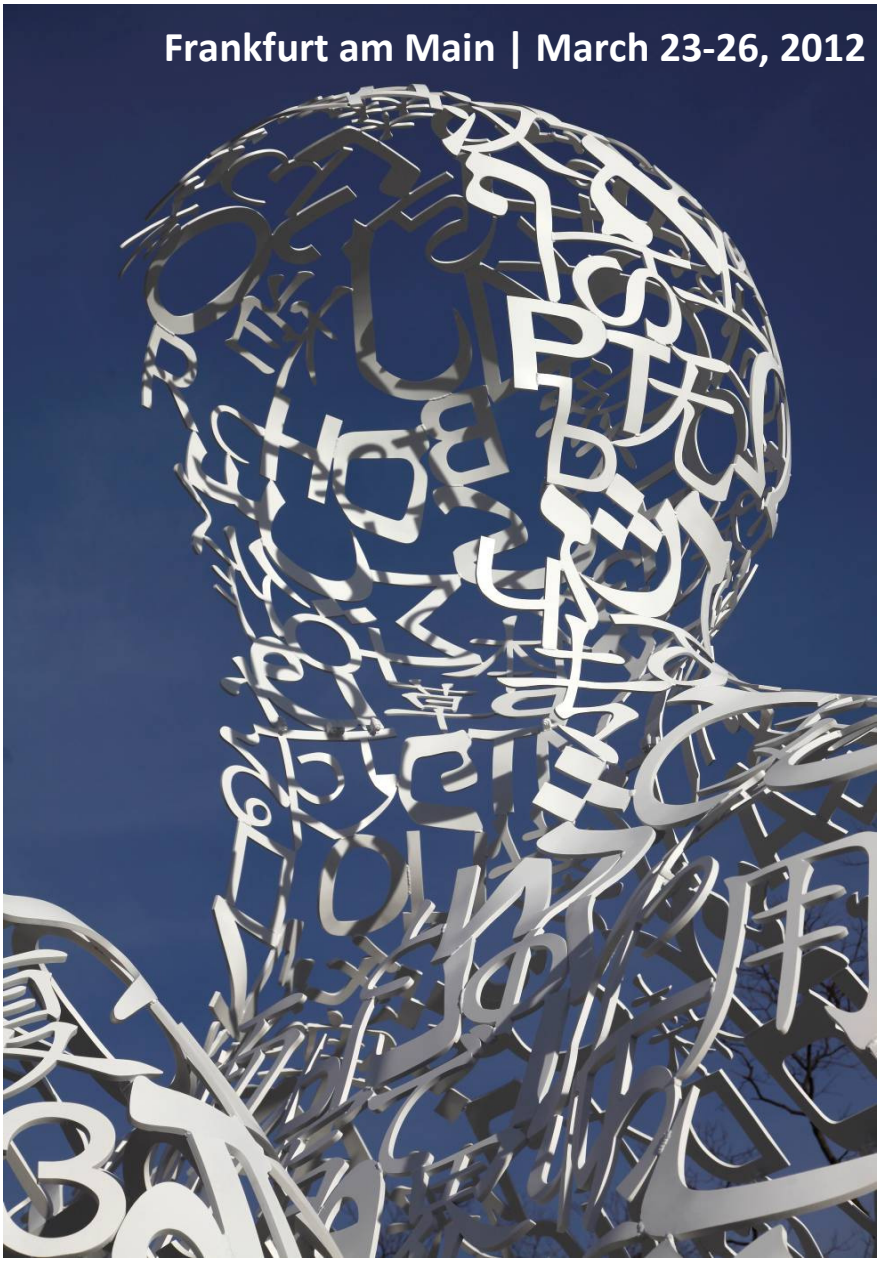
Anatomische Gesellschaft
107th Annual Meeting

Frankfurt am Main | March 23-26, 2012



To find your abstract or an abstract of interest please use the alphabetical list of first authors of lectures and posters starting on next page or use the abstract number which refers to the lecture number given in the meeting program.

Example:
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Abstract Nr.:15

This means poster 15.

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Rubrik: 1.Main Topic I
Abstract Nr.:1

Titel: Characterization of heat shock factor 1-immunopositive neurons in the hypothalamus of C3H mice

Autoren: Noichl E.(1),Reinke H.(2),Korf H.(3),von Gall C.(4),

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Abstract:
Heat shock factor 1 (HSF1) is an essential element of various cellular processes. Besides its central role in heat shock responses, HSF1 is involved in the modulation of carcinogenesis, influences extra-embryonic development as well as postnatal growth and acts as a circadian transcription factor. HSF1-deficient mice are significantly smaller and less developed compared to wild-type individuals. This suggests an important role for HSF1 in controlling nutritive behavior and metabolic homeostasis. However, little is known about the role of HSF1 in hypothalamic brain regions controlling food intake and body weight. Therefore, we examined the presence of HSF1 in hypothalamic brain regions such as arcuate nucleus (Arc), praeoptic nucleus (NPO), lateral hypothalamus (LH), and paraventricular nucleus (PVN) by immunohistochemistry. Double-immunofluorescence and confocal laser scanning microscopy were used to detect colocalization with neuropeptides involved in food intake and appetite regulation such as agouti related peptide (AGRP), proopiomelanocortin (POMC), tyrosinhydroxylase (TH), neuronal peptide Y (NPY), vasopressin (VP), corticotropin releasing factor (CRF), orexin and ghrelin. In the Arc colocalization of HSF1 was observed with AGRP, POMC, TH, NPY and ghrelin. In the PVN colocalization of HSF1 was observed with TH, VP and CRF. In the LH colocalization of HSF1 was observed with orexin. These data suggest a potential role of HSF1 in hypothalamic control of food intake and body weight.

Kategorie: Poster

Rubrik: 1.Main Topic I
Abstract Nr.:2

Titel: Tafa3 is expressed in the mouse pars tuberalis and is affected by melatonin 1 receptor deficiency

Autoren: Fischer C.(1),Christ E.(1),Korf H.(2),von Gall C.(3),

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Abstract:
The hypophyseal pars tuberalis (PT) contains a high density of melatonin type 1 receptors (MT1) and transmits photoperiodic information either to the anterior pituitary or to the hypothalamus presumably via small messenger molecules. Thus, there is increasing interest to identify and establish the nature of small secreted proteins in the PT, which are under the control of the melatonin signalling pathway. Microarray studies suggest an effect of melatonin and photoperiod on the expression of Tafa3, encoding for a small secretory peptide. Therefore, we analysed the localization of Tafa3 mRNA by using real-time qPCR and in situ hybridization in the mouse brain. Hybridization signals were observed in the hippocampus formation, the ventral and posterior part of the thalamus and in the medial habenular nucleus. The strongest hybridization signals were found in the pineal gland and the PT. Tafa3 mRNA expression showed a day/night variance in the PT of wild-type mice with low levels at mid-day (low endogenous melatonin) and high levels at mid-night (rising levels of melatonin). This day/night variance was not observed in the PT of mice with a targeted deletion of the MT1 receptor (MT1-/-), suggesting that Tafa3 mRNA expression is controlled by melatonin acting through the MT1 receptor. In summary, our data suggest that expression of the small secretory peptide TAFA3 in the PT is melatonin-regulated and might play a role in transmitting paracrine photoperiodic information.

Kategorie: Poster

Rubrik: 12.Reproductive Biology
Abstract Nr.:3

Titel: Salinity changes affect the brain-pituitary-gonad axis of tilapia

Autoren: Berishvili G.(1),Shved N.(2),Link K.(2),DCotta H.(3),Baroiller J.(3),Reinecke M.(4),Eppler E.(1),

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Abstract:
Changes in water salinity are a great challenge for fish physiology and often occur during reproductive phases. Insulin-like growth factor (IGF)-I has been found to be involved in fish osmoregulation but data are limited. The highly salinity-tolerant black-chinned tilapia (Sarotherodon melanotheron) were transferred from fresh water (FW) to sea water (SW) for one week and thereafter retransferred to FW for another week. At 4 hours, 1, 2, 3 days and 1 week after transfer and retransfer IGF-I, IGF-II and growth hormone receptor (GH-R) mRNA were measured by real-time PCR. Hepatic IGF-I, IGF-II and GH-R mRNA decreased in parallel after SW-transfer, recovered and decreased again after retransfer. Also in organ systems involved in osmoregulation (gills, kidney, and intestine) alterations occurred after SW and FW transfers (Link et al. Mol Cell Endocrinol 2010) which points to endocrine and autocrine/paracrine actions of IGF-I and IGF-II in osmoregulation. Currently, we are investigating whether also different levels of the brain-pituitary-gonad axis are affected. In brain and pituitary, both IGF-I and IGF-II gene expressions are affected during the treatment. At the pituitary level, also GH, prolactin and GH-R gene expressions are altered. At the gonad level, IGF-I reacts to salinity changes in a sex-differentiated manner. Thus, endocrine and auto/paracrine IGF-I and IGF-II seem to be involved in fish osmoregulation in an organ-specific manner at different levels of neuroendocrine and endocrine system.

Supported by Swiss National Foundation

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:4

Titel: Colocalization of the cannabinoid receptor 1 and NO-synthase in folliculo-stellate cells

Autoren: Schomerus C.(1),Nold J.(1),Korf H.(1),Laedtke e.(1),

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Abstract:
The hypophysial pars tuberalis (PT) is an important center that transmits photoperiodic information to neuroendocrine circuits involved in the control of reproduction, metabolism and behaviour. Recently an intrinsic endocannabinoid system was discovered in the PT of hamster which is regulated by the photoperiod. Furthermore the cannabinoid receptor 1 (CB1) was found to be present in folliculo-stellate (FS) cells of the hamster pars distalis. Taken together, these data suggest that the PT synthesizes lipidergic messengers that regulate adenohypophysial functions. Here we pre sent an immunocytochemical study with antibodies against the folliculo-stellate marker protein S-100, neuronal NO synthase (n-NOS), and CB1 performed on cryosections from the hamster pituitary and on the murine FS cell line TtT/GF. In TtT/GF cells, nearly all cells were immunoreactive (ir) for S-100, n-NOS, and CB1. In the hamster pituitary approx. 80% of the S-100 ir cells also displayed immunoreactivity for n-NOS. In 45% of the S-100 ir cells we found a colocalization of S-100 and CB1. Our data support the hypothesis that endocannabinoids mediate photoperiodic signals from the PT to FS cells. Further experiments are required to investigate whether NO or the FS cell-specific protein follistatin are involved in the transmission of photoperiodic signals from the FS cells to endocrine cells of the pars distalis, such as lactotrophes or gonadotrophes.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:5

Titel: Some observations on the hypophyseal pars tuberalis in mice

Autoren: Kröher N.(1),Korf H.(2),Wicht H.(2),

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Abstract:
The Pars tuberalis (PT) plays a major role in the coupling of rhythmogenetic and endocrine systems. In seasonally breeding animals in particular, it is involved in the generation of the hypophyseal (prolactin-) response to circannual, seasonal (photo-)periodic changes, even though it does not contain prolactin-secreting cells in itself. Transgenic mice have become a standard model for the investigation of the PT, yet there is relatively little information on the micro-topography of their PT. We therefore decided to inspect the PT and its surroundings in situ by means of light-microscopical paraffin-sections of decalcified skull and brain bases of different mouse strains. Our results are as follows. The PT clearly is a rostral continuation of the Pars distalis (PD), it is sharply delimited from both the Pars intermedia and neuralis. Near the rostral pole of the PD, the PT-specific cells start to intermingle with those of the PD. Adjacent to the hypophyseal stalk, the PD-specific cells vanish, the PT and the portal vessels of the tubero-infundibular system form a very thin sheath that covers the stalk. Anteriorly, at the brain base, the PT consists of a much thicker sheath of cells that covers the median eminence (ME) ventrally and laterally. In a three-dimensional view the PT thus takes the shape of a blade of a spade or a shovel, with the ME resting on that blade, while the hypophyseal stalk is reminiscent of the shovel\'s shaft. Thus, from a topographical point of view, the PT should probably be regarded as an integral part of the tubero-infundibular endocrine system.

Kategorie: Poster

Rubrik: 1.Main Topic I
Abstract Nr.:6

Titel: Morphometric monitoring of renal structures reactivity during intermitent light exposure as an oxidative stress condition

Autoren: Zamfir C.(1),Zugun E.(2),Folescu R.(3),Cojocaru E.(4),Tocan L.(1),

Adressen:(1)Histology|University of Medicine and Pharmacy|Iasi|Romania; email:zamfircia@yahoo.com; (2)Immunology|University of Medicine and Pharmacy|Iasi|Romania; (3)Anatomy|University of Medicine and Pharmacy V.Babes|Timisoara|Romania; (4)Histology|University of Medicine and Pharmacy I|Iasi|Romania

Abstract:
Oxidative stress is a major tissular aggression, able to induce different types of tissular and cellular disturbances.Continuous exposure of experimental animals to an intermitent light will interfere with normal chronobiological rhytmicity.Little data is known about renal reactivity during this type of induced oxidative stress.Material and method : Morphometrical assay of renal corpuscles and tubules diameters, number and morphology was performed in a scanning analysis(Observer Z1 mycroscope), using three groups of Wistar rats : control group versus a group exposed to intermitent light for 30 days versus a group exposed to intermitent light for 60 days.The renal fragments were specifically treated, microscopically analised and scanned.Results and discussions:Morphometric analysis of monitoring renal structures parameters revealed significant differences between three groups, pleading for specific renal activity damages.Conclusions : Induced oxidative stress is correlated with important renal disfunctions.
Key words: oxidative stress, morphometric, intermitent light

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:7

Titel: Using photooxidation to visualize synaptic proteins

Autoren: Wittenmayer N.(1),Angermüller S.(2),Dresbach T.(1),

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Abstract:
Photoconversion of fluorochrome-tagged molecules followed by electron microscopy is a powerful method to visualize the localisation of proteins with high resolution. In this work, we show photoconversion of two fluorochrome-tagged synaptic proteins into electron dense diaminobenzidine (DAB)-deposits which are detectable by electron microscopy. Therefore, we transfected primary hippocampal neurons with CFP-tagged versions of Bassoon or Synaptophysin. Bassoon is an active zone specific protein which is transported via distinct Piccolo-Bassoon-transport vesicles (PTV's) from the Golgi apparatus to synapses while Synaptophysin is one of the most abundant integral membrane proteins of synaptic vesicles. Our data indicate that CFP-Bassoon photoconversion results in a dark, fuzzy coat around vesicles which accumulate in clusters in the soma and in neurites. Photoconversion of CFP-Synaptophysin reveals DAB-deposits at membranes of tubular-like structures within the soma and neurites. This method allows the correlation of light microscopical signals with the respective subcellular structures and can provide more information about the transport and localization of proteins such as Bassoon and Synaptophysin.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:8

Titel: Involvement of Bmp-2 and Bmp-4 in neurogenesis in the human embryo

Autoren: Namm A.(1),Arend A.(2),Aunapuu M.(1),

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Abstract:
Neurulation is the process in which the neural plate bends and fuses to form the neural tube which will be become spinal cord and brain. Development, regional specification and neurogenesis of the human brain seem to be controlled by Bone Morphogenetic Proteins (BMP-s). BMP-s were originally identified by an ability to induce the formation of bone and cartilage but they have important roles during embryonic development of the embryonic patterning, in particular they participate in several stages of neural patterning. In human embryonic development BMP-2 and BMP-4 are critical signaling molecules required for the early differentiation of the embryo and the establishment of a dorsal-ventral axis. In our studies we investigated BMP-2 and BMP-4 expression in the human embryos. We determined spatial and temporal expression of BMP-s during the early stages of neural tube development. Twenty four embryos of Carnegie stages 14 - 23 were obtained by medical abortions. Tissue blocks were serially cut in transversal direction, mounted on glass-slides and stained with hematoxyline and eosin for general orientation to section. For immunohistochemistry the sections were incubated with the first and secondary antibodies: BMP-2 diluted 1:250, BMP-4 diluted 1: 100. Data of our investigations indicate obvious immunostaining of BMP-2 and BMP-4 in the developing neural tube. There seem to be difference in the expression of BMP-s at different developmental stages and between dorso-ventral part of neural tube. The results of this study confirm the importance of BMP-2 and BMP-4 signaling in the regulation of the human nervous system formation.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.: 9

Titel: Acute psychosocial stress protects against light-induced damage of photoreceptors via a corticosterone-mediated activation of the akt pathway

Autoren: Ohlmann A.(1),Tembei K F.(1),Reber S.(2),Neumann I.(2),Tamm E.(1),

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Abstract:
Purpose:
Glucocorticoids have repeatedly been shown to be neuroprotective in animal models of hereditary retinal degenerations. The release of glucocorticoids is one of the hallmarks of the classical stress response. To analyze if psychosocial stress has protective effects on retinal neurons, mice were stressed by subordinate colony housing (CSC) followed by a light-induced damage of photoreceptors. In addition, the roles of the HPA axis, Muller cell gliosis and AKT pathway activation was investigated.

Methods:
Acute psychosocial stress was induced via CSC for 10 hrs followed by a light exposure of 5000 lux. Apoptosis and loss of photoreceptors were assessed by TUNEL staining and/or light microscopy. To investigate the role of the HPA axis, adrenalectomy was performed. Retinal expression of neuroprotective growth factors and phosphorylation of AKT was analyzed by real-time RT-PCR and western blotting.

Results:
Acute psychosocial stress and injection of corticosterone protected photoreceptors from light-induced damage when compared to single-housed controls or vehicle-injected animals. As opposed to those of sham-operated mice, photoreceptors of adrenalectomized mice were not protected from light damage after 10 hrs CSC. Retinal mRNA expression of neuroprotective factors was not changed after acute psychosocial stress or corticosterone injection. After 10 hrs CSC or corticosterone injection, a significant higher level of AKT phoshorylation was observed when compared to controls. The same was true when sham-operated mice were compared with adrenalectomized mice.

Conclusions:
Acute psychosocial stress protects photoreceptors against light-induced damage. This effect is most likely mediated via an increase in plasma corticosterone which in turn activates the AKT signalling pathway.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.: 10

Titel: Functional micro RNAs are necessary for cerebellar granule cell development

Autoren: Eiberger B.(1),Tress O.(1),Markopoulos C.(1),Schilling K.(1),

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Abstract:
Differentiation and maturation of cerebellar granule neurons requires the concerted expression and function of many proteins. RNA interference (RNAi), induced by expression of single microRNA (miRNA) isotypes, allows simultaneous posttranscriptional regulation of several target messenger RNAs during neuronal development.

We analyzed the impact of miRNA-mediated posttranscriptional regulation during development of cerebellar granule cells via conditional knockout (cKO) of the endoribonuclease Dicer, resulting in loss of RNAi. Dicer-cKO mice showed impaired movement, ataxia, and premature death. Histologically, mice deprived of Dicer activity in granule precursor cells revealed cerebellar malformations with loss of rostral granule cells, scattered distribution of Purkinje neurons, and postmitotic granule cells located ectopically in caudal cerebellar lobules.

