both protruding tongue maximally and downward and protruding tongue maximally and upward were significantly different between age, sex, hyomental distance and sternomental distance ($p<0.001$, $p<0.001$, $p<0.001$ and $p<0.001$, respectively).

Conclusion:

The describe of tongue movements are very important in the diagnostic and treatment of neurological diseases. We conclude that the findings of this study will be a guide for other studies.

P6-08

Friedman tongue position and mandibular anthropometry

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Objective:

The preoperative anaesthesia evaluation should include an assessment of oropharynx. Difficult intubation increases with increasing tongue volume. Friedman tongue position (FTP) may play an important role in the evaluation of oropharynx. The purpose of this study is to investigate the relation of the age, sex and anathropometric measurements with friedman tongue position.

Material and Methods:

96 volunteers (45 men, 51 women) who were studying at our university participated in this study. The Ramus mandible height, corpus mandible length and bigonial distance were measured. FTP was used for determined of oropharyngeal view .The scores corresponding with the position of tongue in mouth were compared with the anthropometric measurements and demographic data.

Results:

There were not significant corelation between FTP with Ramus mandible height, corpus mandible length and bigonial distance (p=.0,727, p=0,547, p=0,365 respectively).

Conclusion:

There are lots of studies indicating FTP as a marker. But there must be more other studies which search the realitionship between FTP and anthropometric measurements are needed. We convinced that; our study will set light to the awareness of this deficiency.

P6-09

Friedman tongue position and neck anthropometry

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Aim:

Tongue anatomy is major component in the oropharyngeal view. The tongue position has been postulated to be an important predictor of difficult intubation (DI) and obstructive sleep apnea syndrome (OSAS). Friedman tongue position (FTP) may play an important role in the evaluation oropharynx of patients with OSAS and DI, but there are no previous data on FTP distribution by neck anthropometry. The aim of study was to determine the relationship between FTP and neck anthropometry.

Methods:

Prospective cross-sectional study of 102 volunteers (48 men, 54 women) who were studying at our university participated in this study. FTP was used for determined of tongue position. As the antropometric measurements, thyromental distance, thyrosternal distance and neck height were measured. The scores corresponding with the position of tongue in mouth were compared with the anthropometric measurements and demographic data.

Results:

There were not significant corelation between FTP with thyromental distance, thyrosternal distance and neck height (p=.0,905, p=0,547, p=0,392 respectively)

Conclusion:

The describe of tongue position in the mouth is very important in the diagnostic and treatment of respiratory and neurological diseases. We conclude that the findings of this study will be a guide for other studies.

P7-01

Analysis of structural and qualitative characteristics of the cervical vertebrae in the individuals of both sexes

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The cause of diseases associated with impaired blood supply to the brain very often is abnormal changes in the cervical spine. The aim of our work was to analyze linear dimensions and bone density of the cervical vertebrae in adolescence.

The analysis of linear dimensions and bone density of the cervical vertebrae in individuals of the juvenile age (21 boys and 18 girls) was carried out according to the examinations made on computer tomograph of the fourth generation TSX-101A Aquilion 16.Linear dimensions (height, width, depth) and bone density of the anterior arch of the atlas and various parts of the body of each cervical vertebra in direct and lateral projections were measured using standard computer software K-Pacs-Lite.

The results of our study in the direct projection showed that boys and girls have the greatest height of the body in the second vertebra, and the least - the body of the fifth vertebra.In the lateral projection correlation of the vertebrae body height on the anterior edge, in the center and on the posterior edge is different and characteristic for each vertebra, which is obviously associated with the severity of cervical lordosis. The body of the second cervical vertebra has the greatest height on the anterior edge, the lowest - on the posterior edge in boys and girls. The biggest height was on the posterior edge, and the lowest - in the middle in the fourth, fifth and sixth cervical vertebrae. The most wide body of the cervical vertebrae was in the middle, the lowest - on the inferior edge in boys and in girls. The depth of the vertebral bodies (in the lateral view) along the inferior edge was significantly higher than on the superior in all individuals.

Analysis of the bone density showed that the highest index was on the superior edge of the body in the second, third, fourth and seventh vertebrae, in the sixth vertebra – on the inferior edge, in the fifth vertebra–on the superior edge in girls and on the inferior edge in boys. Bone density was the lowest in the central area of the vertebral bodies in all examined individuals.

P7-02

Assessment of the Volume of the Scaphoid Bone on Magnetic Resonance Images Using the Stereological Techniques

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Introduction:
The scaphoid bone is known to play a key role in the function of the wrist. The scaphoid is the most commonly fractured carpal bone, accounting for 71.2% of all carpal fractures. A fracture of the scaphoid bone often occurs after hyperextension of the wrist joint and a fall on the hand or in a motor vehicle accident. The incidence of scaphoid non-unions has been reported to be between 5-15%. The aim of this study is to evaluate the magnetic resonance (MR) images of the right-left scaphoid bone among healthy subjects using the stereological methods.
Material and Methods:
The study included 12 healthy female, with age ranged between 27-75 years. Total of 22 wrists (10 right (RT) wrists and 12 left (LF) wrists) were examined. Participants were scanned using Siemens 1.5T MR (3D_WATSc MR images of the wrists). DICOM images were transferred to the ImageJ software. Volumes of the scaphoid bone were obtained using the manual planimetry technique.
Results:
The mean (±Standard Deviation) volume for the right scaphoid was 766.59 ± 172.53 mm3, the left scaphoid was 753.90 ± 176.12 mm3 and the total mean volume of scaphoid was 759.65 ± 176.12 mm3. There were no significant different between the right and left volume of scaphoid (P> 0.05). Regarding the age there were no statistical correlation with the right and left volume of the scaphoid (P>0.05). We will evaluate the intra- and inter-observer variance in the coming days.
Conclusion:
The volume of the scaphoid is not different between right and left, this fact must be taken into account if the contralateral scaphoid should be used in surgical planning. Volumetric analysis of the scaphoid is recommended for appropriate treatment of scaphoid non-union. Methodologically, the volume of the scaphoid bone could be estimated on MR images.

Key words: Scaphoid bone, Volume, MR images, Planimetry, Stereology.

P7-03

Piriformis syndrome

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Piriformis is a pelvic as well as a lower extremity muscle which is entirely enveloped by thin fascia. It plays a vital role in providing stability to the pelvic viscera in addition to abduction and lateral rotation of the thigh. It arises from the anterior aspect of the sacrum medially and attached to the greater trochanter laterally. It leaves the pelvic via the greater sciatic foramen splitting it into supra and infrapiriformis canals. The suprapiriformis canal conveys the superior gluteal vein, artery and nerve, while the infrapiriformis canal conveys the inferior gluteal and internal pudendal neurovascular bundles as well as the sciatic and posterior femoral cutaneous nerves and the nerves to the obturator internus and quadratus femoris. A double piriformis has been described previously. The sciatic nerve usually passes below the piriformis and then divides into tibial and fibular branches in different forms according to piriformis muscle. Current study investigates 100 specimens to describe the pirifomis morphology and the sciatic nerve courses. 98% of the pirifomis found to be single whereas in 2% found to be double. In double piriformis case, the common peroneal nerve passes between the piriformis. Theoretically, the sciatic nerve classified into several forms based on its course and branches. The Complete (undivided) sciatic nerve passes below piriformis found to be in 90% whereas its congenital absence found to be 8% as its branches appears below the piriformis. The common peroneal nerve is highly susceptible to compression by the piriformis more than tibial or sciatic nerve. The double piriformis carrying highly risk of common peroneal nerve risk than the solitary one. Consequently, asciatica can be classified clinically as peroneal asciatica syndrome. Neurologists, neurosurgeons and orthopedics have to be aware in workup diagnosis to precede the final diagnosis and to minimize the postsurgical complication.

P7-04

Comparison of ultrasonography and dorsal horizon view to detect dorsal screw penetrations

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One of the most prevalent complications of volar locking plates is dorsal screw penetration. Dorsal horizon view (DHV) is the frequently used method in the literature to detect screw penetration after surgery. Computerized tomography is also an option.

The aim of this study is to compare the efficiency of dorsal tangential fluoroscopy and Ultrasonography (USG) on determination of dorsal screw penetration.

Materials and methods

Ten light embalmed (Modified Larsen Solution) cadaver's upper extremities from the Anatomy Department of Ege University Medical Faculty were used for this study. The plates were placed parallel to the longitudinal axis and correct to the styloid process of radius by screwing firstly the proximal one and after the distal screws.

The distal four screws were protruded 0 mm, 1 mm and 2 mm into each of the second, third and fourth dorsal compartments of radius. DHV views were taken for each position using fluoroscopy. All procedures were performed by two fellowship-trained hand surgeons with the guidance of an experienced anatomist. Each radiographic image was evaluated by two blinded orthopedic surgeon.

The USG evaluation was made in separate rooms by one radiologist and one board-certified orthopedic surgeon blinded to the procedure.

Both DTFDHV and USG assessments were noted by the participants whether the tip of the screw penetrated the dorsal cortex for each compartment of each model.

Inter observer consistency was stated using the Pearson correlation test. Comparisons between the DTFDHV and USG evaluations were assessed using the Mann-Whitney U-test. P values were declared statistically significant at .05 or less.

Results

Inter observer consistencies were stated in DHV group as $p<0.01$, while in USG group $p<0.05$. No significant difference was observed on correct detection of 0 mm, 1 mm and 2 mm screw penetrations at second and third compartments with 0 mm and 2 mm penetrations at fourth compartment between DHV and USG groups.

Correct detection accuracy of 1 mm screw penetration at fourth compartment was 87% in USG group and 55% in DHV group.

Discussion

The accuracy of USG on 1 mm penetration at fourth compartment is better than DHV. However, DHV and USG accuracy is similar at the other compartments and penetration levels. While USG is a dynamic process and requires experience, the interobserver correlation of USG group detected more than DHV group.

Conclusion

USG is a reliable and usable procedure for detection of dorsal screw penetrations.

P7-05

Foramen of Huschke and Its Measurements with Related Structures

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Foramen of Huschke (also known as foramen tympanicum) is an anatomical variation in the bony part of the external auditory canal. This bony defect, which is normally closed in adults was first described by a German anatomist and embryologist. It results from the lack of temporal bone ossification and may be closed up to five years of age.
The foramen of Huschke presence was analyzed in 567 temporal bones in this study. The localization of the foramen was determined relative to the wall of the external acoustic canal and mandibular fossa. The axial and sagittal diameters of each foramen were measured. The persistence of foramen of Huschke is an incidental finding in most cases and does not require treatment itself. However in some cases it may lead to complications such as herniation of temporomandibular joint, ear discharge, spread of infection or tumor from the external auditory canal to the infratemporal fossa and vice versa. If presence of this entity is not known and recognized, it may be difficult to diagnose the complications related with foramen of Huschke. Because of this reason, we believe that the detailed anatomic knowledge about foramen of Huschke will be helpful for radiologists as well as ear, nose, throat, and head &neck surgeon.

P7-06

Unusual shapes of lateral plica in adolescents

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Introduction.