To clarify which miRNA isoforms are involved in these phenotypic abnormalities, we performed microarray analysis on RNA samples of P8 and adult cerebella of wildtype mice. This unveiled more than 20 miRNA isotypes to be highly regulated during cerebellar development.
For a subset of these miRNAs we could show impact on the actin-interacting protein Mtss1 (metastasis suppressor 1) which is developmentally regulated in cerebellar granule cells. MiRNA-mediated downregulation of Mtss1 expression in primary granule neurons reveal changes of the dendritic morphology comparable to granule cells of Mtss1 deprived mice. Moreover, similar to Dicer-cKO mice, Mtss1-KO animals showed ectopic postmitotic granule neurons in the molecular layer.

Together, these results suggest a critical role for miRNA concerted cytoskeletal activity in cerebellar histogenesis. Further, our data provide a starting point to identify hithero unknown targets of miRNA regulation necessary for granule neuron development.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.: 11

Titel: Functional properties of the dentate gyrus of mice lacking APP or APLP1 - an electrophysiological in vivo study

Autoren: Vnencak M.(1),Jedlicka P.(1),Owen M.(1),Tschäpe J.(2),Hick M.(2),Müller U.(2),Deller T.(1),

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Abstract:
The amyloid precursor protein (APP) is a member of a larger gene family which includes amyloid precursor-like protein 1 (APLP1). APP is involved in the pathogenesis of Alzheimer's disease. Therefore, it is of great importance to elucidate the physiological role of APP and APLP1 in the CNS. Hence, in this study, we have investigated whether the lack of APP or APLP1 affects the synaptic properties in the dentate gyrus by measuring granule cell field potentials evoked by perforant path stimulation in anesthetized APP- or APLP1-knockout (KO) mice, respectively. We found decreased paired-pulse facilitation in APP KO mice, suggesting altered presynaptic short-term plasticity in the APP-deficient dentate gyrus. In contrast, excitatory synaptic strength and granule cell firing were unchanged in APP knockout mice. Likewise, long-term potentiation (LTP) induced by a theta-burst stimulation protocol was not impaired in the absence of APP. These findings suggest that the deletion of APP may affect presynaptic plasticity of synaptic transmission at the perforant path-granule cell synapse but leaves synaptic efficacy intact and LTP preserved, possibly due to functional redundancy within the APP gene family. In addition, we will be presenting our preliminary data assessing excitatory synaptic strength, granule cell firing and LTP in APLP1 KO mice and their wild-type counterparts.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:12

Titel:A power law for dendritic wiring

Autoren: Cuntz H.(1),Mathy A.(2),Häusser M.(2),

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Abstract:
How dendrites sample their inputs is a crucial determinant of the wiring of neural circuits. Yet the precise link between dendrite shape and its synaptic contacts remains a mystery. Studying maturing neurons in which the number of synapses increases provides a unique window on this problem. We combined morphological analysis and modelling of newborn neurons in the adult olfactory glomerulus during neurogenesis in vivo. We reveal a power law between synapse number and dendrite length that is consistent with an optimal space-filling of a given volume. Furthermore, we show that this same principle leads to a specific ratio between the number of branch points in the dendritic tree and the number of synapses. This in turn allows us to generalize our power law to dendritic trees for which the synapse locations are unknown, and to show that it holds for a wide variety of neuronal dendritic trees.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:13

Titel:The cell adhesion molecule neuroligin-1 is essential for intact excitatory synaptic transmission at glutamatergic perforant path synapses

Autoren: Jedlicka P.(1),Vnencak M.(1),Jungenitz T.(1),Deller T.(1),Brose N.(2),Schwarzacher S.(1),

Adressen:(1)Institute of Clinical Neuroanatomy|Goethe-University Frankfurt, NeuroScience Center|Frankfurt am Main|Germany; email:jedlicka@em.uni-frankfurt.de; (2)Department for Molecular Biology|Max Planck Institute for Experimental Medicine|Göttingen|Germany

Abstract:
The transmembrane adhesion proteins neuroligins are key players in the regulation of both excitatory and inhibitory synaptic inputs. Based on previous in vitro and ex vivo studies, neuroligin-1 (NL1) has been suggested to play a selective role in the function of glutamatergic synapses. However, the role of NL1 has not yet been investigated in the brain of living animals. Here we have, therefore, studied the effects of NL1 deficiency on synaptic transmission in the dentate gyrus using recordings of field potentials evoked by perforant path stimulation in anesthetized NL1 knockout (KO) mice. We report that the loss of NL1 strongly reduces the synaptic strength at glutamatergic perforant path - granule cell synapses. In addition, NL1 KOs displayed impairment in long-term potentiation (LTP). Furthermore, field EPSP-population spike (E-S) coupling was greater in NL1 KO than WT mice indicating a compensatory rise of neuronal excitability in NL1-deficient granule cells. Our findings are consistent with recent reports of the involvement of NL1 in the regulation of both AMPA receptor- and NMDA receptor-mediated synaptic currents. Taken together, we provide the first evidence that NL1 is essential for normal excitatory transmission and long-term synaptic plasticity in the hippocampus of intact animals.

Kategorie: Poster

Rubrik: 8.Neuroregeneration/neurodegeneration
Abstract Nr.:14

Titel:Validation of suitable reference genes for accurate normalization of reverse transcription quantitative real-time pcr data in mouse hippocampus after entorhinal cortex lesion

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Abstract:
Reference genes are used for the normalization of reverse transcription quantitative real-time PCR data. In the case of brain injury, it has been shown that mRNA transcript levels vary considerably and reference genes need to be identified and validated for each species and experimental model. In the present study, we examined putative reference genes in hippocampus, in the microdissected granule cell layer and in the microdissected molecular layer after entorhinal cortex lesion, a model of layer-specific deafferentation. Expression stability of reference genes was analyzed using geNorm, NormFinder, qBasePlus and a consensus ranking (RankAggreg). Pgk1, Actb and Ppia were identified as highly stable genes for hippocampus, Gapdh, Hprt and Actb as stable genes for the granule cell layer, and Gapdh, Actb and Sdha for the molecular layer in control tissue. At 1-28 days post lesion (dpl), Sdha, Ppia, Rpl13a and Gapdh were identified as stable reference genes in the molecular layer. Using these reference genes, changes in the expression for glial fibrillary acidic protein (Gfap) and ionized calcium binding adaptor molecule 1 (Iba1) were determined in the denervated molecular layer compared to control tissue. Gfap reached a maximum at 7dpl (~14x-fold), whereas Iba1 was upregulated with a maximum at 3dpl (~4x-fold). These results extend previously described gene expression changes in the dentate gyrus after lesion and provide more accurate quantitative data than previous approaches. The use of the panel of suitable reference genes is recommended for future studies of gene expression following entorhinal denervation of the mouse hippocampus. (Supported by DFG).

Kategorie: Poster

Rubrik: 8.Neuroregeneration/neurodegeneration
Abstract Nr.:15

Titel:Changes in basal ganglia morphology and behaviour in wistar rats after bilateral intrastriatal application of botulinum toxin a.

Autoren: Dräger D.(1),Holzmann C.(2),Hawlitschka A.(3),Mix E.(4),Benecke R.(4),Wree A.(1),

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Abstract:
Introduction: Centrally effective anticholinergic drugs improve symptoms of Parkinson`s disease (PD), but are hampered by adverse peripheral anticholinergic effects. Unilateral intrastriatal application of botulinum toxin A (BT-A) could improve motor function in hemi-PD rats avoiding the systemic side effects. We now explored whether this treatment has consequences for the morphological integrity of the striatum and the cognitive performance of rats.
Methods: To prevent compensatory mechanisms of the healthy hemisphere naïve Wistar rats were injected intrastriatal in both hemispheres with the therapeutically effective dose of 1 ng BT-A. The following behavioral parameters were tested: spontaneous and forced motor skills, working and spatial memory and anxiety. The brains were evaluated histologically by Nissl, choline acetyltransferase (ChAT) and tyrosine hydroxylase (TH) stainings.
Results: The intrastriatal BT-A application, but also sham injections impaired spontaneous and forced motor skills, coordination and balance performances. The hypocholinergic effect of BT-A had an anxiolytic impact. Spatial learning was not impaired and a slightly reduced working memory was the result of stereotaxic surgery. Morphologically, no cytotoxic effect was appeared, but peculiar ChAT or TH positive axonal varicosities of so far unknown significance were found.
Conclusions: Local injection of BT-A into the striatum could be a therapeutic option for PD.

Kategorie: Poster

Rubrik:
Abstract Nr.:16

Titel:The connectome of the rat amygdaloid complex

Autoren:Schmitt O.(1), Philipp K.(1), Kettlitz R.(1), Eipert P.(1), Wree A.(1), Rostock (Germany)

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Abstract:
The assembling of connectivity data from tract tracing publication is an essential approach in computational neuroanatomy (CoCoMac) to build the backbone of spiking population models. In this study about 480 tract tracing publications refering to intrinsic or extrinsic afferent and efferent connections of the amygdaloid complex of the rat have been analyzed. Connectivity data are administered in the neuroinformatics approach neuroVIISAS. Data are analyzed using graphtheoretical and network analyses methods to obtain quantitative insights into the network architecture of the amygdaloid complex. Between 134 subregions 665 connections (bilateral: 1443 connections) of one hemisphere have been described in a total of 486 tract tracing publications. The amygdaloid complex is a small-world network. The anterior cortical amygdaloid nucleus possesses most connections (46 efferents, 30 afferents) followed by the posterior amygdaloid and posterior basomedial nucleus. Interestingly, the posterior amygdaloid nucleus (instead of the anterior cortical amygdaloid nucleus) emerged to be the most important network node identified by computing the local Eigenvector centrality and Shapley rating.
In conclusion, the unilateral and bilateral network of the amydala meets the criteria of a small-world network and impact of nuclei does not depend alone on their number of connections.

Kategorie: Poster

Rubrik:
Abstract Nr.:17

Titel:Unknown effects of VEGF on the nervous system

Autoren: Theiss C.(1), Foehring D.(1), Olbrich L.(1), Wuestefeld R.(1), Meller K.(1), Brand-Saberi B.(1), Bochum (Germany)

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Abstract:
Vascular Endothelial Growth Factor (VEGF) is a dimeric polypeptide, which is synthesized in low concentrations in different regions of the adult brain. Four isoforms of the VEGF-A gene are known: 121, 165, 189 and 206, with VEGF-165 as the most abundant and biological active one. VEGF potentially binds to two receptors, VEGFR-1 (flt-1) and VEGFR-2 (KDR/flk-1), however many effects of VEGF are mediated by VEGFR-2, e.g. actin polymerization via Rho/ROK-pathway, forced cell migration via SAPK2/p38 (MAPK), and angiogenesis and cell proliferation via Raf-Mek-ERK1-2 pathways.
In the recent years it was shown that VEGF has also a trophic activity on neurons, but the effects on the highly motile neuronal growth cone remained obscure. Besides this, in case of hypoxia, ischemia or injury VEGF is upregulated to stimulate angiogenesis and cell proliferation. But it is not quite clear if these effects, which have been described for endothelial cells, can also be postulated for other cell types, e.g. astrocytes.
The purpose of the present study was to analyze the effects of VEGF on the growth cone morphology and motility of primary DRG neurons with aid of time-lapse imaging. Besides this, we investigated the influence of VEGF on gap junctional intercellular communication and cell proliferation in primary astrocytes. Moreover, we aim at a deeper understanding of the receptor VEGFR-2 signaling in both cell types.
Our results show that VEGF is indeed an attractant of the growth cone and has a positive effect on the turnover of the investigated cytoskeletal proteins. Additionally VEGF has a positive effect on cell proliferation and cell communication within astrocytes. Additionally, we propose that VEGFR-2 and especially the tyr-1214 dependent pathways of VEGF-2 are of importance in VEGF signaling in the growth cone of DRG neurons as well as in gap junctional intercellular communication and cell proliferation in astrocytes.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:18

Titel:Detection of intraepidermal nerve fiber plasticity by anti-ankyrin-b labeling

Autoren: Gromann A.(1),Engelhardt M.(1),Vorwald S.(1),Sobotzik J.(1),Obreja O.(2),Schmelz M.(2),Schultz C.(1),

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Abstract:
Small caliber nerve fibers in the epidermis exert various sensory modalities including nociception, mechanoreception and thermoception. Chronic pain or neuropathies related to diseases such as diabetes lead to alterations of intraepidermal nerve fiber (IENF) density. An approved method for the assessment of IENF density is the analysis of skin punch biopsies by immunohistochemistry. Conventionally, an antibody against protein gene product 9.5 (PGP 9.5), a panaxonal marker, is used to visualize IENF. Recently, our group discovered that antibodies against ankyrin-B (Ank B) also label IENF in comparable if not superior quality compared to PGP9.5. Ankyrin-B is a scaffold protein and plays an essential role in anchoring components such as Na/K ATPase and Na/Ca-exchanger to the cell membrane. Here, we used anti-ankyrin-B immunostaining to analyze possible plastic changes in fiber density in an animal model of neuropathic pain, evoked by intraepidermal injection of nerve growth factor (NGF) in adult domestic pigs. Previous functional studies showed that NGF leads to an increased pain and touch sensitization. Profound morphological analysis, however, of NGF-induced IENF alterations is still lacking. Here we address the question, whether anti-ankyrin-B immunostaining is suitable to highlight NGF-mediated plastic changes of IENF. We analyzed tissue samples for changes of IENF density utilizing confocal microscopy and a novel semi-automatic, software-guided fluorescence intensity quantification. Preliminary data indicate that NGF treatment leads to increases of IENF density. In conclusion, our data reveal ankyrin-B labeling as a novel and suitable method to assess dynamic IENF changes in experimental models of peripheral nociceptor plasticity.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:19

Titel:Innervation pattern of ng2 positive pericytes in the rat choroid

Autoren: Schroedl F.(1),Trost A.(2),Bogner B.(2),Strohmaier C.(2),Runge C.(2),Aigner L.(3),Reitsamer H.(2),

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Abstract:
Introduction: Pericytes are contractile cells surrounding blood vessels. They might be involved in the vessels caliber regulation and therefore in blood flow homeostasis. Here, we ask whether choroidal pericytes receive input from the autonomic nervous system.
Method: Rat choroidal wholemounts and sections were prepared for immunohistochemistry of the pericyte-marker chondroitin-sulfate-proteoglycan (NG2) and the pan-neuronal marker PGP9.5, or tyrosine hydroxilase (TH), vasoactive intestinal polypeptide (VIP), choline acetyl transferase (ChAT) and calcitonin-gene related peptide (CGRP). Additionally, PGP9.5 and TH were analyzed in the DCX-dsRed transgenic rat choroid, a putative model to study pericytes function in-vivo.
Results: In the rat choroid, NG2 immunoreactivity was detected in cells and processes surrounding blood vessels. These NG2 positive cells were not co-localized with PGP9.5, but received close appositions of PGP9.5, TH, VIP and ChAT immunoreactive boutons. Blood vessels were surrounded by NG2-positive processes, in close vicinity to TH, VIP, ChAT and CGRP-positive fibres and boutons. In the DCX-dsRed transgenic rat, PGP9.5 and TH were screened and revealed dense appositions of the respective markers on the dsRed positive cells, a subpopulation of which is also positive for NG2.
Conclusion: Besides the innervations of vascular smooth muscle cells, the close relationship of sympathetic (TH) and parasympathetic (VIP, ChAT) nerve fibres on NG2 positive processes might indicate an additional target of the autonomic nervous system for choroidal blood flow regulation, while the role of primary afferent fibres (CGRP) remains unclear. Although additional experiments are needed, regarding the autonomic innervation, similar findings in the DCX-dsRed transgenic rat indicate this model potentially suitable for in-vivo experiments unveiling the role of pericytes in blood flow regulation.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:20

Titel:Chromaffin cells and sympathetic neurons from the sympathoadrenal cell lineage share a common progenitor

Autoren: Shtukmaster S.(1),Schier M.(2),Huber-Wittmer K.(1),Kalcheim C.(3),Unsicker K.(1),

Adressen:(1)Department of Anatomy and Molecular Embryology|Institute of Anatomy and Cell Biology, University of Freiburg|Freiburg|Germany; (2)Pediatric Oncology|German Cancer Research Center|Heidelberg|Germany; (3)Department of Medical Neurobiology|Hebrew University-Hadassah Medical School|Jerusalem|Israel

Abstract:
The neural crest (NC) is a transient structure in developing vertebrate embryos at the interface of the ectoderm and neural tube (NT). NC cells delaminate from the dorsal NT and undergo EMT prior to migration to their target locations. The sympathoadrenal (SA) cell lineage is a major sublineage of the NC that gives rise to sympathetic neurons (SN), chromaffin cells (CC) and SIF cells. According to a classic perception which was based on in vitro studies SN and CC arise from a common progenitor. We have shown that chromaffin and sympathetic neuronal progenitors are likely to be specified prior to target organ encounter. Moreover, recent data from the Kalcheim lab have suggested that SN, DRG neurons, and melanocytes are already specified on the NT level. We have therefore investigated in ovo using single cell electroporation (EP) of GFP-DNA into delaminating chick NT cells, whether diversification of SA cells occurs prior to delamination. We followed the cells during migration and characterized neuronal and endocrine derivatives with respective markers. Out of 12 successful EPs, in 10 cases derivatives were detected in both sympathetic ganglia and adrenal gland. In 2 cases GFP+ cells were detected only in one location. In 6 cases we found 3-7 GFP+/TH+/NF-M+ (i.e. neuronal) cells in sympathetic ganglia and 3-6 GFP+/TH+/NF-M- (neuroendocrine) cells within the adrenal gland. Our results suggest that a single NC cell marked in ovo on the NT level before delamination can give rise to both chromaffin cells and sympathetic neurons. Supported by DFG SFB 592.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:21

Titel:Neuroanatomy of the mouse conduction system

Autoren: Saburkina I.(1),Pauziene N.(1),Rysevaite K.(1),Jokubauskas M.(1),Pauza D.(1),

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Abstract:
The study was aimed to determine the topography and immunohistochemistry of intrinsic cardiac nerves that supply the mouse conduction system. In a whole heart preparation, intrinsic neural structures were revealed by a histochemical staining for acetylcholinesterase, while the double labeling of tyrosine hydroxylase (TH), choline acetyltransferase (ChAT), and hyperpolarization activated cyclic nucleotide-gated potassium channel 4 (HCN4) was immunohistochemically applied to identify the distribution of adrenergic, cholinergic neural components and conduction myocytes, respectively. Our findings demonstrate that 4-6 epicardial nerves supplying the SA nodal region derive from both the dorsal right atrial and the right ventral nerve subplexuses. The AV nodal region is supplied exceptionally by one interatrial nerve originated from the left dorsal nerve subplexus. The positive for HCN4 conductive myocytes of the SA node are widely distributed both on the medial, anterior, lateral and posterior sides of the right cranial (superior caval) vein. The distribution of the positive for HCN4 conductive myocytes of the atrioventricular node is also wider than it was earlier considered because these cells as extensions of AV node were in addition identified at the roots of ascending aorta and orifice of coronary sinus as well as along the both atrioventricular rings. In spite of fact that cholinergic nerve fibers and axons clearly predominate in the mouse conduction system, the adrenergic nerve fibers and axons are also more abundant therein compared with neighboring atrial and ventricular tissues. This study was supported by the Grant No. MIP-11184 from the Research Council of Lithuania.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:22

Titel:Electron microscopy of innervation the mouse conductive system

Autoren: Pauziene N.(1),Rysevaite K.(1),Jokubauskas M.(1),Saburkina I.(1),Pauza D.(1),

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Abstract:
The study was aimed to examine the ultrastructure of innervation in the regions of the sinuatrial and atrioventricular nodes in addition to atrioventricular rings in order to verify both the density and particularities of nerve fibers identified in these regions by the fluorescent immunohistochemistry. The expression and distribution of adrenergic, cholinergic nerve fibers and conductive cardiac myocytes within the correspondent heart regions were respectively determined applying immunohistochemistry for tyrosine hydroxylase (TH), choline acetyltransferase (ChAT), and hyperpolarization activated cyclic nucleotide-gated potassium channel 4. Both the electron microscopy and immunohistochemistry of the sampled typical regions of the SA and AV nodes demonstrate the densest meshwork of ChAT(+) and TH(+) nerve fibers, but ChAT(+) nerve fibers are evidently predominant therein. The examined nerve samples involved exclusively the unmyelinated nerve fibers, in which many axons possessed varicosities with mediatory vesicles. Some conductive myocytes within AV nodal region were in close contacts with axons. Electron microscopy and immunohistochemistry for adrenergic and cholinergic neuronal markers confirm the densest and extremely complex networks of nerve fibers in the regions of the sinuatrial and atrioventricular nodes compared with the adjacent cardiac zones. Such morphologic pattern of innervation implies a complex neural control of the mouse cardiac conduction system. This study was supported by the Grant No. MIP-11184 from the Research Council of Lithuania.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:23

Titel:Regional immunohistochemistry of the frog intracardiac ganglia

Autoren: Batulevicius D.(1),Skripkiene G.(1),Batuleviciene V.(2),Skripka V.(1),Rysevaite K.(1),Pauza D.(1),

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Abstract:
Experimental studies suggest that intracardiac ganglia act as integrative control centers for maintaining the adequate cardiac output. However, the synaptic connections and circuits of intracardiac neurons remain poorly understood. Frog provides a simple model to study the synaptic connections of intracardiac ganglion cells. We employed immunohistochemistry for cholinergic, adrenergic and peptidergic markers to determine regional distribution of the nerve fibers in intact atrial preparations of the frog Rana temporaria. Most frog intracardiac neurons received inputs by 1-3 preganglionic fibers that were positive for choline acetyltransferase (ChAT). In addition, many intracardiac neurons received separate inputs by the fibers that were positive for calcitonin gene-related peptide (CGRP). Synaptophysin (SYP)- and ChAT-immunoreactivity co-localized in synaptic boutons on the somata of atrial intracardiac neurons. The neurons in ventricular endocardium had no apparent ChAT- and SYP-positive boutons on their somata. All major intracardiac nerves contained the distinct ChAT-, tyrosine hydroxylase (TH)-, and CGRP-immunoreactive fibers. Dense network of CGRP-positive nerve terminals was found in the venal sinus. The TH-positive fibers enlarged greatly in diameter at the atrio-ventricular junction. Most somata of the intracardiac neurons exhibited ChAT-immunoreactivity, but few TH-positive nerve cells were also found. In spite that some neurons were negative for ChAT, they received ChAT-positive inputs as well. Our findings suggest that (1) most neurons in the intracardiac ganglia of the frog Rana temporaria express cholinergic phenotype, (2) the frog intracardiac neurons receive both cholinergic and peptidergic inputs, and (3) distribution patterns of the adrenergic and peptidergic fibers exhibit regional-specific heterogeneity in the frog heart.

Kategorie: Poster

Rubrik: 5.Experimental Morphology
Abstract Nr.:24

Titel:Cardiac endothelial cells label with 200 kda neurofilaments

Autoren: Rusu M.(1),Jianu A.(2),Pop F.(3),Hostiuc S.(4),Curca G.(4),

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Abstract:
Neurofilaments (NF) are the type IV family of intermediate filaments (IF) usually associated with neural tissues. Nestin, which is a type VI IF is a well known marker of endothelial cells in newly formed blood vessels, and is developmentally and structurally related to type IV of IF. We aimed to evaluate whether or not cardiac endothelial cells (ECs) label with antibodies for neurofilaments (200 kDa, Novocastra-Leica, clone RT97), as it is already known for nestin. We used cardiac samples (sinoatrial nodes/right atrial walls) from normal and diabetic donors (10 normal adults, 6 type 2 diabetic adults, 1 pediatric) for NF immune labeling. Positive labeling of ECs, microvascular and endocardial, was obtained in all samples. As this is the first such evidence we can only presume that the NF positive labeling of ECs may be due to nestin and neurofilaments interactions. Studies are needed to further evaluate the hypothesis we reached, in order to explore whether or not NF antibodies can qualify as markers of angiogenesis.

Kategorie: Poster

Rubrik: 13.Pheripheral and vegetative nervous system
Abstract Nr.:25

Titel:The somatic-autonomic neural system of tongue

Autoren: Rusu M.(1),Păduraru D.(2),

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Abstract:
The intrinsic lingual neural interconnections are overlooked. We hypothesized that the intralingual neural scaffold supports a peripheral cross-talk of the somatic and autonomic neural systems of the tongue. We aimed to evaluate the intralingual neural scaffold in human tongues. We microdissected human tongue samples (nine adult and one pediatric). In the interstitium between the genioglossus and hyoglossus muscles, the branches of the lingual nerve (LN) and the medial trunk of the hypoglossal nerve (HN) had a layered disposition of the outer and inner side, respectively, of the lingual artery followed by its periarterial plexus. Anastomoses of these three distinctive neural structures were recorded, as also were those of the LN with the lateral trunk of the HN and the anastomoses between successive terminal branches of the LN. Successive ansae linguales were joining the LN branches and the medial trunk of the HN. The intrinsic neural system of the tongue supports integrative functions and allows a better retrospective understanding of various experimental studies. The topographical pattern is useful for an accurate diagnostic of intralingual nerves on microscopic slides. Funding: POSDRU/89/1.5/S/64153.

Kategorie: Poster

Rubrik: 3.Methods/Teaching
Abstract Nr.:26

Titel:Vital staining of blood vessels and bile ducts with carboxyfluorescein diacetate succinimidyl ester (cfda-se): a novel tool for isolation of cholangiocytes

Autoren: Pryymachuk G.(1),Polykandriotis E.(2),Schievenbusch S.(1),Nierhoff D.(1),Curth H.(1),Odenthal M.(3),Goeser T.(1),Steffen H.(1),Toex U.(1),Neiss W.(4),

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Abstract:
Visualization of the 3D-networks of blood- and bile duct systems and isolation of cholangiocytes are useful for the investigation of liver pathomorphology and -physiology, but current methods cause a wide range of technical difficulties, especially in mice. Here we demonstrate CFDA-SE alone and in combination with DiI-7001 as simple tools for the visualization of blood and biliary vessels and the isolation of vital cholangiocytes.
Intravital retrograde perfusion of bile ducts was performed in wild type mice. Liver and gallbladder were exposed by median laparotomy. The gallbladder was cannulated using a vein catheter. To allow free outflow of the perfusate a few millimeters of the liver edge were cropped and 100-180 µM CFDA-SE solution was infused in a retrograde fashion. Then a formaldehyde solution was injected through the same catheter, or the liver was immediately dissociated into a single-cell suspension for FACS-analysis. Intravital perfusion of the vascular system was performed in Lewis rats by direct intra-arterial injection of solution containing CFDA-SE or 60µM CFDA-SE + 5µM DiI-7001 into the abdominal aorta. The success of CFDA-SE labeling was controlled using Indian ink and cytokeratin 19 immunohistochemistry.
Cryostat and paraffin sections show strong fluorescence of CFDA-conjugates in large and small bile ducts throughout the entire liver. In FACS-experiments, based on combined CFDA-SE-staining and cell size, we enriched liver cell suspensions up to 20% small and large cholangiocytes.
The combination of CFDA-SE plus DiI-7001 allows to determine capillary length plus vitality of the lining cells in all vascular compartments.

Kategorie: Poster

Rubrik: 9.Cell Biology
Abstract Nr.:27

Titel:Adducin modulates intercellular keratnocyte adhesion

Autoren: Rötzer V.(1),Waschke J.(1),Spindler V.(1),

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Abstract:
Adducin modulates intercellular keratinocyte adhesion

Adducin is a ubiquitously expressed protein of the actin-based membrane cytoskeleton. It is located at the spectrin-actin interface thereby recruiting spectrin to actin filaments as well as organizing the spectrin lattice necessary for proper assembly of the cortical actin belt. Although regulation of the membrane cytoskeleton by adducin is well established, a role for cell adhesion has not been investigated so far. The two main isoforms expressed in keratinocytes are alpha- and gamma-adducin, forming a heterodimer. siRNA-mediated silencing of either alpha- or gamma-adducin decreased intercellular adhesion compared to control knockdown as measured by dispase-based dissociation assays. This was accompanied by weakening of cortical actin filaments. Since loss of keratinocyte cohesion induced by autoantibodies causing the blistering skin disease pemphigus vulgaris (PV-IgG) is paralleled by pronounced actin reorganization and previous data indicate cortical actin polymerization being required for Rho GTPase-mediated strengthening of cell adhesion, we studied the role of adducin in this context. Interestingly, as soon as after 10 minutes PV-IgG incubation resulted in adducin phosphorylation at Serin726, a residue important for regulation of adducin activity, Next, E. coli cytotoxic necrotizing factor 1 (CNF-1) was used to activate Rho GTPases and thereby to modulate PV-IgG-mediated loss of cell cohesion. However, under conditions of alpha- or gamma-adducin silencing the protective effect of CNF-1 was ameliorated. These data demonstrate that adducin is necessary for proper intercellular adhesion and suggest an involvement in the pathogenesis of pemphigus vulgaris.

Kategorie: Poster

Rubrik: 9.Cell Biology
Abstract Nr.:28

Titel:Detection of Surfactant Proteins A, B, C and D in human gingiva and saliva

Autoren: Stengl C. (1), Schicht M. (1), Heinemann F. (2), Götz W. (3), Scholz M. (1), Paulsen F. (1), Bräuer L. (1),

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Abstract:
Background The oral cavity with the teeth and the surrounding gingival epithelium are open to the oral environment and thus exposed to multiple microbiological and pathogenous influences. To prevent from permanent inflammatory processes like gingivitis or parodontitis an efficient defense system is necessary to sustain the physiological function of the oral cavity. Surfactant proteins (SPs) originally known from pulmonary tissue are important players of the immune system and beyond this support the stability and rheology of gas or fluid interphases.

Methods Here, we evaluate the expression and presence of SPs (A, B, C and D) in human gingiva and saliva. mRNA expression of SP-A, -B, -C and -D was analyzed by RT-PCR in healthy gingiva. The distribution of all four SPs was further determined with monoclonal antibodies by means of Western blot analyses and immunohistochemistry in healthy and pathologically changed tissues samples obtained during biopsies and in saliva of volunteers.

Results Our results indicate that SP-A, -B, -C and -D are peptides produced by healthy gingiva that reveal a changed expression pattern in cases of gingival disease.

Conclusion Based on the known direct and indirect antimicrobial effects, SP-A and -D appear to be involved in immune defense within the oral cavity especially in direct proximity of teeth. Gingiva affected by bacterial inflammation (gingivitis) seems to increase expression of the SPs. As a result the rheology of saliva may be changed especially at the crest of the gingival epithelium to support the function of antimicrobial substances present in saliva. Furthermore, the SPs could assist in pellicle formation on teeth, which needs to be determined in further experiments.

Kategorie: Poster

Rubrik: 9.Cell Biology
Abstract Nr.:29

Titel:Human axillary apocrine glands: proteins involved in the apocrine secretory mechanism

Autoren: Stoeckelhuber M.(1),Schubert C.(2),Kesting M.(1),Loeffelbein D.(1),Nieberler M.(1),Koehler C.(3),Welsch U.(3),

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Abstract:
The apocrine secretory mechanism is a mode of secretion by which the apical part of the cell cytoplasm is pinched off, which leads to the formation of an aposome. The distinct mechanism of formation and decapitation of the aposome is not well investigated. Only few proteins are known that are involved in this secretory mechanism. We studied the human axillary apocrine gland and looked at proteins associated with cytokinesis, a process that is comparably to the pinching-off mechanism of apocrine glandular cells. By immunohistochemistry, we detected actin, myosin II, cytokeratin 7 and 19, alpha- and beta-tubulin, anillin, cofilin, syntaxin 2, vamp8/endobrevin and septin 2. In highly active glandular cells, these proteins are located at the base of the apical protrusion when the aposome is in the process of being released or are concentrated in the cap of the apical protrusion. These findings demonstrate new insights on the apocrine secretory mechanisms and point to similarites to the terminal step of cytokinesis, which is regulated by a SNARE-mediated membrane fusion event.

Kategorie: Poster

Rubrik: 9.Cell Biology
Abstract Nr.:30

Titel:Hybrid pig- versus göttinger minipig-derived cartilage and chondrocytes: race dependent differences in cartilage biology?

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Abstract:
Minipigs are widely used as a large animal model for cartilage repair but also many in vitro studies are based on porcine chondrocytes. However, most of the in vitro cultured chondrocytes derive from premature hybrid pigs, which are easier available. At least, it remains unclear whether race-dependent differences limit comparability between in vitro and in vivo results based on minipig and hybrid pig porcine articular chondrocytes. Porcine knee joint femoral cartilage was isolated from 3-5 month old minipigs and hybrid pigs. Cartilage of both pig races was analysed for cell content, size, cartilage thickness and zonality and proteoglycan deposition. Cultured articular chondrocytes of both pig races were analysed for gene expression of cartilage-specific proteins such as type II collagen, aggrecan and non-specific type I collagen. Protein expression of type I collagen, Sox9 and β1-integrins was analysed.
Cartilage thickness was lower in the minipig compared with the hybrid pig. It was generally higher in the lateral compared with the medial femur condyles in both pig races. Cell numbers were higher in the cartilage of the lateral femur condyles of hybrid pigs compared with that of the minipigs. The minipig chondrocytes expressed type II, I collagen, the transcription factor sox9 and the adhesion receptor β1-integrin at a higher level compared with hybrid pig chondrocytes.
Distinct race-dependent differences should be kept in mind concerning the histology of cartilage and the expression profile of cultured chondrocytes, when using hybrid pig cartilage for tissue engineering and Göttinger minipigs as a large animal model.

Kategorie: Poster

Rubrik: 5.Experimental Morphology
Abstract Nr.:31

Titel:Annexin a1 modulates macula densa function by inhibiting cyclooxygenase 2

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Abstract:
Annexin A1 is an endogenous mammalian prostaglandin synthesis inhibitor and thereby could affect renal tubular transport functions. Once secreted, annexin A1 can bind to G protein-coupled formyl peptide receptors and activate diverse cellular signaling pathways. The mechanisms governing juxtaglomerular annexin A1 expression and its relation to cyclooxygenase 2, one of the rate-determining enzymes of prostaglandin synthesis expressed in thick ascending limb and macula densa, have not been elucidated. We hypothesized that annexin A1 regulates the biosynthesis of cyclooxygenase 2. Annexin A1 abundance in rat kidney macula densa was raised by furosemide, an established stimulus for cyclooxygenase 2 induction. Annexin A1 and cyclooxygenase 2 were extensively co-localized in macula densa of control (95%) and treated rats (99%). In annexin A1-deficient mice, cyclooxygenase 2-positive cells were more numerous than in control mice (+107%; normalized to glomerular number; p < 0.05). Cultured macula densa cells transfected with full-length rat annexin A1 revealed downregulation of cyclooxygenase 2 mRNA (-59%; < 0.05). Similarly, treatment with dexamethasone suppressed cyclooxygenase 2 mRNA in the cells (-49%; p < 0.05), while inducing annexin A1 mRNA (+56%; < 0.05) and annexin A1 protein secretion. We next antagonized formyl peptide receptor 1 with cyclosporin H, which also blunted the effect of dexamethasone on cyclooxygenase 2 expression. These data suggest that annexin A1 could exert an inhibitory effect on cyclooxygenase 2 expression in the macula densa. Annexin A1 may therefore be a novel, intrinsic modulator of renal juxtaglomerular regulation.

Kategorie: Poster

Rubrik: 9.Cell Biology
Abstract Nr.:32

Titel:Manganese superoxide dismutase 2 (mnsod) is not localized to peroxisomes in mammalian cells despite earlier reports in the literature.

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Abstract:
Superoxide dismutases (SODs) are metalloenzymes belonging to the essential antioxidant enzymes of the cell and catalyze the dismutation of superoxide radicals to H2O2 and molecular oxygen. The subcellular localization of SOD2 in eukaryotic tissues was extensively studied since its discovery in 1970 (Munim et al., 1992; Weisiger and Fridovich, 1973a, b), suggesting a dual mitochondrial localization and peroxisomal localization (Singh et al., 1999). Indeed mitochondria and peroxisomes are metabolically linked organelles and also share some components of their division machinery (Delille et al., 2009). Since in our hands, SOD2 localization was never observed in pure peroxisomal fractions. Hence, we set up to clarify the discrepancy and to clearly address the correct localization of SOD2 by employing level using sensitive ultrastructural localization techniques as well as by using careful biochemical fractionation techniques allowing clear discrimination between mitochondria and peroxisomes in mouse lung and liver as well as mouse fibroblasts and human hepatoma cells (HepG2). The subcellular localization of SOD2 in mouse liver was studied by cryo-electron microscopy with ultra gold technique. Our results obtained from immunofluorescene, cryo-electron microscopy and biochemical experiments suggest that SOD2 is not at all in peroxisomes as described before in the literature, but that SOD2 is indeed a true mitochondrial protein. Moreover, our efforts to delineate the real subcellular localization of SOD2 include, complete database analysis of SOD2 (transcrpitomics and proteomics) revealing also the sole association of SOD2 with mitochondrial matrix and membrane suggesting also its true mitochondrial origin in mammalian cells.