Synovial plicae in the knee joint are remnants of embryonal mesenchymal tissue which fills the space between the femur and tibia during embryonic joint development. Formation of the joint cavity begins approximately at 8th week of embryonic development as a result of programmed resorption of the mesenchymal tissue. Mesenchymal resorption starts with a smaller cavities in the the joint space and spreads to the remaining mesenchymal tissue. Once the mesenchymal tissue is completely resorbed, the knee joint cavity is formed as a single space. According to some authors pathological condition secondary to inflammation can affect the joint. There are 4 types of knee synovial plicae: infrapatellar, mediopatellar, suprapatellar and lateral (prevalence not well known, range is approximately 1 to 2%). Aim. Our aim was to present three adolescent patients, each with unusually formed residual plicae in the suprapatelo-lateral space of the knee, which were discovered by therapeutic arthroscopy treatment of recurrent luxation of the patella. Materials and Methods. Unusual intraarticular structures, which resembled to ligament, were found in three children aged from 12 to 14 yrs. Synovial plicae stretched from the medial suprapatellar to the lateral part of the articular capsule. During knee flexion the synovial plicae pulled the patella laterally and caused the obvious luxation of the patella. After these unusual structures were removed surgically, tissue samples were obtained and treated by antibodies against collagen type I and collagen type III. Results.

Longitudinal histological slices were stained by HE, and on each slice central and peripheral zones were recognized. The central zone consisted of collagen fibers which were linearly arranged, with few fibroblasts between them. The blood vessels were very rare. Peripheral zone of the tissue sample is synovial sheet with a continuous layer of stratified lining epithelial cells on the surface. Beneath epithelial cells, connective tissue matrix contains blood vessels. Here, in the peripheral zone, collagen fibers were not parallel and we did not find any morphological signs of the inflammation. Immunohistochemical analyses revealed numerous type III collagen fibers, localized in the blood vessel's wall and in adjacent stroma around them. Except for those, type III collagen fibers were also located beneath epithelial layer. Only few immunopositive type I collagen fibers were detected, with overall prevalence of the type III collagen fibers.

Conclusion.

From above received histological findings we have presumed examined structure is probably the plica, which is relatively common occurrence and could be associated with inflammation and some other pathological conditions in orthopedics. Until now such shapes of the plicae which resembled to the ligament were not described in available literature. During adolescence lateral synovial plicae may cause lateral luxation of the patella, especially in athletes.

P7-07

Applicability of a semiquantitative evaluation of the intercondylar fossa

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Background:
The intercondylar notch (IN) can differ in morphology and size. Because of the close anatomical relationship to the ligaments of the knee, there is a certain influence on the function of the joint. There are various studies that discuss a narrow notch width as a risk for tears of the anterior cruciate ligament (ACL). However not only the size of the IN but also the shape influences the ACL. Another consequence of reduced space in the IN is impingement of the ACL and the posterior cruciate ligament (PCL). Particularly osteoarthritis of the knee and mucoid hypertrophy of the ACL can cause impingements.
Purpose:
To make evaluation of the IN easier, three shapes of the IN were defined previously. The applicability of just visual classification of the notch in clinical practice was investigated.
Methods:
Patients were divided to 6 groups of age of about 60 patients in each group. Three shapes of IN were defined. Afterwards the IN size was evaluated in the coronal plane of MRI scans and one of the three shapes was distributed.
Results:
Measurements were performed for 326 patients. Among these patients, the Ω-shape was identified in most of the measurements (n=183, 55,5%). Second most there was the inverse-U-shape calculated (n= 100, 30,3%) and at least the A-shape (n=43, 13,0%). In semiquantitative evaluation also most of the patients were classified as Ω-shaped (n=249, 75,5%). On the contrary A-shape was evaluated second most (n=44, 13,3%) and inverse-U-shape least (n=37, 11,2%). In 209 out of 326 (64,1%) patients there was an agreement between measurements and semiqunatitativ evaluation. In semiquantitative evaluation with the visual supporting tool 183 patients (55,5%) were classified as Ω-shaped, 103 patients (31,2%) as inverse-U-shaped and 44 patients (13,3%) as A-shaped.
Conclusio:
Due to moderate agreement between the results of measurements and semiquantitative evaluation and also due to poor agreement between the results of three independent raters, accuracy can not be proven. Between the measurements and semiquantitative evaluation with the visual supporting tool very good agreement was achieved. So accuracy of the semiquantitative evaluation with the visual supporting tool can be proven.

P7-08

Superficial Innervation of the distal forearm and the hand - danger zones in surgery

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The cutaneous innervation of the distal forearm, the wrist joint and the hand is often variable. Aberrant or inconstant branches of cutaneous nerves can often cause problems for surgical approaches for multiple surgical procedures in this area.

Aim:

The aim of this thesis was to investigate the course of the lateral, medial and posterior antebrachial cutaneous nerves, the superficial branch of the radial nerve, the dorsal branch of the ulnar nerve and the palmar branches of the median and ulnar nerve and to determine their relationship to osseous and tendinous landmarks, in order to define danger zones.

Material and method:

The cutaneous nerves were dissected on 20 formalin – embalmed cadaver forearms and hands. Standardized fotographies were taken and the position and distribution of the nerves and landmarks were measured digitally at pre-determined positions. A statistical analysis was carried out and the danger zones were defined.

Results:

Palmar danger zone in a proximal to distal course: 10 cm proximal to the wrist joint: between 0 – 20%, 40 – 66,67 %, 80 – 86,67% and 93,34 – 100% of the width of the forearm; 5 cm prox. to the wrist: 0 – 26,67 %, 53,34 – 66,67 % and 86,7 – 100 % of the width; on the line between the styloid processes: 0 – 13,33 %, 20 – 26,67 % and 93,34 – 100% of the width; on the line between the distal border of the pisiform bone and the base of the first metacarpal bone: 0 – 20 %, 46,67 – 60 % and 66,67 – 73,33% of the width. Dorsal danger zones in a proximal to distal course: 10 cm prox. to the wrist: 0 – 6,67 %, 13,34 – 33,33 %, 40 – 66,67 % and 93,33 – 100 % of the width; 5 cm prox. to the wrist: 0 – 6,67 %, 20 – 60 % and 66,67 – 73,33% of the width; on the line between the styloid processes: 0 – 20 %, 73,33 – 80 % and 93,33 – 100 % of the width; proximal metacarpus: 0 – 40 %, 73,33 – 86,67 % and 93,33 – 100 % of the width; on 50% of the metacarpal height: 0 – 6,67%, 13,33 – 33,33 %, 46,67 – 53,33 %, 66,67 – 86,67 % and 93,33 – 100 % of the width; distal metacarpus: 0 – 5 %, 25 – 35 %, 50 – 65 %, 75 – 85 % and 95 – 100 % of the width. The anatomic snuffbox and the ulnar aspect of the wrist were considered to be not safe, because of the wide distribution of nerves.