Kategorie: Poster

Rubrik: 9.Cell Biology
Abstract Nr.:33

Titel:Peroxisomal metabolic alterations and their possible involvement in the pathogenesis of pulmonary fibrosis

Autoren: Oruqaj G.(1),Kotarkonda L.(2),Karnati S.(2),Baumgart-Vogt E.(2),

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Abstract:
Idiopathic pulmonary fibrosis (IPF) is a chronic pulmonary disease, in which the lung undergoes pathological fibrotic remodeling. In the lung of IPF patients myofibroblasts secrete huge amount of extracellular matrix. ROS accumulation and proinflammatory mediators were considered as pathogenic mechanisms of this devastating disease. In this respect, it is of interest that patients with peroxisomal disorders develop already during their first year of life liver fibrosis. Therefore we hypothesize that peroxisomal metabolism might be affected in IPF, leading to aggravation of IPF.
Consequently, in this study we investigated the abundance of peroxisomal biogenesis proteins, antioxidant and lipid metabolic enzymes in lung tissue and pulmonary fibroblasts of healthy controls and IPF patients.
Our results revealed significant alterations of peroxisomal metabolism and biogenesis, both in lung tissue and IPF fibroblasts. Moreover, SOD1, Glutathione reductase and HO-1 were significantly decreased.
Moreover, we investigated the synthesis of collagen in pulmonary fibroblasts of control subjects after silencing of the PEX13 gene by RNAi.
Indeed, collagen production was increased and fibrotic markers were upregulated in cells with a PEX13 knockdown, suggesting a role of peroxisomes in protection against fibrosis.
In conclusion, our results suggest that accumulation of lipids and ROS due to downregulation of peroxisomes in IPF might lead to lipid toxicity and stress induced release of profibrotic mediators.

Literature:
1.Karnati S, Baumgart-Vogt E. Peroxisomes in airway epithelia and future prospects of these organelles for pulmonary cell biology. Histochem Cell Biol. 2009 Apr;131(4):447-54. Epub 2009 Feb 20.

Kategorie: Poster

Rubrik: 9.Cell Biology
Abstract Nr.:34

Titel:Peroxisomal biogenesis defects (pex13 ko) lead to interference with antioxidative, proinflammatory and ppar signalling and disturb sirtuin regulation in bone

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Abstract:
Peroxisomes are ubiquitous organelles protecting cells against oxidative stress and inflammation. They are involved in the regulation of the homeostasis of lipid mediators and ligands for nuclear receptors, such as peroxisome proliferator-activated receptor-gamma (PPARgamma). Patients with peroxisomal biogenesis disorders exhibit severe ossification defects, the molecular pathogenesis of which is not yet understood.

Therefore, in this study, paraffin sections and primary osteoblast cultures of Pex13 KO mice, defect in peroxisome biogenesis, were used to study the molecular alterations leading to the ossification defects in Zellweger syndrome. We noted reduced bone matrix production and mineralization as well as significant alterations in PPAR(alpha, beta, gamma) signalling pathways in Pex13 KO osteoblasts, suggesting that for regular bone formation the normal function of peroxisomal metabolic pathways is essential. Whereas the mRNAs for Pparalpha and beta were down-regulated, the one for Ppargamma was increased. Moreover, Nrf2 and Nfkappab were up regulated on the mRNA level in Pex13 KO osteoblasts and a severe dysregulation of most antioxidative and proinflammatory genes was noted. These alteration can be explained by the PPARgamma-dependent down-regulation of the silent information regulator type 1 (Sirt1) gene, encoding a NAD+ dependent deacetylase, responsible for the deacetylation of PGC1alpha, NRF2, NFkappaB and p53, important transcription factors regulating antioxidative, proinflammatory and proliferation pathways. In addition to Sirt1, especially also the genes for mitochondrial sirtuins were down-regulated in Pex13 KO osteoblasts, suggesting severe interferences with general regulatory pathways in osteoblasts due to the peroxisomal deficiency.

Kategorie: Poster

Rubrik: 9.Cell Biology
Abstract Nr.:35

Titel:Pancortin-3 enhances substrate adhesion of podocytes and seems to play a role in wnt-signaling

Autoren: Koch M.(1),Bauer K.(1),Tamm E.(1),

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Abstract:
Pancortins are glycoproteins of the olfactomedin family, which are encoded from a single gene. By alternative splicing, pancortins 1-4 are produced that share a middle part B with two different variations at the N-terminal (A1 or A2) and C-terminal (C1 or C2) sides. Pancortin-3, which is constitutively expressed in podocytes of the rat kidney (Kondo et al., JASN 2000) is a secreted variant that contains a C-terminal olfactomedin domain. As other olfactomedin proteins are involved in cell-cell and/or cell-matrix adhesion, we hypothesized that pancortin-3 might play a similar role in the glomerulus of the kidney.

To test our hypothesis, we developed an eukaryotic expression system and purified recombinant pancortin-3 by chromatography. Culture plates were coated with pancortin-3 to test its effects on substrate adhesion of podocytes. We found that pancortin-3 significantly increases substrate adhesion of murine podocytes to fibronectin, collagens I and IV, and laminin I, but has alone no effects on cell adhesion. The adhesion-promoting effects of pancortin-3 appear to be mediated by focal contact formation as they were blocked by adding RGD-peptides. Inhibitors of Wnt-signalling, such as sFRP-1 and DKK1 blocked the effects of pancortin-3 on substrate adhesion, and the formation of focal contacts and actin stress fibers. We conclude that pancortin-3 might contribute to cell-matrix adhesion of podocytes in vivo, an effect that is mediated by Wnt-signalling.

Kategorie: Poster

Rubrik: 9.Cell Biology
Abstract Nr.:36

Titel:Subcellular effects of magnetic nanoparticles in breast cancer cells in vitro

Autoren: Oehring H.(1),Kettering M.(2),Hilger I.(3),

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Abstract:
Electron microscopy and ultrahistochemistry were used to study incorporation and subcellular effects of starch coated magnetite nanoparticles in BT 474 breast cancer cells. Cell cultures were briefly incubated with a suspension of 12.5 nm starch coated nanoparticles. After a survival time of up to 24 h, cells showed no signs of apoptotic or necrotic cell death but lost their membrane associated acid phosphatase activity, as determined by Cerium based para nitrophenyl phosphate histochemistry. Nano particles were rapidly incorporated by endocytosis and concentrated in large endosomes and finally in lysosomes. Exocytosis of nanoparticles could not be observed.Although starch coated magnetic nanoparticles may not have primarily toxic effects, they seem to reduce enzyme expression and to induce lysosomal activity. Similar to other cell types, BT 474 cells seem to be unable to get rid of incorporated nanoparticles but store them over an extended period of time. These effects should be considered if non degradable nanoparticles are employed in clinical diagnosis.

Kategorie: Poster

Rubrik: 10.Developmental Biology
Abstract Nr.:37

Titel:Expression of semaphorins, plexins and neuropilins in the posterior hindbrain of chick embryos

Autoren: Haque Z.(1),Pu Q.(1),Huang R.(1),

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Abstract:
Secreted Class-III semaphorins exert their effect in axon guidance and neuronal migration by binding with receptors, such like plexin and neuropilin. Neither neuropilin-1 nor neuropilin-2 is sufficient to convey signals of their own; rather, they form complexes with plexins to propagate signals of semaphorins into cells. Their role in axon guidance of cranial nerves is still unresolved. In our study, we analyzed mRNA expression of Class-III semaphorins (Sema 3A and Sema 3D), Plexin As (Plexin A1, Plexin A2 and Plexin A4) and Neuropilins (Npn-1 and Npn-2) at the post-otic hindbrain level in chick embryos from which branchiomotor and visceral motor (IX, X/XI) and somatic motor (XII) axons arise. Our results demonstrate that cells of the ventral motor pool expressed all analyzed plexins and neuropilins. Plexin A2 and Plexin A4 were found to be co-expressed with Npn-1 by the ventral motor neurons, while Plexin A1 was expressed throughout the ventral neural tube except the floor plate. Plexin A4 was also detected in the dorsal and intermediate parts of neural tube. Npn-2 was expressed by the lateral motor neurons, migrating dorsolaterally toward the exit point. Sema 3D expression was restricted in the dorsal part, while Sema 3A in the ventrolateral part of neural tube except the motor zones. These expression patterns reveal that semaphorin pathways are involved in axon guidance of cranial nerves in the post-otic hindbrain.

Kategorie: Poster

Rubrik: 10.Developmental Biology
Abstract Nr.:38

Titel:The role of spar3 in lens and brain development

Autoren: Kanwal N.(1),J. Schmeisser M.(1),Bockmann J.(1),Boeckers T.(1),

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Abstract:
Spine associated Rap-GAP 3 is a novel member of the SPAR family of small GTPase activators. It is conserved among species (Rattus norvegius, Mus musculus, Xenopus laevis), and consists of 20 exons and 21 introns of different lengths, encoding 1776 amino acids in mouse. Here, we generated SPAR3 knockout mice to characterize the hitherto unknown function of this protein in vivo. SPAR3 mutants display a severe onset of early cataract, while further investigation revealed abnormal arrangement, shape, structure and packing of lens fiber cells. We therefore hypothesize that lens fiber cells in SPAR3 knockouts may lose their early differentiation path and hence can not enucleate. Interestingly, defined interaction partners of SPAR3 (LAPSER1, beta-Catenin) and neuronal marker proteins (ßIII-Tubulin, MAP2, Synaptophysin, PSD95) are up-regulated in mutant lenses, but not in brain.
Moreover, other members of the SPAR family (SPA, SPAR1, SPAR2) are expressed in brain at quite high levels, but not in lenses thus implicating possible compensatory effects in brain. Taken together, the exact functions of SPAR3 are not known at this time, but it seems that the protein has a crucial role during early lens development. Further investigations of our SPAR3 mutants will help to elucidate the functional aspects of this novel protein in development.

Kategorie: Poster

Rubrik: 9.Developmental Biology
Abstract Nr.:39

Titel:The transcription factor atoh8 is involved in muscle and heart development in zebrafish.

Autoren: Chankiewitz V.(1),Bockolt K.(1),Brand-Saberi B.(1),

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Abstract:
The transcription factor Atoh8 is involved in muscle and heart development in zebrafish. Athoh8 is a member of the NET family of basic helix-loop-helix transcription factors involved in many developmental processes. It has mainly been discussed as permissive factor for podocyte maturation for its regulatory role during neurogenesis and in the context of muscle development. In the zebrafish Atoh8 is expressed especially in the myotomes and the developing heart.
We used the zebrafish model to investigate the importance of Atho8 for muscle and heart development. For this specific morpholino antisense nucleotides were injected into fertilized zebrafish eggs. The morphant embryos were analyzed by in situ hybridization after 24h or 47h when they had reached 26+somites stage or prehatching stage respecively.
The Atoh8 knock down animals had patterning defects in the myotomes which could be visualized with a MyoD in situ probe. Namely the absence of segmentation and not distinguishable epaxial and hypaxial muscle masses became obvious.
Alterations in heart development became visible in the living embryos where a weaker contractility could be observed. By using an in situ probe against the sodium calcium exchanger 1h (ncx1h) as cardiac specific marker we found morphological changes mainly a plump heart without a definable septum and ventricle. Furthermore the expression of the heart specific ventricular myosine heavy chain (vmhc) gene was strongly down regulated after Atoh8 knock down.
Taken together our results demonstrate that Atoh8 is important for the morphogenesis of the heart and the development of heart and trunk muscles.

Kategorie: Poster

Rubrik: 10.Developmental Biology
Abstract Nr.:40

Titel:Dimensions of the great intrathoracic arteries of chick embryos after the establishment of the definitive in ovo circulation

Autoren: Maurer B.(1),Geyer S.(1),Hieselmair G.(1),Weninger W.(1),

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Abstract:
The presentation aims at presenting objective measurements and comparisons of the dimensions of the lumina of the great intrathoracic arteries of chick embryos of developmental stages 34 and 35 according to Hamburger Hamilton (HH).
The intrathoracic arteries of 60 chick embryos (Gallus gallus domesticus), 30 of developmental stage HH34 and 30 of developmental stage HH35, were included in this study. The embryos were sacrificed and their morphology was carefully analyzed and photo documented under a dissecting microscope. Then their thoraces were separated and subjected to volume data generation employing the high-resolution episcopic imaging technique (HREM). The voxel size of the HREM data was 2.14 x 2.214 x 2 microns. Out of these data, we created three-dimensional (3D) computer models. We then used a recently published protocol for measuring the lumen diameters of the great intrathoracic arteries.
For both developmental stages, we present statistics of the lumen diameters as measured in microns of the ascending aorta, the pulmonary trunk, the right fourth pharyngeal arch artery, the left and right sixth pharyngeal arch artery, and the descending aorta. In addition we present all measurements in relation to the lumen diameter of the ascending aorta and pulmonary trunk.

Kategorie: Poster

Rubrik: 10.Reproductive Biology
Abstract Nr.:41

Titel:Differential expression of nrf2 and vegf in human placental beds from normal and pregnancies from preeclampsia/iugr

Autoren: Kweider N.(1), Huppertz B.(2), Wruck C.(1), Beckmann R.(1), Jumakuliev(3), Pufe(1), Kadyrov(1),

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Abstract:
Objectives: Oxidative stress may play a key role in the aetiology of Preeclampsia (PE). Recently, we have shown that PE is associated with an increased expression of Nrf2 in villous cytotrophoblast. Furthermore, we found that VEGF could enhance the persistence of BeWo cells under oxidative stress conditions in vitro.
In this study the expression of both Nrf2 and VEGF was determined in the interstitial and intramural extravillous trophoblast in normal pregnancies and those complicated by preeclampsia and intra-uterine growth restriction (IUGR).
Methods: Full-thickness placental-bed biopsies were obtained from women with early-onset preeclampsia/IUGR (n=6) and normal pregnancies (n=5) Interstitial and intramural trophoblast was studied by morphometric analysis of paraffin sections stained with anti-Cytokeratin 7, anti-Nrf2 and anti-VEGF.
Results: Cases suffering from preeclampsia/IUGR were characterised by reduced invasion of extravillous trophoblast into spiral arteries in the endometrial and myometrial segment of the placental bed. In addition, these cells showed an increased expression of Nrf2 in the pathological sections. The overexpression of Nrf2 in cases with PE/IUGR was associated with restricted expression of VEGF in these cells compared to controls.
Conclusion: Our data suggests that besides villous cytotrophoblast, also the extravillous trophoblast is a source of Nrf2-dependent genes. VEGF deficiency may cause higher oxidative stress in extravillous trophoblast in cases with PE/IUGR. The resulting reduced basal defence against oxidative stress and the higher vulnerability to oxidative damage may play a role in the limited trophoblast invasion into spiral arteries in cases suffering from early onset preeclampsia and IUGR.

Kategorie: Poster

Rubrik: 10.Developmental Biology
Abstract Nr.:42

Titel:Double lumen aortic arch malformation in a mouse fetus

Autoren: Geyer S.(1),Maurer B.(1),Zendron B.(1),Weninger W.(1),

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Abstract:
Purpose: Double lumen aortic arch is a rare congenital malformation in humans. It is the consequence of an abnormal persistence of a left 5th pharyngeal arch artery (PAA). Although the mouse is an important model organism for researching the genesis of PAA malformations, there is no documented case of a persisting 5th PAA in mice. This study aims at presenting a case of a double lumen aortic arch in a mouse fetus.

Methods: We studied the cardiovascular system of mouse fetuses (strain him:OF1) of developmental stage 22 with the “High-resolution episcopic microscopy” (HREM) technique. HREM generated digital volume data with a voxel size of 1.07 x 1.07 x 2 microns, which were used for creating 3D surface models of the great intrathoracic arteries. While performing a large-scale study, we recognized an individual with a double lumen aortic arch.

Results: The fetus showed normally patterned great intrathoracic arteries. The diameters of the lumen of the ascending aorta, pulmonary trunk, ductus arteriosus, and descending aorta were in the usual range. However, the segment of the aortic arch distally to the origin of the left common carotid artery and proximally to the connection of the ductus arteriosus with the aorta consisted of two channels. The channels were of similar diameter and length.

Conclusions: Our results show that mice, like humans, do show double lumen aortic arch malformations. These malformations can be detected by HREM imaging. Until now, they might have escaped their detection due to the lack of adequate imaging methods.

Kategorie: Poster

Rubrik: 10.Developmental Biology
Abstract Nr.:43

Titel:Mouse embryos do develop a 5th pair of pharyngeal arch arteries

Autoren: Geyer S.(1),Dorn M.(1),Maurer B.(1),Weninger W.(1),

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Abstract:
Purpose: Recent studies demonstrate that mouse embryos do not develop a 5th pair of PAAs. If this proves to be true, the suitability of the mouse as a model organism for researching the genesis of malformations of the great intrathoracic arteries in humans would be diminished. Thus, we aimed to use modern three-dimensional (3D) imaging techniques to evaluate whether mouse embryos do or do not form a 5th pair of PAAs.

Methods: Employing “High resolution episcopic microscopy”, we produced digital volume data (voxels size: 1.07 microns x 1.07 microns x 2 microns) of the thoraces of 30 mouse embryos (Him:OF1 strain) aged 12-12.5 days post conception (dpc). From the volume data, we generated three-dimensional (3D) surface computer models of the great intrathoracic arteries and analysed them with a modern 3D visualisation software package.

Results: In 15 of the 30 embryos we detected a thick vascular channel, which connects the lumen of the 4th and the lumen of the 6th pharyngeal arch artery. Nine embryos (30%) showed this channel unilaterally. Six embryos (20%) showed it bilaterally. According to descriptions of the human 5th pharyngeal arch artery and to descriptions of the 5th pharyngeal arch artery in rat embryos, we identified this vascular channel as the 5th pharyngeal arch artery.

Conclusions: Our results show that mice do develop 5th PAAs. Hence we conclude, that the mouse is a useful model for researching pharyngeal arch artery development and for researching the genesis of malformations of the great intrathoracic arteries seen in humans.

Kategorie: Poster

Rubrik: 10.Developmental Biology
Abstract Nr.:44

Titel:Somite patterning is independent of signals from the wolffian duct

Autoren: Nesemann J.(1),Scaal M.(1),

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Abstract:
In the vertebrate embryo, the formation of somite compartments, like dermomyotome, myotome and sclerotome, depends on signals from neighboring structures, including surface ectoderm, neural tube, notochord, and lateral plate mesoderm. The role of the intermediate mesoderm, namely the Wolffian or nephric duct, in somite development is poorly understood. Here, we studied somite compartmentalization after surgical ablation of the early Wolffian duct anlage, which lead to loss of the Wolffian duct, but maintenance of Pax2-positive nephrogenic mesenchyme. We show that somite compartments develop normally in the absence of the Wolffian duct, indicating that somite patterning is independent of signals from the Wolffian duct.