Conclusion:

The presented method allowed the registration and description of normal and aberrant courses of cutaneous nerves. Danger zones for surgical approaches were defined, which should help minimizing iatrogenic nerve injury.

P7-09

MicroVids: indication-based examination protocols in musculoskeletal ultrasound.

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Today ultrasound is commonly used in various medical specialties. Numerous indications are visible with ultrasound, and show good sensitivity and specificity for this imaging modality.
Dominated by the rapid development in US technique – such as high-frequency probes and better software image processing – the number of investigations in daily clinical practice has constantly been increasing over the last years and decades.
Coming along with the invention of high-frequency ultrasound probes, musculoskeletal (MSK) radiology has become a specialty of ultrasound more and more. Despite the evidence of good specificity and sensitivity for the gross of MSK pathologies, the offer of standardized guidelines is still poor. Efforts have been made by the European Society of Musculoskeletal Radiology, which created anatomy-based guidelines for all big joints of the extremities. Apart from this fundamental paper, we weren't aware of useful guidelines with a clinical approach.
Our overall-objective of this study was to develop, and at a later moment to verify and test indication-based guidelines for musculoskeletal ultrasound of the wrist.
A comprehensive literature research combined with experts's opinions on the mined data resulted in the basic version of our new indication-based protocols.
Implementation of multimodal reference images (frozen section, US, CT, MRI, X-ray, anatomic sketches) of standard views as well as the use of a novel, dynamic video documentation method was performed in order to guarantee the demands of high-quality guidelines.

P7-10

A cadaveric study on the safety of retrograde drilling of the talar osteochondral lesions

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Osteochondral lesions of the talus affect the talar dome cartilage and subchondral bone. These lesions were often related to traumatic ankle injuries and usually takes place in the posteromedial corner of the talar dome. Although, conservative methods were the first step in treatment, subchondral drilling was the preffered method in patients who have failed conservative treatment.

Drilling of osteochondral lesions of the medial talar dome can be performed by two techniques, using retrograde or antegrade fashion. Retrograde technique was reported to have less complications with almost the same outcomes.

The aim of this study was to reveal the anatomical structures at risk during a standard retrograde drilling procedure for an osteochondral lesion of medial talar dome under fluoroscopic control and to define an anatomically safe area for application.

Eighteen fresh-frozen ankle (10 right and 8 left) specimens from 14 male and 4 female cadavers were used for this study. Posteromedial talar dome, which was the most frequent localization of osteochondral lesions in the ankle, was targeted under fluoroscopic guidance. The bony superior wall of tarsal sinüs just anterior to anterior talo-fibular ligament (ATFL) insertion was used as the anterolateral entrance site. For posterolateral entrance a 3-mm longitudinal incision was made through the skin just lateral to the Achilles tendon. Blunt dissection was performed to expose the posterolateral corner of talus. First a Kirschner wire (K-wire) 1.2 mm in diameter was inserted from the entrance points. Antero-posterior (AP) and lateral fluoroscopic images of the ankle were obtained to figüre out what direction to insert the guide wire. Then the K-wire was advanced toward the estimated posteromedial lesion side without penetrating the chondral layer. After ensuring the accurate wire position under fluoroscopic control, a cannulated drill 2.5 mm in diameter was advanced until the tough subchondral bone felt.

After drilling with cannulated drill, K-wires were left in the same tracts for the anatomic dissection. The distance between the portals and the lateral malleolus tip were measured. For anterolateral approach the distance between the wire and dorsal cutaneous nerve, tarsal sinüs artery and ATFL, for posterolateral approach distance of the wire to sural nerve were measured.

In 4 specimens (22%) a damage to sural nerve and in another 4 specimen (22%) damage to ATFL were documented.

Although, retrograde drilling was accepted as a safe and percutaneous procedure, it may harm the neural (especially the sural nerve) and ligamentous (ATFL) structures, which may further cause morbidities.

If not necessary, retrograde drilling via posterolateral approach have to be avoided, in order to protect the sural nerve from the potential high risk of damage.

P7-11

The inguinal region revisited – The surgical point of view - An anatomic - surgical mapping with regard to postoperative chronic groin pain following open hernia repair

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Background

Inguinodynia or chronic post-herniorrhaphy pain, defined as pain lasting longer than 3 months after inguinal hernia repair, has become the most important complication after open inguinal hernia repair and therefore comprises the patient´s quality of life. The lack of exact knowledge and understanding of the neuroanatomy of the inguinal region, might be the major reason for long term postoperative pain. Besides, the treatment of the nerves during operation remains unclear.

Methods

A clear and understandable anatomic mapping of the inguinal region and the spermatic cord sheaths by means of anatomic specimens and surgical cases is presented. Step-by-step documentation of surgical layers, their relationship to the most important anatomic landmarks and all three inguinal nerves (iliohypogastric nerve [IHN], ilioinguinal nerve [IIN], genital branch of the genitofemoral nerve [GBGFN]) are provided.

Results

The anterior superior iliac spine (ASIS), pubic tubercle (PT), Camper´s fascia, external oblique aponeurosis, superficial inguinal ring (SIR), external spermatic fascia, cremasteric fascia with cremaster muscle fibers, internal spermatic fascia, cremasteric vein (CV) (=external spermatic vein=“blue line”), ductus deferens (DD), pampiniform plexus (PP) and the inferior epigastric artery (IEA) are the main surgical landmarks for an open inguinal hernia repair.

Conclusion

An exact and well-understood knowledge of the inguinal anatomy is an indispensable basic requirement for all surgeons to perform open inguinal hernia repair without complications especially as postoperative inguinodynia.