Kategorie: Poster

Rubrik: 12.Reproductive Biology
Abstract Nr.:45

Titel:Morphology in growth retardated preimplantation embryos obtained from donoroocytes

Autoren: Pilmane M.(1),Fodina V.(2),

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Abstract:
Aim of work was detection of differences between different growth factors, their receptors, stem cell surface markers and metabolic enzymes in embryos of donoroocytes and those obtained from own females.
Different n 3 days old 63 embryos, retardated in growth, were donated after IVF and ICSI by their mothers (I group). Another 19 embryos of the same age obtained from donoroocytes also were growth retardated and donated by their recipient mothers (II group). Immunohistochemistry was used for detection of lactate dehydrogenase (LD), hexokinase (Hex), basicFGF, FGFR1, IGF, IGF1R, TGFalfa, Oct ¾.
Results of donoroocyte embryos showed abundant expression of IGF, IGF1R and LD in comparison to female own oocyte embryos where only few cells were factor positive. TGFalfa expression didn't show any difference between the groups. Only few cells of donoroocyte embryos were Oct3/4 positive while this factor was notably more in female own embryos. Donoroocyte embryos were negative for Hex and basicFGF while female own embryos demonstrated various expressions of these factors. Moderate number of cells expressed FGF1R in donoroocyte embryos, but I group embryos possessed variable expression for this factor.
Conclusions. Despite the growth retardation 3 days old donoroocyte embryos show high LD expression and absence of Hex that respond to the correct metabolism; high expression of growth stimulating factors like IGF and IGF1R. Increased Oct ¾ expression on female own growth retardated preimplantation embryos suggests high totipotency of them. Commonly, basicFGF and FGF1R are the most variable factors in the growth retardated embryos.

Kategorie: Poster

Rubrik: 2.Main Topic II
Abstract Nr.:46

Titel:Whole-body vibration exercise does not alter motor neuron excitability in spinal cord-injured rats

Autoren: Schempf G.(1),Wirth F.(1),Stein G.(2),Ankerne J.(3),Ashrafi M.(1),Semler J.(3),Angelova S.(4),Eisel L.(1),Harrach R.(1),Ozsoy O.(5),Ozsoy U.(6),Schoenau E.(3),Angelov D.(1),Irintchev A.(7),

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Abstract:
Previous studies have shown that the plantar H-reflex is a useful tool to assess motor neuron excitability after spinal cord injury (SCI) in rodents, correlating with severity of injury and locomotor outcome. Specifically, recovery of better locomotor abilities after incomplete SCI is associated with enhanced H- but not M-wave and attenuated frequency dependent depression (rate depression) of the H-reflex.
We performed severe compression SCI at low-thoracic level in adult female Wistar rats and subjected them to whole-body vibration (WBV) therapy. WBV was performed daily starting 7 or 14 days after injury (WBV7 and WBV14, respectively) and continued over a 12-week post-injury period. Rats with SCI but no WBV training (sham) served as controls. H-reflex was analyzed at 1, 3, 6, 9, and 12 weeks after SCI. Several variables were measured at baseline stimulation frequency (0.1 Hz): maximum M- and H-wave amplitudes and H/M ratios, as well as M- and H-wave latencies.
None of these parameters showed differences among the treatment groups. In addition, we analyzed the alterations of the M- and H-waves upon incrementally increasing the stimulation frequency from 0.1 to 5 Hz. In contrast to the M-wave, which showed no frequency-dependent depression, a marked rate depression was found for the H-wave. However, this depression was similar in the three experimental groups.
These findings indicate that WBV did not influence the spinal reflex excitability as estimated here for the plantar motor neuron pool.

Kategorie: Poster

Rubrik: 2.Main Topic II
Abstract Nr.:47

Titel:Manual locomotion therapy of the hind limbs fails to improve body weight support and does not alter motoneuron excitability in spinal cord-injured rats.

Autoren: Harrach R.(1),Eisel L.(1),Ozsoy O.(2),Ozsoy U.(3),Wirth F.(1),Schempf G.(1),Stein G.(4),Ankerne J.(5),Ashrafi M.(1),Semler J.(5),Angelova S.(6),Schoenau E.(5),Irintchev A.(7),Angelov D.(1),

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Abstract:
Manual locomotion therapy (MLT) is a classic form of excersize to improve motor performance in patients with neuro-muscular disorders. Its usefulness as a therapy for patients with spinal cord injury (SCI) has been extensively explored in clinical settings, but not tested in animal models of SCI.
We performed severe compression SCI at low-thoracic level in adult female Wistar rats and subjected them to twice daily MLT starting 14 days after injury and continuing over a 12-week post-injury period. Rats with SCI but no MLT training (sham) served as controls. Recovery of locomotion was analyzed using video recordings of beam walking and inclined ladder climbing. H-reflex was analyzed at 1, 3, 6, 9, and 12 weeks after SCI. Finally, the functional status of the bladder was assessed immediately prior to each manual voiding i.e. 3 times daily, using an own scoring method.
Locomotor rating and numerical assessment of plantar stepping and skilled limb movements revealed no significant effects of MLT versus sham treatment during the observation time period. Accordingly, none of the electrophysiological parameters showed differences between both groups. MLT also lead to no significant improvement of bladder function at 6 – 12 weeks after injury.
These findings provide important evidence that MLT exerts no positive effect on hind limbs motor performance and bladder function after compressive SCI in rats.

Kategorie: Poster

Rubrik: 2.Main Topic II
Abstract Nr.:48

Titel:Physical rehabilitation with whole body vibration and manual locomotion fails to improve sprouting of 5ht+ fibers after spinal cord injury in rats.

Autoren: Masson I.(1),Stein G.(2),Ankerne J.(3),Papamitsou-Sidoropolou T.(4),Eisel L.(1),Harrach R.(1),Ozsoy O.(5),Ozsoy U.(6),Irintchev A.(7),Angelov D.(1),

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Abstract:
In the past few decades, accumulating data suggested that specific neuromodulatory agents, which mimic or facilitate the actions of the monoamines, including serotonin (5HT), can initiate or augment walking behaviors in animal models of SCI. In the present study we looked for correlations between functional (single-frame motion analysis and electrophysiological measurements) and morphological (density of 5HT+ sprouts) parameters after SCI and several therapeutic sets.
We performed severe compression SCI at low-thoracic level in adult female Wistar rats and subjected them to do daily training with whole body vibration (WBV) starting 7, 14 or 28 days after injury (WBV7, WBV14, WBV28 respectively) and continuing over a 12-week post-injury period. Intact rats, rats with SCI but no WBV training (sham) as well as rats subjected to manual locomotion therapy (MLT) served as controls. Recovery of locomotion was analyzed using video recordings of beam walking and inclined ladder climbing. H-reflex was analyzed at 1, 3, 6, 9, and 12 weeks after SCI.
Use of physical therapy caused sparse positive effects on body weight support and bladder function, but failed to improve motoneuron excitability (no H-reflex enhancement). These findings correlated with the measured intensity of CY3-fluorescence after immunostaining of serotonergic fibers (rabbit anti-5HT,1:400, ImmunoStar, Cat. Nr. 20080) in 25 micrometer thick longitudinal sections just below the lesion site. There were no significant differences among the lesioned groups.
We conclude that physical rehabilitation improves body weight support and bladder function, but has no effect on sprouting of serotonergic axons across the lesioned rat spinal cord.

Kategorie: Poster

Rubrik: 2.Main Topic II
Abstract Nr.:49

Titel:Delayed whole-body vibration therapy fails to attenuate microglial activation in the ventral horn of the chronically injured rat spinal cord.

Autoren: Abdulla D.(1),Stein G.(2),Ankerne J.(3),Papamitsou-Sidoropolou T.(4),Eisel L.(1),Harrach R.(1),Schempf G.(1),Wirth F.(1),Ozsoy O.(5),Ozsoy U.(6),Irintchev A.(7),Angelov D.(1),

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Abstract:
As inflammation after spinal cord injury (SCI) is a damaging factor, we examined whether whole-body vibration (WBV)-therapy would provide neuroprotection by reducing the activation of microglial cells.
Following compressive SCI at low-thoracic level, adult female Wistar rats were subjected to WBV starting 7, 14, or 28 days after injury (WBV7, WBV14, WBV28 respectively). Therapy was performed daily and continued over a 12-week post-injury period. Rats with SCI but no WBV (sham) served as controls.
Recovery of locomotion was analyzed using video recordings of beam walking and inclined ladder climbing. H-reflex was analyzed at 1, 3, 6, 9, and 12 weeks after SCI. The functional status of the bladder was assessed during each manual voiding i.e. 3 times daily. Finally, microglial activation (intensity of fluorescence according to a gray scale) was determined in transverse sections through the ventral horn after immunostaining with IBA1 (SySy, 234003) and Cy3-conjugated IgG (Sigma, C2306).
BBB-locomotor rating, plantar stepping and skilled hind limb movements showed that only WBV28 had no beneficial effects. Accordingly, electrophysiological parameters showed no enhancement of the H-wave and no rate depression of the H-reflex. WBV28 also lead to no significant improvement of bladder function. Compared to sham, WBV7 and WBV14 the ventral horn of WBV28 rats showed significantly more activated microglia in the lumbar enlargement.
These findings show that beneficial effects of WBV in our rat SCI model are onset-dependent. Improvement of locomotion, bladder function and anti-inflammatory effects can be expected only if WBV is applied earlier than 28 days after SCI.

Kategorie: Poster

Rubrik: 2.Main Topic II
Abstract Nr.:50

Titel:Delayed whole-body vibration therapy fails to improve hind limbs motor recovery and does not alter motoneuron excitability in spinal cord-injured rats.

Autoren: Eisel L.(1),Harrach R.(1),Wirth F.(1),Schempf G.(1),Stein G.(2),Ankerne J.(3),Ashrafi M.(1),Semler J.(3),Angelova S.(4),Ozsoy O.(5),Ozsoy U.(6),Schoenau E.(3),Irintchev A.(7),Angelov D.(1),

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Abstract:
Whole-body vibration (WBV) is a novel form of exercise used to improve neuromuscular performance in healthy individuals. Its usefulness as a therapy for patients with neurological disorders, in particular spinal cord injury (SCI), has been barely explored in clinical settings and not tested in animal models of SCI.
We performed severe compression SCI at low-thoracic level in adult female Wistar rats and subjected them to delayed WBV training starting 28 days after injury (WBV 28). This therapy was performed daily and continued over a 12-week post-injury period. Rats with SCI but no WBV training (sham) served as controls. Recovery of locomotion was analyzed using video recordings of beam walking and inclined ladder climbing. H-reflex was analyzed at 1, 3, 6, 9, and 12 weeks after SCI. Finally, the functional status of the bladder was assessed immediately prior to each manual voiding i.e. 3 times daily, using an own scoring method.
Locomotor rating and the numerical assessments of plantar stepping and skilled limb movements revealed no significant effects of WBV28 versus sham treatment during the observation time period. Accordingly, none of the electrophysiological parameters showed differences among both groups. WBV28 also lead to no significant improvement of bladder function at 6 – 12 weeks after injury.
These findings provide important evidence that positive functional effect of WBV in our rat SCI model is onset-dependent. Unbiased improvement of hind limbs motor performance and bladder function can be thus expected only when this potent rehabilitation therapy is applied earlier than 28 days after SCI.

Kategorie: Poster

Rubrik: 2.Main Topic II
Abstract Nr.:51

Titel:Proper post-operative care and regular bladder voiding after spinal cord injury prevents urinary retention in the kidneys and allows intensive therapeutical approaches.

Autoren: Theelen M.(1),Stein G.(2),Angelova S.(3),Ankerne J.(4),Ashrafi M.(1),Eisel L.(1),Harrach R.(1),Schempf G.(1),Wirth F.(1),Wellmann K.(1),Ozsoy O.(5),Ozsoy U.(6),Angelov D.(1),

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Abstract:
Elucidation of the morphological grounds of autonomic dysfunction after traumatic spinal cord injury (SCI) is crucial for understanding the mechanisms of recovery and testing of therapeutic approaches. In the present study we looked for correlations between objective functional (locomotor rating score and lower urinary tract status) and morphological (renal cortex thickness) parameters after SCI compression injury in rats. We performed compression SCI at low-thoracic level in adult female Wistar rats and subjected them to whole-body vibration (WBV) therapy. WBV training was performed daily starting 1, 7, 14 and 28 days after injury and continued over a 12-week post-injury period. Intact rats (no SCI), rats with SCI but no WBV training (sham) and rats subjected to manual locomotion therapy (MLT) served as controls. Motor recovery was analyzed using the locomotor rating score of Basso, Beattie and Bresnahan (BBB). The bladder functional status was estimated 3 times a day (during manual voiding) according to a scoring table representing the degree of bladder filling.
Both functional parameters showed significant differences between WBV-treated and control rats at 1-12 weeks after SCI. These correlated with clear morphological alterations in the wall of the neurogenic urinary bladder. However, measurements of the renal-cortex thickness in 25 µm thick transverse sections (HE-staining) in all SCI-lesioned rats revealed no differences when compared to intact control animals.
We conclude that bladder emptying by the regular (3 times a day) manual expression preserved the kidneys from urine reflux and promoted unaffected renal function after SCI.

Kategorie: Poster

Rubrik: 2.Main Topic II
Abstract Nr.:52

Titel:Functional deficits and morphological alterations of the neurogenic bladder are proportional to the severity of spinal cord compression

Autoren: Wolfsdorff N.(1),Ozsoy O.(2),Ozsoy U.(3),Stein G.(4),Schempf G.(1),Wirth F.(1),Angelova S.(5),Ankerne J.(1),Ashrafi M.(1),Semler J.(6),Schoenau E.(6),Papamitsou-Sidoropolou T.(7),Irintchev A.(8),Dunlop S.(9),Angelov D.(1),

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Abstract:
Recovery of lower urinary tract function is an important prognostic sign for functional recovery after spinal cord injury (SCI). In rats normal micturition requires coordinated activity of m. detrusor vesicae (parasympathicus) and the external urethral sphincter (sympathicus) that is controlled by spinal and supraspinal circuitry. We used a clinically relevant model for thoracic SCI compression-injury to examine the effect of traumatic impact-intensity on recovery of urine storage- and voiding bladder functions. Adult female Wistar rats were subjected to graded compression of the spinal cord. Recovery of locomotion was analyzed using the Basso, Beattie and Bresnahan (BBB) locomotor rating scores. Bladder functional status was estimated 3 times a day according to a scoring table representing the degree of bladder filling. All functional parameters showed significant differences between moderately and severely injured rats at 1-9 weeks after SCI which, in turn, correlated with the scar volume as well as with clear morphological alterations in the neurogenic bladder (dry weight, wall thickness and an immense increase (3-5 times) in density of intramural axons). Our findings indicate that the use of an objective bladder scoring combined with BBB rating provides a time- and cost-efficient opportunity for versatile and reliable functional evaluations in both severely and moderately impaired rats combining clinical assessment with precise numerical measures.

Kategorie: Poster

Rubrik: 2.Main Topic II
Abstract Nr.:53

Titel:Whole-body vibration exercise improves body weight support and bladder function in spinal cord-injured rats.

Autoren: Wirth F.(1),Schempf G.(1),Stein G.(2),Ankerne J.(3),Ashrafi M.(1),Semler J.(3),Angelova S.(4),Eisel L.(1),Harrach R.(1),Ozsoy O.(5),Ozsoy U.(6),Schoenau E.(3),Angelov D.(1),Irintchev A.(7),

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Abstract:
Whole-body vibration (WBV) is a relatively novel form of exercise used to improve neuromuscular performance in healthy individuals. Its usefulness as a therapy for patients with neurological disorders, in particular spinal cord injury (SCI), has been barely explored in clinical settings and not tested in animal models of SCI.
We performed severe compression SCI at low-thoracic level in adult female Wistar rats and subjected them to daily WBV training starting 7 or 14 days after injury (WBV7 and WBV14, respectively) and continuing over a 12-week post-injury period. Rats with SCI but no WBV training (sham) served as controls. Recovery of locomotion was analyzed using video recordings of beam walking and inclined ladder climbing. The functional status of the bladder was assessed immediately prior to each manual voiding i.e. 3 times daily, using an own scoring method.
Locomotor rating and numerical assessment of plantar stepping and skilled limb movements revealed no significant effects of WBV versus sham treatment during the observation time period. However, compared with sham-treated rats, WBV14 but not WBV7 significantly improved body weight support during ground locomotion and overall recovery by 6 – 12 weeks after SCI. Most remarkably, WBV14 lead to a significant improvement of bladder function at 6 – 12 weeks after injury.
These findings provide first evidence for positive functional effects of WBV in an animal SCI model and warrant further preclinical investigations on WBV as a potential rehabilitation therapy for neurological disorders.

Kategorie: Poster

Rubrik: 2.Main Topic II
Abstract Nr.:54

Titel:Recovery of locomotion after compressive spinal cord injury in rats correlates with coordinated muscle activity but not with muscle atrophy

Autoren: Schwarz A.(1),Stein G.(2),Semler J.(3),Ankerne J.(3),Ashrafi M.(1),Eisel L.(1),Harrach R.(1),Schempf G.(1),Wirth F.(1),Ozsoy O.(4),Ozsoy U.(5),Schoenau E.(3),Irintchev A.(6),Angelov D.(1),

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Abstract:
Knowledge on the morphological grounds of motor deficits after traumatic spinal cord injury (SCI) is crucial for understanding the mechanisms of functional recovery. In the present study we looked for correlations between objective functional (single-frame video motion analysis) and morphological (hind-limb muscle atrophy) parameters after SCI compression injury in rats.
We performed severe compression SCI at low-thoracic level in adult female Wistar rats and subjected them to whole-body vibration (WBV) therapy. WBV is a novel form of exercise used to improve neuromuscular performance in healthy individuals. Its usefulness as a therapy for patients with SCI, has been barely explored in clinical settings and not tested in animal models. WBV training was performed daily starting 1, 7, 14 and 28 days after injury and continued over a 12-week post-injury period. Intact rats (no SCI), rats with SCI but no WBV training (sham) and rats subjected to manual locomotion therapy (MLT) served as controls.
Recovery of locomotion was analyzed using video recordings of beam walking and inclined ladder climbing. We correlated functional results with the degree of atrophy of the soleus muscle. To our astonishment, regardless of the postlesional treatments applied, neither of these values were changed at 12 weeks after SCI, there were no signs of muscle atrophy at all.
We conclude that the use of combined functional and morphological objective measures provides a time- and cost-efficient opportunity for versatile and reliable functional evaluations in severely impaired rats combining clinical assessment with precise numerical measures.