P7-12

The Difference of Regional Bone Strength in Cervical Vertebra: Find a Trajectory for Freehand Technique of Pedicle Screw Fixation

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Aim

Pedicle screw fixation in cervical vertebra has biomechanical advantages, but it was considered very risky due to neurovascular complications. Thus, a lot of anatomical studies were conducted and concentrated on the entry point, convergent angle of cervical pedicle, trajectory, or misplacement rate. However, the anatomical study has still limitations about the individual shape difference of the vertebra. The freehand technique for cervical pedicle screw fixation was a method to complement these limitations. For performing a safety freehand technique, the strength of bone at the cortical wall of the spinal canal (adjacent of the lateral mass), the medial and the lateral wall of pedicle have to be quantified to lead the probe. In this study, we evaluated the regional bone quality and strength in cervical vertebra for safety guidance on freehand technique.

Methods

In this study, we used 35 patients' data (female: 19, male: 16, mean age: 64) of the cervical CT and 2 cadavers (20 pedicle). The Hounsfield unit (HU) numbers in the vertebral canal (cHU), the medial (mHU) and lateral (lHU) wall of pedicle were measured on the axial CT images in the middle of pedicle from C3 to C7. Then, we evaluated the difference of the HU number among these regions. For comparison HU number with real bone strength, we performed the penetration test of the same region with measurement area of HU number using cadaver. The micro-indenter tip and universal test machine were used for penetration test. As the penetration test, we got the penetration load of cortical bone and we can find the correlation between HU number and penetration strength.

Results

There was no statistical difference between the left and right side of the HU number and penetration load. The HU No. was showed the highest value in the vertebral canal. The mean number of HU in vertebral canal, the medial wall and the lateral wall of pedicle was 1005.94±206.64, 974.70±195.78, and 636.75±203.61 respectively ($p<0.01$). The mean penetration load of vertebral canal was 246.23±47.79 N, the lateral wall of pedicle was 72.78±42.93 N.

Conclusion

The mean Hounsfield unit number in the vertebral canal wall and the medial wall of pedicle was larger than the lateral wall. Moreover, the penetration load of cortical wall in vertebral canal larger than the lateral wall of pedicle. Thus, the vertebral canal wall and the medial wall of pedicle were strong structure among these regions. And these structures could support the probe to make a safety trajectory for pedicle screw. The cortical bone of the vertebral canal and the medial wall of pedicle has enough strength to guide a probe for making safety trajectory in the freehand technique of cervical pedicle screw fixation.

P7-13

Morphologic Characteristics of the Volar Surface of the Distal Radius in Korean

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Aim:

Volar locking plate has been commonly used for treatment of distal radius fractures. In depth understanding of the distal radius morphology is mandatory in order to choose a proper implant and to avoid implant-related complications. The purpose of this study was to evaluate the morphologic characteristics of the volar surface of the distal radius and to provide useful information to prevent implant-related complications after volar locking plate fixation for distal radius fractures.

Methods:

Morphologic characteristics of the volar surface of the distal radius were evaluated with 3D computed tomography images from cadavers. Ninety specimens (male:34, female:56) were included in this study. CT scan was performed with 0.75 mm thickness and reconstructed with 3D modelling program (Mimics, Materialise, Belgium). Three dimensional sagittal images were reconstructed through each column. In these images, volar slope angles of the distal radius were measured. We also analyzed whether the volar slope angle would differ between male and female specimens. The volar slope angles of currently available volar locking plates were measured by using a 3D digitizer (Microscribe MX, Reware Inc., NC, USA) three times to obtain an average value. The measurements were obtained in each column of plates.

Results:

Mean volar slope angle was 23.9±7.2 degrees in radial column and 28.1±7.6 degrees in intermediate column. Mean volar slope angle in radial column was significantly larger in male specimens compared to those of female specimens (26.1±6.6 degrees versus 20.5±6.8 degrees, $p<0.001$). Mean volar slope angle in intermediate column was significantly larger in male specimens compared to those of female specimens (29.9±7.9 degrees versus 25.2 degrees, $p=0.002$). Width of the distal radius positively correlated with the volar slope angle in radial column ($r=0.323$, $p=0.003$). However, it did not correlate with the volar slope angle in intermediate column ($p=0.101$)

Conclusion:

According to our measurement of distal radius in Korean populations, larger plates need to have more volar slope angle to accommodate the morphology of the distal radius and some plates protrude from the female distal radius which may cause flexor tendon complications. If the width of the distal radius were in-between size in the application of plates, the authors suggest that it would be safe to choose narrower plate to prevent plate protrusion especially at the intermediate column.

P7-14

The examination of the inferior lumbar triangle in the human cadavers.

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Background:
Petit's hernia is caused by a defect in the inferior lumbar triangle, which is described as the external oblique muscle anterolaterally, the latissimus dorsi muscle posteromedially, and the iliac crest anferiorly. The floor of this triangle forms a weak anatomical area. Acquired lumbar hernias are primary and secondary. Primary cases are nontraumatic and account for over half of acquired hernias. Secondary cases are related to trauma, such as motor vehicle crashes, falls and blunt trauma or surgeries such as renal surgery, flank incisions and iliac bone graft harvesting. Contents of the hernias may be retroperitoneal fat, colon, small bowel or kidney.
Aim:
For the practioner of manual medicine, knowledge of general anatomical locations, causes and relevant clinical findings of lumbal hernias will provide for easier understanding and aid in improved clinical outcomes.
Methods:
The posterior body wall was dissected in 25 adult male Turkish cadavers that were fixed with 10% formaldehyde solution. The structures of lumbal area were examined bilaterally. Diameters of the inferior triangle were made with a micrometer. According to the measumerents, the different types of the inferior lumbar triangles were produced. With respect to location of proceeding hernia, area of petit's triangle and the median axis of columna vertebralis is measured.
Results:
The layers were easily dissected and the transverse aponeurosis was bloated. After opening it, the fat responsible of this protrusion was easily reintegrated Petit triangles were classified in according its surface area into four distinct types: Type I or small triangle < 8 cm2, type II or intermediate 8-12 cm2, type III or large triangle >12 cm2 and type 0 or no triangle did not exhibit a triangle; instead, the aponeurosis of the transversus abdominis was enclosed by the external abdominal oblique muscle and the sacrospinalis muscle. Type I triangle is seen most of.
Conclusion: Repair needs to be individualized, depending upon the size of the defect. Small or moderate-size inferior lumbar hernias can be repaired by approximanition of the transversalis fascia along with the fascia of the transversus abdominis muscle. In the large defects, mesh repair is mandatory.
The shape and size of the triangle of Petit is important in the hernia formation and determining surgery procedure.