Kategorie: Poster

Rubrik: 8.Neuroregeneration/neurodegeneration
Abstract Nr.:55

Titel:Aorta-y-tube-conduit to study axonal regrowth after facial nerve injury

Autoren: Sarikcioglu L.(1),Hizay A.(1),Ozsoy U.(1),Demirel B.(1),Ozsoy O.(1),Angelova S.(2),Ankerne J.(3),Bilmen Sarikcioglu S.(4),Dunlop S.(5),Angelov D.(3),

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Abstract:
INTRODUCTION AND PURPOSE: Despite increased understanding of peripheral nerve regeneration, functional recovery following surgical repair remains disappointing. A major contributing factor is extensive collateral branching at the lesion site which leads to inaccurate axonal navigation and aberrant reinnervation of targets. We aimed to determine whether the Y-tube improved axonal regrowth and whether this was associated with improved function.
MATERIALS AND METHODS: we used an aorta-Y-tube conduit with the aim to improve navigation of regenerating axons following facial nerve transection in rat.
RESULTS: Retrograde labeling from the zygomatic and buccal branches showed a halving in the numbers of double-labelled facial motorneurons (15% vs 8%; $p<0.05$) following Y-tube compared to FFA-coaptation. However, in both surgical groups, the proportion of poly-innervated motor endplates was similar (~30%; $p>0.05$) and video-based motion analysis of whisking revealed similarly poor function.
CONCLUSION: We conclude that although Y-tube reconstruction reduces axonal branching at the lesion site and improves axonal navigation compared to FFA coaptation, it fails to promote monoinnervation of motor endplates and confers no functional benefit. [This study was supported by TUBITAK (The Scientific and Technical Research Council of Turkey, project number: 109S462), Jean-Uhrmacher-Foundation (S.K.A.)]
KEY WORDS: motoneuron, nerve repair, facial nerve, entubulation, functional recovery

Kategorie: Poster

Rubrik: 2.Main Topic II
Abstract Nr.:56

Titel:Changes in the femoral cortical thickness after compressive spinal cord injury and whole body vibration in rats

Autoren: Pick C.(1),Stein G.(2),Semler J.(3),Ankerne J.(3),Ashrafi M.(4),Eisel L.(4),Harrach R.(4),Schempf G.(4),Wirth F.(4),Ozsoy O.(5),Ozsoy U.(6),Schoenau E.(3),Irintchev A.(7),Angelov D.(4),Koebke J.(1),

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Abstract:
The aim of the study was to analyze the effect of a compressive spinal cord injury on the morphology of the rat femur.
A group of young adult femal rats were injured at the T 8 level and subjected to whole-body vibration therapy.
The bones of these animals were compared with bones of intact animals in length, weight and densitometry.
Furthermore, the femur structure was analyzed by histomorphometry. After embedding in photocurring one-component methaacrylate-based resin, the femora were sectioned at three different positions. The thickness of anterior, posterior, medial and lateral cortical bone were measured.
Main results of this analysis will be presented.

Kategorie: Poster

Rubrik: 2.Main Topic II
Abstract Nr.:57

Titel:Effect of platelet-released growth factors on tendon healing, an in vitro study

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Abstract:
Purpose: The healing of tendons is limited due to the poor vascularity of this tissue. Platelet-released growth factor (PRGF) is a fraction of Platelet Rich Plasma (PRP), witch stores antimicrobial peptides and growth factors released from platelets. This factors promote cell proliferation, chemotaxis, and collagen synthesis in wound healing. Aim of the present study was to elucidate the effect of PRGF on the proliferation and viability of cultured humane tenocytes and to explore the capability of PRGF on tendon regeneration.

Methods: PRGF was obtained from healthy human donors. Primary human tenocytes were used for this study. Tenocytes were characterized with Immunohistochemistry using antibody against tenomodulin. Cell proliferation and cell viability assay were carried out using CyQuant and Cell Titer Blue assay. Real-time-RT-PCR was used to analyse of tenocytes gene-expression with and without PRGF treatment.

Results: We could demonstrate the increase of tenocyte proliferation and viability during treatment with PRGF. Furthermore PRGF leads to an induction of gene expression like cleraxis (Scx) and typ I collagen (Col1 a1).

Discussion: Former studies revealed antimicrobial activity of platelets. The present study revealed data concerning increase of wound healing. Taken together we suggest that the use of autologous PRGF in order to increase tendon healing and prevent postoperative tendon infection can be a suitable addition to conventional therapy.

Kategorie: Poster

Rubrik: 2.Main Topic II
Abstract Nr.:58

Titel:Mechanical load increases vegf and decreases sflt-1 expression in chondrocytes

Autoren: Houben A.(1),Beckmann R.(1),Dietz-Laursonn K.(2),Wruck C.(1),Tohidnezhad M.(1),De la Fuente M.(3),Pufe T.(1),

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Abstract:
Unphysiological high stresses on the articular structures may lead to a loss of structural integrity of articular cartilage and thus initiate the degeneration of cartilage. Recent studies revealed that VEGF is participated in aetiology and pathogeneses of osteoarthritis. Aim of the present study was to investigate the influence of mechanical load on VEGF and sFlt-1 expression as a natural inhibitor of VEGF.
Methods:
For load application 3 different models were used. A flexer cell chamber, a 3-D collagen gel compression chamber and a shock wave model were used.
VEGF promoter activity was measured via dual luciferase assay. VEGF and sFlt-1 expression was quantified using ELISA.
Results and Conclusion:
The mechanical load induces VEGF transcription and release, while sFlt-1 expression decreases. Taken together the mechanical overload could lead to an increase of catabolic effects of VEGF via two ways – increase of VEGF itself and decrease of its inhibitor.

Kategorie: Poster

Rubrik: 2.Main Topic II
Abstract Nr.:59

Titel:Thymic epithelial remodeling is supported by a particular structure of desmosomes

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Abstract:
Remodeling of epithelial tissues requires that the cells in the tissue rearrange their adhesive contacts in order to allow cells to migrate relative to their neighbors (coordinated cell migration). Most of the mechanisms regulating desmosome assembly and stability in migrating epithelial cells are still unknown. It was recently found that the actin cytoskeleton is a significant component of desmosome assembly and maturation. However, the type of association with the actin cytoskeleton is not known and requires additional investigations. For this purpose, a transmission electron microscopic (TEM) study on five samples of rat thymus was performed. We found interepithelial series of desmosomes up to 6.5 microns length. Series of various junctions, tight, adherens, and desmosomes were also evidenced between thymic epithelial cells. As a particular feature, intracytoplasmic circumferential actin belts (CABs) were underlying the junctional complexes and attached the keratin filaments of desmosomes. Although no such CABs were found beneath the adherens junctions, they could parallel the tight junctions while passing from desmosome to desmosome. The CABs’ lengths were usually greater than those of the attached series of desmosomes. Moreover, series of immature desmosomes were identified, with yet unorganized underlying CABs. The particular structure of interepithelial thymic desmosomes meet so the dual challenge of maintaining tissue architecture and facilitating cell dynamics.

Kategorie: Poster

Rubrik: 1.Main Topic I
Abstract Nr.:60

Titel:Cardiac networks of c-kit -positive cells

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Abstract:
Telocytes (TC), formerly described as interstitial Cajal-like cells (ICLCs), are present in heart, and are morphologically characterized by their extremely long and thin prolongations. Therefore we were interested to see whether or not such interstitial/stromal cells form networks in normal cardiac tissues, in adult and during ontogenesis. Autopsy samples of cardiac tissues were obtained from 13 young human cadavers, without identifiable cardiac pathology and with a negative personal history of cardiovascular disease. Immunohistochemistry on formalin-fixed paraffin-embedded tissues was performed using monoclonal antibodies for CD117/c-kit. Cardiac samples from three midterm human fetuses were also investigated by immune labeling. All the ethical requirements were fulfilled. In adult samples we found in subepicardium c-kit+ cells with ICLC/TC features, as well in subepicardial arteries and in subepicardial fat too. Such cells were also present in subendocardium. Light microscopy revealed the existence of consistent intramyocardial networks built-up by bipolar TC. Larger c-kit+ multipolar TC were present in between cardiac muscle bundles. However, in fetal samples, c-kit positive interstitial cells were populating the cardiac layers but seemingly these were not building networks as in adults. Such stromal networks able of cell-to-cell signaling may interfere with cardiac regulation and remodeling.

Kategorie: Poster

Rubrik: 1.Main Topic I
Abstract Nr.:61

Titel:Lingual telocytes and networks of telocytes

Autoren: Rusu M.(1),Paulsen F.(2),Hostiuc S.(3),

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Abstract:
Telocytes (TCs) were recently described as stromal cells with very long and thin prolongations (telopodes), with alternating thin segments (podomers) and dilations (podoms). Telopodes can only be diagnosed in transmission electron microscopy (TEM). We aimed to evaluate whether or not such particular cells are also present within the stromal compartment of the tongue. We performed a TEM study of human adult tongues. We positively identified such particular stromal cells that we termed lingual telocytes (LTCs). LTCs were multipolar or bipolar, collagen-embedded and occasionally were nearing blood vessels. The most striking finding was of well-built stromal networks consisting of such LTCs and mainly located within the basal layer of the lingual aponeurosis. Moreover, distinctive perineurial cells with TCs features were identified. We hypothesize that the networks of LTCs could play a functional role in lingual stromal signaling, as they are characterized by intercellular connections and, moreover, shed vesicles and exosomes.

Kategorie: Poster

Rubrik: 2.Main Topic II
Abstract Nr.:62

Titel: Vasculogenic zone of the vessels wall is impaired in klotho gene deficient mice

Autoren: Schumann S.(1), Kleff V.(1), Kuro-o M.(2), Jastrow H.(1), Diana Klein D.(1)(3), Ergün S. (1)(4)

Adressen:(1)Institut für Anatomie|Universitätsklinikum Essen, Institut für Anatomie|Essen|Germany; email:sven.schumann91@web.de;(2)UT Southwestern Medical Center at Dallas|Dallas|Texas; (3)Institute for Cell biology, University of Duisburg-Essen, University Hospital Essen|Essen|Germany; (4)Institute of Anatomy and Cell Biology, Julius Maximilian University of Würzburg|Würzburg|Germany

Abstract:
Here, we demonstrate an impairment of the vessel wall-resident stem cell niche, called “vasculogenic zone” in klotho gene deficient mice, known as model organisms for pathological human aging. Deletion of klotho gene accelerates aging while its overexpression extends life span. We performed ring assay, electron microscopic and immunohistochemical studies on vascular tissue from kl(-/-) versus kl(+/-) and wt mice. Our immunostaining analyses for CD34 (endothelial and hematopoietic progenitors) and CD44 (multipotent vessel wall-resident stem cells) show a significant reduction or partial absence of these cell types in the adventitial vasculogenic zone of kl(+/-) and kl(-/-) mice vessels. This impairment of the vasculogenic zone is a putative explanation for the reduced vessel sprouting capacity and modified cell mobilization in aortic ring assays. We will determine this approach in an in-vivo-model of tumor angiogenesis.

Kategorie: Poster

Rubrik:
Abstract Nr.:63

Titel: Tumor necrosis factor alpha maintains the denervationinduced compensatory increase in excitatory synaptic strength of dentate granule cells in mouse hippocampal slice cultures

Autoren: Becker D.(1), Deller T.(1), Vlachos A.(1),

Adressen: (1)Institute of Clinical Neuroanatomy|Dr. Senckenberg Anatomy|Goethe-University|Frankfurt am Main|Germany

Abstract:
Synaptic scaling is a homeostatic plasticity mechanism, which allows neurons to adjust their synaptic strength to perturbations of afferent neuronal activity. It is aimed at keeping the firing of neurons within a dynamic range. Hence, in response to a prolonged reduction in afferent activity neurons strengthen ("upscale") their excitatory synapses in a multiplicative manner, which preserves the relative differences in strength between synapses. Of note, entorhinal denervation in vitro leads to a similar compensatory upscaling of excitatory synapses of dentate granule cells in mouse hippocampal slice cultures. However, the molecular mechanisms underlying this homeostatic response remained unknown. We now provide experimental evidence that TNFα is a regulatory molecule in denervation-induced homeostatic synaptic scaling. Whole-cell patch-clamp recordings of non-lesioned and denervated dentate granule cells in TNFα-deficient slice culture preparations revealed that the synaptic scaling response is impaired at 3-4 days post lesion, while the initial phase of denervation-induced scaling (1-2 days post lesion) is not affected in these culture preparations. Furthermore, we show that the TNFα-dependent phase of denervation-induced homeostatic synaptic scaling depends on the insertion of calcium permeable GluA2-lacking AMPA-receptors at excitatory postsynapses. These results demonstrate that TNFα mediates the ‘maintenance phase’ of denervation-induced homeostatic up-scaling of excitatory synaptic strength in cultured dentate granule cells. (Supported by DFG).

Kategorie: Poster

Rubrik:
Abstract Nr.:64

Titel: Alleviation of autophagy by Knockdown of Beclin-1 enhances susceptibility of hippocampal neurons to proapoptotic signals induced by amino acid starvation

Autoren: Kim M.(1), Maronde E.(1), Rami A.(1),

Adressen: (1) Dr. Senckenbergische Anatomie|Institute of Cellular and Molecular Anatomy|Wolfgang Goethe-University|Theodor-Stern-Kai 7|Frankfurt am Main|Germany

Abstract:
Beclin 1 is an autophagy-related gene product which belongs to the class III PI3K, and participates in autophagosome formation. In addition, Beclin 1 has been described as a Bcl-2- interacting protein. The regulation of the dissociation of the Beclin 1/Bcl-2 complex is probably an important aspect of keeping autophagy under control and suggests that Bcl-2 acts as rheostat that turns autophagy on or off as required. In addition, it is known that Beclin 1 is monoallelically deleted in many forms of sporadic breast, ovarian and prostate cancer. Mice that carry heterozygous disruption of Beclin 1 have a high incidence of spontaneous tumors, and cells with reduced Beclin 1 expression exhibit reduced autophagic activity.
This study examined the potential role of Beclin-1 in an autophagic response in hippocampal neurons challenged with amino acid starvation (AAS). In wild type neuronal cultures AAS induced light chain-3 (LC-3)-immunopositive and monodansylcadaverine (MDC) fluorescent dye-labelled autophagosome formation. Surprisingly, Beclin-1 knockdown hippocampal neurons exhibit high levels of the proapoptotic factor HtrA2 comparing to wild type. In addition, AAS induced apoptotic neuronal death in wild type cultures without affecting the expression levels of caspase-3, AIF or HtrA2. In contrast, in Beclin-1 knockdown neurons, AAS induced: 1) an exacerbation of apoptotic cell death 2) a dramatic up-regulation of AIF and 3) an alleviation of autophagosomes accumulation.
To summarize, this study shows that AAS induces cell death in hippocampal neurons by involving both apoptotic and autophagic mechanisms. In addition, our data further show that alleviation of the autophagic machinery by a knockdown of Beclin-1, enhanced neurons susceptibility to death signals induced by AAS. To conclude for genetic or pharmacological manipulation of autophagy it is more than essential to take into account both its cytoprotective and deleterious roles, and the additional caveat that abolition of one type of cell death may trigger compensatory cell destructive pathways.

Kategorie: Poster

Rubrik: 5.Experimental Morphology
Abstract Nr.:65

Titel:Morphological changes of chicken chorioallantoic membrane with different laryngeal tumor onplants

Autoren: Kuzminienė A.(1),Šalomskaitė-Davalgienė S.(2),Balnytė I.(2),Palubinskienė J.(2),Valančiūtė A.(2),Ulozas V.(1),

Adressen:(1)Department of Otorinolaryngology|Medical academy, Lithuanian University of Health Sciences|Kaunas|Lithuania; (2)Department of Histology and Embryology|Medical academy, Lithuanian University of Health Sciences|Kaunas|Lithuania; email:ingrida.balnyte@lsmuni.lt

Abstract:
The aim: to evaluate the morphological changes of chicken chorioallantoic membrane (CAM) with laryngeal papilloma and laryngeal squamous cell carcinoma (LSSC) tissues onplants.
Materials and methods
Fresh laryngeal papillomas and LSSC tissue samples were obtained from the operated patients, carried to the laboratory in isotonic saline solution and were transplanted onto chicken CAM in the period of 160 to 168 hours of the egg incubation. After 72 hours of incubation on CAM, the CAMs with onplants were removed and prepared for histological and morphometrical evaluation of CAM and chorionic epithelium.
Results
The thickness of chorionic epithelium under the onplanted LSSC as well as under the papilloma onplants was increased, as compared with control CAM. The chorionic epithelium under LSSC was thickened and it appeared stratified of several layers and in some locations squamous. The thickness of the whole CAM under the LSSC increased by 14 times, mainly due to thickening of mesenchymal layer. Also different density of mesenchymal cells was observed under different tumors: the mesenchymal cells were densely arranged in the CAM situated under the transplanted papilloma tissue and in neighboring sites; under the carcinoma onplants the mesenchyme was both loosely and densely arranged.
Conclusions
Thickening of chorionic epithelium and of CAM itself was marked under LSSC onplants, under papilloma the thickening of chorionic epithelium was less, but more dense arrangement of mesenchymal cells was observed.

Kategorie: Poster

Rubrik: 5.Experimental Morphology
Abstract Nr.:66

Titel:Comparative anatomy of the human and canine efferent tear duct system - impact of mucin muc5ac on lacrimal drainage

Autoren: Tektas O.(1),Hirt R.(2),Carrington S.(3),Arnett R.(3),FitzPatrick E.(3),Paulsen F.(1),

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Abstract:
Purpose: To investigate the histomorphology of the canine tear drainage system and to show the distribution of mucin MUC5AC within the tissue.
Methods: Conjunctiva and tear drainage systems of 21 long-nosed dogs were investigated histologically and ultrastructurally. The tissues were stained with 8 different antibodies reactive against less glycosylated and highly glycosylated MUC5AC. Results were compared with findings in human tissue received from 12 body donors.
Results: Except a distinctly longer nasolacrimal duct and several accessory openings of the duct into the nasal cavity, the morphology of the canine tear drainage system is very similar to that of humans. Less and highly glycosylated MUC5AC was present in the conjunctival tissue of dogs as well of humans. Within the tear sac and the nasolacrimal duct only less glycosylated MUC5AC could be found in dogs and in human.
Conclusions: These findings demonstrate that the canine tear drainage system is very similar to its human equivalent. In particular the distribution of MUC5AC, supposed to play an important role within the pathogenesis of dry eye syndrome (DES), is the same as in humans. Therefore the canine model seems to be an appropriate model for further DES research.

Kategorie: Poster

Rubrik: 5.Experimental Morphology
Abstract Nr.:67

Titel:Morphofunctional changes in the intestine of pigs fed with jerusalem artichoke

Autoren: Valdovska A.(1),Pilmane M.(2),Zitare I.(3),Jemeljanovs A.(3),

Adressen:(1)Faculty of Veterinary Medicine|Latvian University of Agriculture|Jelgava,|LATVIA; email:Anda.Valdovska@llu.lv; (2)Institute of Anatomy and Anthropology|Riga Stradins University|Riga|Latvia; (3)Morphology|Research Institute of Biotechnology and Veterinary Medicine “Sigra”|Sigulda|Latvia; (3)Morphology|Research Institute of Biotechnology and Veterinary Medicine “Sigra”|Sigulda|LATVIA

Abstract:
Diet has an important influence on gastrointestinal health. Although is clear that prebiotics have some effects on microbiota, little is known about action of inulin-type-fructans on the intestinal cell turnover (proliferation, defence activity, apoptosis). The morphofunctional changes in the intestine of pigs fed with Jerusalem artichoke (Helianthus tuberosus L.) was investigated. Forty helmint-free piglets (8 weeks old) were allocated randomly and fed with piglet feed (n=20, control group) and piglet feed with Jerusalem artichoke (n=20, experimental group). After 5 weeks samples from jejunum and colon was obtained. Multiple 6 µm-thick sections of the paraffin-embedded pig intestine samples were examined for beta Defensine-2 (BD2) and TUNEL. Semi-quantitative analysis was used to estimate relations of immunopositive cells in intestine. Our investigation indicated that BD2 expression in jejunum and colon segments were incresed in control group that indicated about decreasing of intestinal bacteria, compared with experimental pigs. BD2 expression were seen in enterocytes, inflammatory cells and in connective tissues cells. Insignificant apoptosis was seen only in jejunal enterocytes of experimental pigs while in control group it was absent.
These findings suggest that feed with Jerusalem artichoke significantly maintains the defence and regeneration processes in the intestine of pigs.