P7-15

The proportion of the contact surface area of the toes to the total contact surface area of foot

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Aim:

The human foot is a unique structure, formed by numerous bones and joints. It is typically considered as a "functional unit". It supports the body weight and pushes the body forward in walking and running. Foot and toes have effects on the comfort and well-being human. In addition, they have critical role in gait. The aim of this study is to analyze the measurements of contact surface area of foot and to explore the proportion of contact areas of the toe and foot.

Methods:

Sixtynine (42 male and 27 female) healthy subjects, with no known musculoskeletal impairments participated in this study, their ages range between 18 and 25 years. Three (3) measurements compared between the male and female subjects; contact toe area, contact foot area and proportion obtained by dividing toe area by foot area. Water-based dye was used to determine the footprints on the cardboard paper. The footprints were scanned with SAMSUNG SCX-3405 scanner. The contact surface area of the toe and the foot for each subject were measured using ImageJ software. Statistical analysis was performed using IBM SPSS Statistics 21. Informed consent and ethical review were obtained.

Results:

In females, in right and left footprints proportion of contact surface area of toe to the contact surface area of foot were 13.29±2.21% and 14.03±2.73 % respectively. There was no significant difference between right and left proportion of contact surface area of toe to the contact surface area of foot in female (sig=0.21) ($p>0.05$). In males, in right and left footprints proportion of contact surface area of toe to the contact surface area of foot were 12.97±2.32% and 12.39±2.09 % respectively. There was no significant difference between right and left proportion of contact surface area of toe to the contact surface area of foot in male (sig=0.07) ($p>0.05$). There was no significant difference in the proportion of right contact surface area of toe to the right contact surface area of foot between female and male (sig=0.57) ($p>0.05$). And there was significant difference in the proportion of left contact surface area of toe to the left contact surface area of foot between female and male (sig=0.21) ($p\leq0.05$).

Conclusion:

The present study provides information about contact surface area of toe and foot. The result reveals that the proportion obtained by dividing contact surface area of toe by contact surface area of foot does not change between right and left foots of people. But it change between female and male. It is important to produce footwears. And this study will be very helpful in the design of consumer products.

Key words: contact surface area of the toe, contact surface area of foot

P7-16

Anatomic visualization of a sternoclavicular joint – new MRI examination protocol using spine coil.

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Introduction:

Sternoclavicular joint injuries are uncommon, thus create a diagnostic challenge. They are diagnosed usually by means of the MRI examination. For reliable and full assessment of the joint the exact anatomical conditions should be visualised. However, two, currently used examination protocols, have major limitations. They, consider mainly low quality of examination due to increased signal to noise ratio and motion artefacts.

Aim of this study was to develop a new examination protocol that will allow for full morphological assessment of a sternoclavicular joint.

Material and methods.

We designed a new MRI protocol for examination of a sternoclaviculr joint, with application of a standard multichannel Total Spine Coil. Then it was compared with standard protocols. Twenty one healthy volunteers (10 women and 11 men) with average age of 25 years old, were randomized into 3 groups and examined in 3 different MRI installations (Philips Eclipse 1.5 T; Philips Inginia 1.5 T; Phlips Achiva 3.0 T). Every patient was examined twice – according to the standard protocol, with application of Torso/Body Coil, and according to the proposed protocol with a Spine Coil. Standard sequences were used – TSE – T1W, T2W, PD, PD FatSat in axial, coronal and sagittal plane. Within each group the following parameters were compared: signal to noise ratio, spatial resolution, intensity of motion artefacts. Study protocol was approved by the local bioethics comity and all participants signed an informed consent.

Results:

Application of a Spine Coil resulted in comparable signal to noise ratio as with torso coil. However the spatial resolution was better and the intensity of motion artefacts was decreased.

It allowed for more reliable assessment of a joint capsule and articular disc. Moreover the border between the join and adjacent muscles and ligaments around the joint became better delineated.

Conclusion:

Proposed protocol allows for full morphological visualisation of the sternoclavicular joint. Moreover it provides more raliable information than standards protocol. It can be applied in future anatomical studies as well as in clinical practice.

P7-17

The influence of the morphology of the suprascapular notch on the ultrasound visualization of the suprascapular nerve

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Aim

The suprascapular notch is a depression on the superior border of the scapula. This region is the most important point on the course of suprascapular nerve, because it is the most common place for suprascapular nerve injury and entrapment. The aim of the study is to determine the influence of the morphology of the suprascapular notch on the effectiveness of ultrasound visualization of the suprascapular nerve at this region.

Methods

The type of suprascapular notch was ultrasonographically determined in 78 patients using the classification system described by Polguj et al. (2011) with a modification for sonographic visualization (2015). This classification system is based on the shape of the inferior border of the incisura, as well as a comparison of the two main geometrical measurements: maximal depth (MD), and superior (STD) transverse diameter.

Results

The suprascapular nerve was recognized in 48 cases, among which, the type IV / V suprascapular notch occurred significantly more frequently than types I-III: 21 type IV / V suprascapular notches (60.3%) compared to 27 type I-III (24.5 %), ($p = 0.0023$). The type I – III notches which revealed the presence of a suprascapular nerve were significantly wider and shallower than average.

Conclusion

Sonographic visualization of the suprascapular nerve is possible and may be useful in several procedures around this region. Ultrasonographic suprascapular notches. examination of the suprascapular nerve is more likely to be successful when used for type IV/V.

P7-18

A morphological analysis of the plantaris tendon course and types of its insertion in the adult humans

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Aim

The purpose of this study was to determine the anatomic relationships between the course of the plantaris tendon (PT) and the calcaneal tendon, and to identify the types of insertion of the plantaris tendon that may be important in pathogenesis of the Achilles teninopathy.

Methods

Sixty randomized and isolated lower limbs (29 left and 31 right) was dissected.

Results

Five types of insertion were found for the plantaris tendon.

Type 1 (29 limbs/48,3%) is characterized by a wide, fan-shaped insertion to the calcaneal tuberosity on the medial side of the Achilles tendon.

Type 2 (12 limbs/20%) is characterized by insertion with a slight branching of the plantaris tendon to the calcaneal tuberosity.

Type 3 (5 limbs/8,3%) is characterized by insertion at the calcaneal bone, anterior to the calcaneal tendon.

Type 4 (2 limbs/3,3%) is characterized by the insertion at the deep crural fascia over the calcaneal tuberosity.

Type 5 (12 limbs/20%) is characterized with a very wide insertion encircling the posterior and medial surfaces of the Achilles tendon.

Two variants of a course of the plantaris muscle tendon were found. Variant I (53 limbs/88,3%). PT crossed the space between gastrocnemius (GM) and soleus muscle(SM), and ran on the medial part of the leg, medial to Achilles tendon. This variant connected with Type 2 of insertion PT at calcaneal tuberosity is cinsider to affect the patology in this area. Variant II (7 limbs/11,7%) crossed the space between GM and SM, and ran on the medial part of the leg, and next anterior to Achilles tendon.

Conclusions

The course of the plantaris tendon and its mobility range in relation to the calcaneal tendon may affect the occurrence of pain in the lower medial part of the shin i.e. the Achilles tendinopathy.

P7-19

Thin slice silicone plastination of hand

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One hand of an amputated limb was obtained from the pathology department as a fresh specimen. After washing with %0.9 NaCl solution the arteries of the hand were filled with red colored polyester (Poliya 354 + Polipigment red) via cannulations of ulnar and radial arteries. The specimen was precooled at 4°C in refrigerator for one night and stored in -80°C for following five days. 2-3 mm thick coronal slices were obtained from the frozen specimen using a saw machine. All slices were placed between wire meshes respectively. After one month of fixation with %10 formalin solution, cold acetone baths for dehydration and degreasing at room temperature in last acetone bath were done. Xylene added (X/S ratio: 1/1) silicone reaction mixture (Biodur S10+S3) was used for impregnation at room temperature. Curing of slices was carried out in a gas curing chamber in which the specimens were exposed to S6 vapors at room temperature. The added xylene was removed from the slices using vacuum chamber after curing. The added xylene was removed from the specimens using vacuum chamber after curing.

Thin slices of the hand were produced using a modified S10 plastination method. The plastinated slices are good of quality and color, durable, semi-flexible, semi-transparent and have fine details of many anatomical structures comparable with radiological images. The arteries of the hand are in traceable clarity from the palmar arches to the tip of the digital arteries.

Using xylene as an additive to impregnation mixture ensures lightweight plastinates and lower costs. Also assures a realistic tactile sense of structures like bone, muscle, tendon etc. The slices are easy to handle and to evaluate. The preparation is easy and less expensive relative to other plastination methods (epoxy and polyester) and standard silicone plastination.

There is no study in the literature of thin slices of hand with filled arteries which were prepared and plastinated using the process as described in this study.

P8-01

Topological variability and sex differences in fingerprint ridge density in a sample of the Sudanese population

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Fingerprints are important biometric variables that show manifold utilities in human biology, human morphology, anthropology, and genetics. Their role in forensics as a legally admissible tool of identification is well recognized and is based on their stability following full development, individualistic characteristics, easy classification of their patterns, and uniqueness. Nevertheless, fingerprint ridge density and its variability have not been previously studied in the Sudanese population. Hence, this study was conducted to analyze the topological variability in epidermal ridge density and to assess the possibility of its application in determining sex of Sudanese Arabs. The data used for this study were prints of all 10 fingers of 200 Sudanese Arab individuals (100 men and 100 women) aged between 18 and 28 years. Fingerprint ridge density was assessed for three different areas (radial, ulnar and proximal) for all 10 fingers of each subject. Significant variability was found between the areas ($p < 0.01$). Women showed significantly higher ridge density in the three areas for all and each fingers. Men and women showed similar patterns of densities with distal areas being denser than proximal ones. Side asymmetry was more evident in distal areas. Ridge density thresholds for discrimination of sexes were developed. Hence, fingerprints found in forensic examinations/crime scenes can be useful to determine sex of Sudanese individuals based on fingerprint ridge density, furthermore, ridge density can be considered a morphological trait for individual variation in forensic anthropology.

P8-02

Anthropological and Paleopathological analysis of two different populations of Sardinia in prenuragic and roman period.

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AIM

The purpose of the present study was to evaluate and compare two different archaeological sites located in the North-West of Sardinia, Italy. The first place was a Domus de Janas, named S'adde 'e Asile, located in Ossi (Sassari's province), datable around 1700 BC. The second site was a necropolis with "cappuccina" burials, appointed as Monte Carru, in Alghero (Sassari's province), dated back to the Roman Imperial age (around 350 AC).

METHODS

The examined burials were subjected to washing with water and to restoration through gluing with PVA glue, wherever possible, and only then we were able to proceed with the anthropological study. In order to delineate the biological profile of each individual considered, we followed the main anthropological techniques known in literature (Meindel & Lovejoy, 1985; Iscan 1985; Ubelaker 1989; Trotter & Gleser 1952) supported, if necessary, by less common techniques (Vance et al. 2011; Chibba 2007; Bidmos 2006).