Kategorie: Poster

Rubrik: 11.Immune Biology
Abstract Nr.:68

Titel:Chemokine and cytokine levels in osteoarthritis and rheumatoid arthritis synovial fluid

Autoren: Hampel U.(1), Iserovich P.(2), Sesselmann S.(3), Sel S.(4), Paulsen F.(1), Sack R.(2),

Adressen:(1)Department of Anatomy II|Friedrich Alexander University Erlangen Nürnberg|Erlangen|Germany; (2) Department of Biological Sciences|SUNY College of Optometry New York|New York|USA; (3) Division of Molecular Immunology|Friedrich Alexander University Erlangen Nürnberg|Erlangen|Germany; (4) Department of Ophthalmology|Martin Luther University Halle Wittenberg|Halle|Germany

Abstract:
Purpose: To determine possible differences in chemokine and cytokine levels in synovial fluid from patients suffering from osteoarthritis (OA) or rheumatoid arthritis (RA) and if there are specific markers for RA.

Method: 20 synovial fluid samples from OA and 17 synovial fluid samples from RA patients were analyzed using a dot sandwich ELISA based micro-well protein array. Different buffers were tested to prevent the interference of heterophilic antibodies.

Results: Heterophilic antibodies were detectable in synovial fluid derived from one RA patient, but not in OA synovial fluid. Interference of heterophilic antibodies was prevented by using the human sample diluent buffer (Quansys). Significant differences in cytokine (IL-6) and chemokine (Eotaxin, hGROa, MCP-2, MIG, TRAC, IL-8, RANTES) levels were found between OA and RA synovial fluids. RA synovial fluid displayed elevated cytokine and chemokine levels compared to OA synovial fluids.

Conclusion: The investigated cytokines and chemokines can be used as treatment targets, but need further examination. When dealing with human fluids heterophilic antibodies are always a source of interference in immunoassays. We showed that the use of selective buffers prevent the distortion of results by heterophilic antibodies.

Kategorie: Poster

Rubrik: 11.Immune Biology
Abstract Nr.:69

Titel:Characterization of Osteopontin (OPN) expression and associated receptor proteins in human conjunctiva and cornea epithel cells under normal in vitro conditions

Autoren: Hoffmann K. (1), Garreis F. (1), Paulsen F.(1), Scholz M.(1),

Adressen:(1)Department of Anatomy II|Friedrich Alexander University Erlangen Nürnberg, |Erlangen|Germany

Abstract:
Purpose: To characterize the basal expression of OPN as well as the non-integrin OPN receptor CD44 and the subunits of the most prevalent integrin-type OPN receptors in human conjunctiva (HCjE-Gi) and cornea epithel cells (HCE).
Methods: OPN as well as the integrines α 4, 5, 6, v and β 1, 3, 5, 8 and the non-integrin CD44 have been detected by RT-PCR. Immunohistochemical analyses for all investigated proteins on cultivated HCE and HCjE-Gi cells were performed. Confirmation on the protein level was done by Western blot analysis.
Results: OPN and the most prevalent integrin receptors as well as the non-integrin receptor CD44 were found to be basal expressed by HCE and HCjE-Gi cells under normal culture conditions. These results have been confirmed by Western Blot analysis for all proteins except for the integrin receptor αv. Neither in HCE nor in HCjE-Gi cells the presence of αv protein was detectable.
Conclusion: The phosphorylated glycoprotein Osteopontin is considered to play an important role in tissue preservation and regeneration. OPN is upregulated in a variety of cells during inflammation, autoimmune diseases and tumor pathogenesis. Here we show that OPN and its most relevant receptors show a basal expression in human HCE and HCjE-Gi cell lines. In further experiments with these cell lines, we will investigate possible changes in receptor expression and metabolic cell activity after stress induction via H_2O_2.

Kategorie: Poster

Rubrik: 11.Immune Biology
Abstract Nr.:70

Titel:S100 fused-type protein hornerin and filaggrin-2 – expression and function at the ocular surface.

Autoren: Wild K.(1),Jahn J.(2),Paulsen F.(1),Garreis F.(1),

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Abstract:
The S100 fused-type proteins (SFTPs) Hornerin (HRNR) and Filaggrin-2 (FLG2) are members of the epidermal differentiation complex (EDC) which is involved in terminal differentiation of keratinocytes via cornification as well as maintaining the antimicrobial barrier of the epidermis. The purpose of this study was to investigate the expression and regulation of HRNR and FLG2 at the ocular surface and in the lacrimal apparatus. Different tissues of the lacrimal apparatus and ocular surface were systematically analyzed by means of RT-PCR and immunohistochemistry for their ability to express and produce HRNR and FLG2. The inducibility and regulation of HRNR was studied in cultivated human corneal (HCE) as well as conjunctival epithelial (HCjE-Gi) cells after challenge with different pathogen-associated molecular patterns (PAMPs), proinflammatory cytokines and hypoxic conditions by Real-time RT-PCR. RT-PCR and immunohistochemistry results revealed a constitutive expression of HRNR in cornea, conjunctiva, nasolacrimal ducts and lacrimal gland. Immunoelectron microscopy results showed HRNR localization in the stratum granulosum and an accumulation in the stratum corneum. No expression of FLG2 could be detected at the ocular surface and in the lacrimal apparatus of human body donors. Real-time RT-PCR results revealed a decreased HRNR mRNA expression after challenge with proinflammatory cytokines and supernatants of E. coli and P. aeroginosa in HCE cells whereas in HCjE-Gi cells revealed no changes. These data suggest that HRNR is a component of the ocular surface and the lacrimal apparatus. HRNR may contribute to maintaining the epidermal barrier at the ocular surface and may be involved in ocular surface diseases.

Kategorie: Poster

Rubrik: 11.Immune Biology
Abstract Nr.:71

Titel:Estrogen effects on the gh/igf-system and on cytokines in immune organs of yersinia -exposed rainbow trout (oncorhynchus mykiss)

Autoren: Wenger M.(1),Shved N.(2),Akgül G.(1),Nakayama-Casanova A.(3),Segner H.(3),Eppler E.(1),

Adressen:(1)Research Group Neuro-endocrine-immune Interactions, Institute of Anatomy|University of Zurich|Zürich|Switzerland; email:michael.wenger@uzh.ch; (2)Research Group Neuro-endocrine-immune Interactions and Center for Evolutionary Medicine, Institute of Anatomy|University of Zurich|Zürich|Switzerland; (3)Center for Fish and Wildlife Health|University of Bern|Bern|Switzerland

Abstract:
Estrogens are known to interact with the neuro-endocrine system, which is also involved in immunological responses in fish via the growth hormone/insulin-like growth factor (GH/IGF)-system. GH thereby stimulates synthesis of hepatic IGF-1 which in turn exerts a negative feedback loop to pituitary GH secretion. There exists evidence also for extrahepatic actions of GH via IGF-I. Previous studies have shown that external factors such endocrine disruption, salinity, temperature, and nutritional state influence this system. Especially endocrine disruption via estrogen receptor (ER) ligands is thought to be one of the major stressors of the aquatic environment. There exists first evidence for effects of estrogenic exposure on the GH/IGF system and the possible interactions with the immune system but immune functionality remains to be further elucidated. The current project aims at investigating these interactions between the GH/IGF-axis and immune-related factors to discover a possible connection between the neuro-endocrine system and the immune system in fish. To this end, juvenile rainbow trout were first exposed to different doses of 17beta-estradiol and then infected with the bacteria Yersinia ruckeri, etiological agent of the red mouth disease. The mRNA expression levels of GH receptor 1 and 2, IGF-1, IGF-2, estrogen receptor beta 1 (ER-beta1), as well and TNF-alpha in immune system-related organs (headkidney, spleen, liver) were measured via qPCR and results were then compared to immune system responses assessed by using a 2K-cDNA microarray platform. The results indicate treatments effects on the GH/IGF-system and TNF-alpha in the various organs investigated.

Supported by Swiss National Foundation

Kategorie: Poster

Rubrik: 11.Immune Biology
Abstract Nr.:72

Titel:Cgrp, adrenomedullin and intermedin attenuate inflammation and pathogen clearance by alveolar macrophages

Autoren: Soultanova A.(1),Mikulski Z.(1),Pfeil U.(1),Kummer W.(1),

Adressen:(1)Institute for Anatomy and Cell Biology|Justus-Liebig University|Giessen|Germany; email:m4log@yahoo.com

Abstract:
Background and objective: Calcitonin gene-related peptide (CGRP), adrenomedullin (ADM) and intermedin (IMD) belong to the same peptide family. While CGRP and ADM have anti-inflammatory properties, the role of IMD in the immune system is unknown. The aim of this study was to investigate expression and functional role of these peptides in alveolar macrophages. Methods: Expression of CGRP, ADM, IMD and TNFalfa in rat alveolar macrophage cell line NR8383 was quantified by real-time PCR. Concentrations of secreted protein were measured by ELISA. Gelatin zymography was used to analyze activity of matrix metalloproteinase-9 (MMP-9). For phagocytosis assay, cells were exposed to Texas Red-conjugated zymosan beads and evaluated by fluorescence microscopy. Intracellular calcium concentration ([Ca2+]i) was recorded fluorimetrically with Fura-2. Results: NR8383 cells expressed all three peptides, with ADM mRNA being more abundant than CGRP and IMD mRNA. However, the concentration of secreted IMD was higher than that of ADM. Gene expression of CGRP and ADM was upregulated by LPS in a time-dependent manner, whereas LPS augmented IMD release, but not gene expression. Applied exogenously, the peptides downregulated LPS-induced gene expression of TNFalfa dose-dependently, with CGRP and IMD being more potent than ADM. Neither of the peptides affected activity of MMP-9. All three peptides inhibited phagocytosis of opsonized zymosan to a similar extent. Neither of the peptides increased [Ca2+]i, yet ADM dampened store-operated calcium entry. Conclusions: CGRP, ADM and IMD reduce inflammation and pathogen clearance through auto-/paracrine signaling in alveolar macrophages, but their effects, despite high structural homology, are peptide-specific.

Kategorie: Poster

Rubrik: 5.Experimental Morphology
Abstract Nr.:73

Titel:Characterization of cytokines expression in the adhesions with and without inflammation

Autoren: Pilmane M.(1),Valdovska A.(1),

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Abstract:
Inflammation is suggested to be a strong initiator for tissue remodelling. However, there is no clear role of many cytokines in fibrotic tissue with and without inflammation. Thus aim of work was detection of the expression of cytokines in congenital and acquired adhesions of children with and in absence of signs of inflammation.
Materials and methods. The congenital adhesions were obtained from 17 children aged from 1 day to 3 years, while acquired adhesion group consisted of 9 children aged 10-16 years. The tissue were collected during adhesiolesion and stained for the TNFalfa, IL-1, IL-6, IL-8, IL-10 immunohistochemically.
Results demonstrated absence of inflammation in adhesions of 2 younger and 3 elder children, while the main group (21 children) showed inflamed adhesions. Despite these data only occasional to few cells expressed TNFalfa in adhesions of both groups. Also IL-1 expression didn't differ between the groups. Number of IL-6 positive inflammatory cells, fibroblasts and endothelial cells was significantly higher in adhesions of elder patients, where also IL-8 and IL-10 marked more fibroblasts and inflammatory cells. Interestingly, endotheliocytes showed notable decrease of IL-10 for the adhesions in elder children.
Conclusions. Commonly, adhesions with and without inflammation show no difference in TNFalfa and proinflammatory cytokine IL-1 expression. Expression of IL-8 and IL-6 characterizes the inflamed adhesions in elder children and probably suggests the impact of duration of the same adhesions. Decrease of IL-10 expression from endothelial cells detected in older children inflamed adhesions proves the decompensation of endothelial barrier within persistent inflammation.

Kategorie: Poster

Rubrik: 3.Methods/Teaching
Abstract Nr.:74

Titel:Micro-computed tomography based physical anatomical teaching models: presentation of a new learning aid for routine use in anatomy lectures

Autoren: Wulf J.(1),Rohde I.(1),Koppe T.(2),Winder J.(3),

Adressen:(1)Innovation|3B Scientific GmbH|Hamburg|Germany; email:Joerg.Wulf@3bscientific.com ; (2)Department of Anatomy and Cell Biology|Ernst Moritz Arndt University, Greifswald|Greifswald|Germany; (3)Health and Rehabilitation Sciences Research Institute|University of Ulster|Newtownabbey|United Kingdom

Abstract:
The aim of our project was the development and implementation of micro-computed tomography (micro-CT) based plastic anatomical models to make them commercially available as an anatomy learning tool for students at all levels. High resolution micro-CT of human ossicles and trabecular bone was performed. After image processing, application of rapid prototyping (RP) and rapid manufacturing(RM) technologies enlarged physical teaching models, magnified by a factor of 20 were built and provided an accurate representation of the human anatomy.

Anatomy has always been a mandatory subject in medical education regardless of country or university. Cadaver dissection is considered to be the best teaching method, however, many anatomical institutes provide dissection courses which utiliseplastic anatomical models. These models may be suboptimal regarding anatomical authenticity and variation.
The aim of our project is the development and implementation of micro-CT based plastic anatomical models to make them commercially available as an anatomy learning tool for students at all levels.

For the first time, we are able to provide magnified anatomical models for a broad range of users which will beavailable on the market by the end of 2011. This technology may be applied to a wide range of applications (including micro-anatomy of teeth with root channels and inner ear) to aid visualization and understanding of complex anatomy.
The enlarged model of ossicles was created in 3 parts and magnified by a factor of 20, and provided an accurate representation of the anatomy.

Kategorie: Poster

Rubrik: 12.Reproductive Biology
Abstract Nr.:75

Titel:Integration of anatomy, literature research skills and clinical practice through a peer-teaching and peer-assessment exercise at pre-clinical level in an undergraduate medical course

Autoren: Eppler E.(1),Filgueira L.(2),

Adressen:(1)Research Group Neuro-endocrine-immune Interactions, Institute of Anatomy. University of Zurich and School of Anatomy and Human Biology, The University of Western Australia|University of Zurich|Zurich, Perth|Switzerland; email:eppler@anatom.uzh.ch; (2)School of Anatomy and Human Biology|University of Western Australia|Crawley|Australia

Abstract:
The aim of this project was to explore the feasibility of enhancing clinical anatomy teaching in an undergraduate medical course by engaging a sub-group of advanced preclinical students (n=54/186) in providing lecture material as a group presentation (n= 3).
Focussing on specific syndromes or diseases, we aimed at enhancing knowledge in clinical anatomy, and integrating anatomy with (differential) diagnosis, pathology, clinical investigation, imaging, therapy and prognosis. Additional aims were to train and enhance literature research, teamworking, oral communication and presentation skills and to engage students in peer-teaching and peer-assessment. The lectures were recorded for revision purpose and the content tested using a multiple choice exam at the end of semester. The group presentations were peer-assessed. Additional self and teacher assessment was performed.
Finally, students' perception was assessed through an online questionnaire. In addition, marks of peer, self and teacher assessment, as well as final marks for this and other units were statistically analysed to evaluate for the sub-group and the whole class whether this additional educational exercise enhanced the average student outcome.
The sub-group doing these activities scored similar to their peers at semester-start in the core unit (66% vs. 62%, p=0.09), whereas the subgroup improved their performance significantly, towards semester-end (78% vs. 66%, p=0.00975). All students of the sub-group stated that they enjoyed these activities and that they enhanced their learning experience and outcome.
The described educational exercise is feasible and valued by the students, especially as their skills and knowledge in anatomy are substantially improved.