RESULTS

The anthropological analysis showed that 35,29% of population in S'adde 'e Asile was represented by sub-adult individuals, most of them between 0 and 12 years; only 18% sub-adult s, equally distributed between 0 and 17 years, were found in Monte Carru. Regarding the adult population, the rate of female was the same in both sites (36%), while the percentage of males was higher in Monte Carru. The aged between 20 and 35 years (young adults) was mostly represented in Monte Carru and S'Adde 'e Asile, 52% and 29.5% respectively.

The maximum age is greater in S'adde 'e Asile where 6% of individuals had a higher age of 50 years.

Heights decreased from an average of 168 cm to 162 cm in prenuragic and Roman period respectively: specially, the mean height for females was of 158cm in Monte Carru.

Diseases were present in both periods: the most common diseases were joint disorders such as osteophytosis and osteolysis, localized mainly in upper limbs and spine of Monte Carru individuals while in lower limbs of S'adde 'e Asile subjects.

Dental pathologies were tartar and caries and hypoplasia in S'adde 'e Asile and Monte Carru respectively, Dental wear was found on lower molars in both samples, but with a greater rate in prenuragic sample.

CONCLUSION

Despite a greater number of deaths in childhood, the general state of health was better in the prenuragic period; we can assume a different feeding in Roman times, with a larger percentage of carbohydrates, proven by a higher percentage of caries.

REFERENCES

Bidmos M., 2006. J Clin Forens Med 13 Pp.247-252.
Chibba K., Bidmos M.A., 2007. Forens Sci Int 169 Pp.145-151.
Iscan, M.Y. 1985. J Forens Sci, 30: 1090 – 1099.
Meindl L, Lovejoy C., 1985. Am J Phys Anthropol 68 Pp.57-66.
Trotter M., Gleser G.. 1952. Am J Phys Anthropol 10 Pp.463-514.
Ubelaker DH. 1989. Human skeleton remains: excavation, analysis, interpretation. Washington: Taraxacum.
Vance V.L., Steyn M., L'Abbé E.N., 2011. J Forens Sci 56/3 Pp.710-714.

P8-03

Morphometry of the auricle

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Introduction:
Morphometric studies of auricle find their place in many areas, which are aesthetics, forensic medicine, biology, anthropology, mythology, arts and acupuncture. The aim of this study was to determine the morphometric parameters, the form of the auricle, and to determine differences in relation to the gender and body side.
Material and Methods:
The research was conducted on 60 subjects (30 males and 30 females), students of the Medical Faculty in Novi Sad, average age 19.10 years, without history of genetic disorders, injuries or any disease of the auricles. We photographed both auricles in all subjects and we measured nine parameters on each auricle by using a computer program Image J 1.48 v. According to the shape, we classified auricles into four groups.
Results: The average length of the auricle was 65.08 mm, and the width was 34.05 mm. The average length of the auricle above the tragus was 29.33 mm, below the tragus was 16.79 mm, while the average length of the tragus was 16.91 mm. The average length of conch was 24.71 mm while conch width was 18.51 mm. The average height of the lobule was 11.05 mm while its width was 18.71 mm. The most common form in males was oval (43.33%) and in females was triangular (40%).
Conclusion:
The average values of almost all parameters were higher in males than females, except the length of the auricle below tragus and lobule height. There was no statistically significant difference in relation to the body side, but between the genders there were statistically significant differences among almost all of the parameters (except length of the auricle below tragus and lobule height). Compared to the other populations, deviations are minor.

P8-04

Appliment of different calculation formulas of theoretical weight in order to obtain body mass index by a standard general pattern

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Aim:
The aim of this study was to investigate which is the most acceptable model for body mass index evaluation by a standard general pattern, since the one of the oldest bioantropological issues is what is the mass that a person should have, with a certain height, constitution, gender, age and other important determinants.
Methods:
This prospective study included 78 patients, male gender, divided into two groups: PTSD - group (44 patients) and control group (34 patients). Those were heterogeneous groups according to age and educational structure, where the 30's and 40's are dominant for age and high school education is dominant for education. Calculations of body mass index were performed using standard general pattern, applying different methodologies to obtain the theoretical mass values (Broca's, Azerad's, American insurance company's, Demelov's)
Results:
There are significant differences between the average values of body mass index calculated by the general standard pattern, depending on the different kind of calculation of theoretical mass used within the PTSD group and control group.
Conclusion:
The correlation coefficient indicates that nutritional index obtained by standard general pattern by use of different methodologies for determining a theoretical body mass is very similar for measurment and calculation of nutitinal state within the PTSD and control group.
However, compared to correlation matrix we obtained within the PTSD group the coefficients of correlation levels were slightly lower within the control group.

Keyword: body mass index, theoretical mass, PTSD

P8-05

Comparison of Cormack and Lehane's grade with anthropometric measurements

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Aim:

The Cormack-Lehane score is a grading system commonly used to describe laryngeal wiev during intubation. The purpose of study is to investigate the anthropometric measurements of head and neck in relation to the Cormack Lehane classification.

Methods:

303 adult patients (138 male, 165 female) submitted for elective surgery under general anesthesia were included in this study. Age, height, weight, hyomental distance, thyrosternal distance, neck circumference, neck dept and neck height were recorded during preoperative evaluation. CL was used for visualization of the larynx.

Results:

There were not any significant corelation between CL and age, height, weight, neck depth and neck height ($p>0.05$). But hyomental distance, thyrosternal distance, neck circumference measurements showed statistical significant effect on the CL (respectively p=0,000, p=0,000, p=0,000).

Conclusions:

Cormack and Lehane classification is the most valuable test for predicting difficult intubation. CL is not used as preoperative bedside tests to predict a difficult airway. Therefore we need new methods easy applicable. According to our results, hyomental distance, thyrosternal distance and neck circumference useable instead of CL.

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