Kategorie: Poster

Rubrik: 3.Methods/Teaching
Abstract Nr.:76

Titel:Volumetric measuremeant of the femoral head using direct and imagistic methods

Autoren: Frandes C.(1),Sferdian M.(2),

Adressen:(1)Faculty of Medicine, Pharmacie and Dental Medicine|“Vasile Goldis” Western University of Arad|Arad|Romania; email:frandes.corina@gmail.com; (2)F aculty of General Medicine, Pharmacie and Dental Medicine|" Vasile Goldis ", Western University of Arad|Arad|Romania;

Abstract:
PURPOSE: For an exact subsequent determination of lack of substance in the femoral head in multiple diseases, with subtle differential diagnoses, this paper wishes to measure the “whole”, respectively the two thirds of sphere that constitute the femoral head proper, so this would represent the basis of calculus and evaluation of possible bone deterioration. MATERIAL AND METHOD: The lots were constituted of prepared bones: 19 femurs, out of which 11 were from the right side and 8 from the left side. The measurements were done by two methods, the direct method of physical measurement and the second was the measurement with the aid of a software on the CT scans that we've performed. RESULTS AND DISCUSSIONS: One of the most important problems that arises during direct measurements, obvious from the very beginning, was the degree of deterioration of the prepared bones .The use of the CT technique has been relatively simple, obtaining successive images . The subsequent use of the software that helps establish the volume depends on some sources of error detected along the way. The two methods of volumetric assessment overlap to a positively variable degree that can still be subjected to some corrections. CONCLUSIONS: The volumetric assessment of the femoral head is not yet a routine measurement, recognized and in 100% correspondence to the physical volumetric measurements. We consider that the improvement of the computerized algorithm would lead to more precise results. KEY WORDS: femoral head, physical volumetric measurements, quantitative computerized tomography, geometry of the sections.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:77

Titel:Skulls with a colonial past - first results of the charité human remains project

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Abstract:
PURPOSE
Anthropological collections in anatomical institutes originate in large parts from the colonial period. Increasingly, restitution of such human remains to their countries of origin is requested. To handle such requests adequately, both a thorough provenance analysis and an investigation of the scientific-historical context is needed. We present first results on 20 skulls of Namibian origin.
METHODS
Our interdisciplinary approach combines anthropological, historical, ethnological and museological investigations. Historical research involves investigation of catalogues, historical publications and archival sources. The direct investigation of osteological remains includes the assessment of inscriptions, of sex, age, pathology and/or traces of violence, and comparison with data from historical publications.
RESULTS
Following information in surviving catalogues and inscriptions, 20 skulls could be identified in the anthropological collection of the former Berlin Institute of Anatomy, which were likely collected in the period of the German colonial war 1904-1908 in today's Namibia. The investigations confirmed this link, mainly by correlation with historical anthropological publications from the Institute around 1913. For most cases, it could be established that the skulls stem from prisoners of war of Herero or Nama ethnicity who died in the infamous prison camp on Shark Island between 1905 and 1907. Their heads were preserved in formalin and sent to Berlin anthropologist Paul Bartels who used them for investigations of the facial musculature with a clearly racist intention.
CONCLUSION
There was clear evidence that the 20 investigated skulls originate from an illegitimate collection context. They were officially handed over to a Namibian delegation in September 2011.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:78

Titel:Comparison between clinical OP situations and human dissected specimen

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Abstract:
Purpose: The developing operation procedures in the field of dental implantology cause increasing requests for the surgeons. A profound knowledge of the topography of anatomical structures is crucial. Textbooks often visualize them in an idealized way without considering the individual range of variation, usually in layers as during anatomical preparations. Approaches as required in practice are rare to be found.
Methods: Therefore six intact and six bisected human anatomic head specimen (all fixed in alcohol, of both sexes, age between 72 and 95 years) were used to simulate operation situations focusing on the most important anatomical structures.
Results: The results were documented by help of images and measured values. In the focus were particular the 1. soft tissue management of the palate using the “Flap-technique” considering the course of the major palatine artery, 2. interforaminal implantation in the lower jaw with reference to the course of the inferior alveolar nerve respectively the mental nerve and 3. transplantation of proper bone into the mandibular branch under comprehension of the mandibular canal showing a low-risk region to take the bone from.
Conclusion: We tried to fill the gap between clinical situations and the anatomic correlate with regard to the courses in clinical anatomy at our institute.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:79

Titel:Contributions of rostock to the otolaryngology at the beginning of the 20th century – the description of reinke space

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Abstract:
The biography of anatomist Friedrich Reinke (1862-1919) characterizes the fate of a scientist at the beginning of the 20th century between professional success, massive cuts through the superiors and incipient contributions to the field of tumor pathology. While the biographies of other well-known anatomists were refurbished for years in several weaves, only sparse information is found on Reinke. His greatest achievements were descriptions of the Reinke space of the human larynx and the Reinke crystals of testes. The Reinke space corresponds to the narrow lamina propria mucosae of the plica vocalis. It allows a shift of the plica above the epithelium during the phonation. His contemporary popularity was reached through the exploration of crystalline aggregates of proteins in the Leydig cells. Their ultimate function is still unclear. On the 11th of April, 2012, we will celebrate Reinke´s 150th birthday. On the occasion of this anniversary, it is time to remember one of his most important anatomical findings and to discuss, their current importance. In 1897, Reinke published the paper “Über die funktionelle Struktur der menschlichen Stimmlippe mit besonderer Berücksichtigung des elastischen Gewebes“. The anatomical evidence of bagged off edema of the vocal cord, which was denied at that time for anatomical reasons, was the motivation to this work. Already two years before Reinke had shown in his „Untersuchungen über das menschliche Stimmband“(1895), that it is possible to create an artificial edema in the mucosa of the vocal cord. Both papers were milestones of otolaryngology explaining the anatomical basis of articulation.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:80

Titel:Longitudinal changes in cartilage thickness in knees with osteophytes but no joint space narrowing versus contralateral knees without radiographic oa

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Abstract:
We test the hypothesis that cartilage thickness displays significant longitudinal (one year) thickening and is more variable in external central medial (ecMF) and lateral (ecLF) femur in knees with osteophytes (OP) without joint space narrowing (JSN), compared with contralateral knees without OPs and no JSN.

A within-person, between-knee approach was used to assess longitudinal change of subregional cartilage thickness. We investigated 50 individuals with definite femorotibial OPs and no JSN in one knee and OP and JSN scores of zero in the contralateral knee. Cartilage thickness change was measured longitudinally in the femorotibial subregions, using quantitative MRI measurements.

Longitudinal cartilage thickness change in ecMF was -6±94µm in OP knees vs. -1±68µm in non-OP knees (p=0.78). The change in ecLF was +18±91µm in OP vs. +4±76µm in non-OP knees (p=0.38). Significant differences in cartilage thickness change were detected in the central lateral tibia (-49±108µm in OP vs. +13±95µm in non-OP knees; p=0.001). In OP knees, the standard deviation of longitudinal thickness change was larger than in non-OP knees in 12 of 16 subregions (cMT, aMT and ecMF; p<0.05).

The variability of longitudinal cartilage thickness change is larger in knees with early radiographic OA (e.g. both thinning and thickening potentially going on at the same time) than in contralateral knees without signs of radiographic OA. OP knees displayed significantly greater cartilage loss in the central lateral tibia, but did not show evidence of longitudinal thickening compared with contralateral non-OP knees.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:81

Titel:The heart arterial orifices -biometric study

Autoren: Motoc A.(1),Folescu R.(1),Stana L.(1),Petrescu C.(1),Ilie C.(1),Sisu A.(1),

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Abstract:
Biometric study of heart arterial orifices was performed on a total of 54 normal and 15 pathological hearts with coronary atherosclerosis. The 54 normal hearts were divided by age and sex and the 15 hearts with coronary atherosclerosis pathology were grouped according to the dynamics of coronary atherosclerosis lesions: stage I, 4 hearts, stage II, five hearts, and stage III six hearts. In order to obtain the heart arterial orifices circumference were measured aortic and pulmonary orifices diameter with caliper and then through numeracy was reached the match representing the orifice. By examination the measurement of performed results it shows that in normal adults the circumference of the pulmonary artery orifice has an average 67.9 mm. In females it has 66.8 mm and in males it has 69.1 mm. The average of 67.9 mm is between two limits, a minimum of 57 mm and a maximum of 78 mm. If normal adult aortic arterial orifice circumference is approximately 68.4 mm, with a value of 67 mm in females and 69.8 mm in males. The average total value is 68.4 mm, being between two limits, a minimum of 55 mm and a maximum of 81 mm. Pulmonary artery orifice circumference on pathological hearts is 1.1561 times higher than normal hearts. Aortic artery orifice circumference on pathological hearts is 1.1330 times higher than normal hearts.
Keywords: normal heart, aortic artery orifice, pulmonary artery orifice.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:82

Titel:Cephalometric parameters in peri-puberty-aspects of sexual dymorphism

Autoren: Motoc A.(1),Stana L.(1),Folescu R.(1),Moise M.(1),Sisu A.(1),

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Abstract:
The data regarding the global and segmental growth and development of the child are useful in pluri-disciplinary studies which view the human body as an entity where the biological aspects interlace with the socio-cultural ones, thus offering the possibility to any specialist in the field of humanities and morphological studies to cover a wide range in contemporary anthropological research. The present study focuses on cephalometric aspects of growth and development during puberty and adolescence from the perspective of development anatomy. The shape of the skull depends on genetic and race factors and it is already defined in the first year of life. Although a seven-year-old child displays relative dimensions and characteristics of the skull similar to those of the adult, during puberty there may occur certain changes in the shape of the skull, revealed by variations of certain cephalometric parameters. The development of the skull takes place in two active stages separated by a stage of relative quiet during the age of seven and puberty when the skull has a dolicocephalic aspect. During the second stage of active growth (which starts with puberty) there is a transversal growth of the basis of the cranium followed by an anteroposterior growth. The degree of gender-related differences as far as the dimensions and proportions of the skull are concerned vary greatly according to race, therefore we may say that general ethnic differences are more pronounced than gender-related ones.

Key words: cephalometry, sexual dimorphism, anthropometric parameters

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:83

Titel:Long axis longitude of the total left heart

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Abstract:
Long axis dimensions of the two left cardiac chambers have been determined separately by two-dimensional echocardiography but there is no measurement available concerning the longitude of the living left heart as a whole, although the apex of heart has proved to be almost motionless and stationary in earlier investigations.

In order to define the intravital length of the heart, apical four-chamber views of twelve female and twelve male individuals with no evidence of cardiac disease were evaluated. The distance from the epicardial apex to the inner border of the left atrial roof between the two superior pulmonary veins was determined.

The total left cardiac length in the isovolumic period of contraction agreed largely with that in the isovolumic period of relaxation, with a mean of 121,41mm (SD:6,27mm) to 121,25mm
(SD:7,37mm) in the group of females and of 134,50mm (SD:7,30mm) to 134,33mm (SD:8,32mm) in the group of males. By means of M-Mode-echocardiography the left atrial roof could be shown as approximate stationary.

Long axis longitude of the total left heart represents a straight line L which can be defined by two fixed points A and R, the epicardial apex and the left atrial roof. In this study L does not undergo a substantial change in length at the isovolumic periods of contraction and relaxation and we have reason to suppose that L is a constant factor during the whole cardiac cycle. Forming a stable scale, this long axis could serve as a one-dimensional, objective frame of reference for intracardiac measurements.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:84

Titel:Induction of heart failure by minimally invasive aortic constriction in mice: a morphological study.

Autoren: Wächter J.(1),Faerber G.(2),Schwarzer M.(2),Fitzl G.(1),

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Abstract:
Purpose: Pressure overload is one of the most common causes of heart failure. For understanding the pathological mechanisms, adequate animal models are required. So far implementation of pressure overload in mice resulted in compensated hypertrophy but not in heart failure. We therefore assessed the suitability of a modified model of minimally invasive transverse aortic constriction to induce heart failure in C57BL/6 mice on the basis of morphological criteria.
Methods: Minimally invasive transverse aortic constriction was performed through a ministernotomy without intubation over a 29 – gauge needle (minimally invasive transverse aortic constriction, n = 14; sham operation, n = 6). 7 weeks postoperative heart failure was assessed based on heart weight/body weight ratios and clinical symptoms. Samples were taken out of the left ventricle. Electron microscopy was used for structural analysis.
Results: 7 weeks postoperative, minimally invasive transverse aortic constriction induced an increase of heart weight/body weight ratio. Mice with a ratio > 10 mg/g showed clinical signs of manifested heart failure (weight loss, dyspnoea, ascites, pleural effusions) and reduced contractile function. In these animals myocardium is characterized by different morphological lesions such as an increase of interstitium, degeneration of cardiomyocytes with edema, myofibrillolysis, alterations of mitochondria and intracellular edema of microvessels. The alterations are significantly less expressed in animals undergoing minimally invasive transverse aortic constriction with a heart weight/body weight ratio < 10 mg/g.
Conclusions: It has been shown, that this model induced heart failure. Due to morphological alterations, we may confirm the clinical differentiation of hypertrophy and heart failure.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:85

Titel:Myocardial bridging of left anterior descending coronary artery - a risk factor for myocardial ischemia?

Autoren: Jankovic R.(1),Parapid B.(2),Aleksandric S.(2),Nedeljkovic I.(3),Beleslin B.(3),Simic D.(3),Teofilovski M.(4), Teofilovski -Parapid G.(4),

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Abstract:
Introduction. Myocardial bridging (MBing) is a congenital anomaly presented by a band of myocardial fibers overlaying a segment of a coronary artery or/and their major branches along some part of their subepicardial courses, the most frequently described over LAD. Recently, MBs are often related to myocardial ischemia (MI), left ventricle dysfunction, arrhythmias, and sudden cardiac death. The reported incidence of MBing on autopsies varies extensively (4.7%-86%), likely related to geographical regions, while national data have not yet been available.
Material and Methods. Retrospective analysis of autopsy protocols of 721 consecutive autopsies (adults of both sexes) performed between July 2010 and June 2011 at the Institute of Pathology at FMUB, with LM studies (HE&Masson trichrome) of the tunneled vessel (TV) wall along with the morphometric analysis of the ventricular myocardium supplied by the TV (experimental group) and the ventricular myocardium of the same heart but with a different blood supply (control group) were done.
Results. Myocardial bridges were described in 6/721 cases (0.8%): 5 were male and all over 70yrs. Only single MB were described over LAD. In all of the cases: a) TV had intensive atherosclerotic changes proximal to the MB, and only focal in the tunneled part; b) there was intensive interstitial fibroses of the myocardium supplied by the TV.
Conclusions. We found strong evidence of MBing and myocardial ischemia, but do not consider the 0.8% being the true prevalence of MBing in Serbian population, and suggested prospective studies. (This work was supported by MESRSerbia Grants: 41022;175030).

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:86

Titel:On the cerebral blood supply- arterial variability in elements

Autoren: Stana L.(1),Sisu A.(1),Jianu A.(1),Ilie C.(1),Grigorita L.(1),Enache A.(2),

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Abstract:
The encephalon arterial blood supply is provided by intracranial branches of internal carotid artery and vertebral arteries, these forming interconnected arterial systems. The intercarotid basilar system or cerebral arterial circle is located at the base of the encephalon, representing a functional unit with a specific hemodynamic cerebral arterial rebalancing intake. The carried out study aimed the investigation of anatomical variations of the encephalon base arterial vessels. 24 formalised human brains were studied. Also 80 forensic autopsied human brains, died from different causes were investigated. No person who presented an anatomical variation had no case of death the stroke or cerebral aneurysm. The study was completed by the 80 MR Angiography analysis. Highlighted variability items during carried out study are present in 9.78%.The examination of the autopsy specimens revealed having the most morphological variants, 10%. Using 3D MR Angigraphy, vascular changed were observed in 7.5% of cases. On the posterior communicating artery were reported the most morphological variants, in 3.80% of cases. Morphological variability was included the following types: hypoplastic arteries, foetal type, absent arteries and association in variants. The anterior part variability of the cerebral blood supply is 3.78%, and the posterior part variability is 5.97%. High incidence rate of the encephalon blood supply variability and the primary role of the arterial cerebral circle in providing an anastomotic path, leads to the need of knowing better arterial cerebral branches distribution and brain vascular territories, especially in context of frequent pathologies of this region.
Keywords: cerebral arteries, cerebral arterial circle, encephalon

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:87

Titel:Morphological changes of elastic fibers of basilar artery in aging

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Abstract:
Purpose: to evaluate age and gender related changes of elastic fibers in tunica media of basilar artery.
Methods Basilar arteries were obtained from 54 human cadavers (29 male and 25 female) of three different age groups (30 to 75 years). Investigation included cases of violent death without obstructive atherosclerotic lesions and history of cerebral blood vessels disease. Histological slides were performed from the middle segment of basilar arteries. Area of elastic fibers network, perimeter and number of elastic fibers bundles were evaluated.
Results Morphometric analysis revealed decrease of elastic component with age in male and female basilar arteries. Diminishing of elastic fiber area, perimeter and number of bundles in the tunica media was more abrupt in male than in female groups, but it was not observed significant difference between young and middle-aged female groups. Our data suggest that elastic fibers become thinner, smaller and less branchy.
Conclusions Area of elastic fibers network, perimeter and number of fibers in the media of basilar arteries diminishes with age in both genders. Significant age-related changes of female basilar arteries media elastic network begin in older age as compared with the males. These findings might be responsible for the loss of arterial elasticity in aging and contribute to the development of cardiovascular diseases.

Kategorie: Poster

Rubrik: 8.Neuroregeneration/neurodegeneration
Abstract Nr.:88

Titel:Adult leptomeningeal cerebellar heterotopia compressing the posterior inferior cerebellar artery

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Abstract:
During microdissection of an adult cadaver, male, aged 63, dorsal to the left side of the medulla oblongata and to the posterior inferior cerebellar artery (PICA) a leptomeningeal mass was encountered, and it compressed the PICA. Histology identified cerebellar-like tissue. Immunohistochemistry for S100 protein, glial fibrillary acidic protein and neurofilaments (NF, the triplet proteins and the 200 kDa antibody) on paraffin-embedded samples confirmed the cerebellar heterotopion. Abundant Lewy-like degenerative bodies were also identified within the heterotopion, they were positive for the NF triplet but were negative for the 200 kD neurofilaments. Purkinje cells were rare. This is the first evidence of a leptomeningeal cerebellar heterotopia with compression of PICA in adult. Such subtentorial heterotopias, even if rare, should be searched during clinical, paraclinical and surgical explorations of the posterior fossa.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:89

Titel:Fahr syndrome associated with brain stem calcification: a radiological, clinical and histopathological study

Autoren: Indrei A.(1),Dumitrescu G.(2),Hodorog D.(3),Prodan R.(3),Haba D.(4),

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Abstract:
Fahr syndrome (FS) refers to basal ganglia calcification that is associated with many neurological and psychiatric abnormalities and appears secondary to other diseases. We present below the case of a female patient, age 68, checked-in at the Neurology Clinic, „N. Oblu" Clinical Emergency Hospital Iasi. The patient had generalized tonico-clonic crises, Parkinson syndrome, visual disorders with bilateral optic atrophy.
Following the necropsy, the histopathological examination of the spinal cord, brainstem, cerebellum, diencephalon, cerebral hemispheres, thyroid gland, lungs, cord, liver, kidney, spleen etc was performed. The sampled fragments were fixed in 10% formaldehyde for 24 hours, and then paraffin embedded, followed by cutting in 4 micron serial sections stained through various techniques.
In the central nervous system we noticed a diffuse atrophy and the presence of a fine granular material on sections like "sand grains" in both sides of the corpus striatum, internal capsule, thalamus, cerebellum, bulb and pons.
The histopathological exam revealed concentric calcium deposits within the walls of small and medium-sized arteries and droplet calcification along the walls of capillaries from the affected areas, chronic tyroiditis, absence of parathyroids, and phosphate nephropathy.
Conclusions: FS diagnosis requires the joint work of a wide range of specialists, starting with the neurologist and ending with the Anatomical pathologist. FS involves a wide variety of clinical symptoms and guarded prognosis as in the aforementioned case. This case calls attention because of the presence of calcification also in the pons and medulla oblongata regions identified in a Fahr syndrome determined by hypoparathyroidsm.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:90

Titel:Superior obliqus muscle paralysis due to trochlear nerve trauma

Autoren: Pop E.(1),Folescu R.(1),Bolintineanu S.(1),Petrescu C.(1),Motoc A.(1),Sisu A.(1),

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Abstract:
Trochlear nerve originates in the caudal region and in the one that continues with periaqueductal grey matter of the oculomotor nucleus. Superior oblique muscle acquired paralysis is a common sequel of closed head injuries, caused in 27-39% of trauma head. Usually is the result of frontal or frontoparietal severe trauma, but can be produced by injuries to the inion. It can result even from insignificant minimal trauma head. Bilateral paralysis of the trochlear nerve can be produced by vertex trauma affecting the anterior medullary velum, where both nerves of the pair emerge. Congenital trochlear nerve paralysis previously compensated, may be decompensated due to minor head injury and to show signs of lack of fusion or diplopia symptomatic of the visual field. Diagnosis of acute isolated nerve trochlear paralysis is not hard to put. These patients characteristically bowed their heads in the opposite direction to the lesion. Patients with bilateral trochlear nerve palsy have an abduction motion force deficit, which gives esodeviation. They have left hypertropy to the right side, right hypertropy to the left side and exocyclotorsion over 15 °, which produces torsional diplopia and homonymous when looking down. Knapp classified superior oblique muscle paralysis depending on the deviation and suggested the optimal surgical treatment for each type separately.
Keywords: trochlear nerve, paralysis, trauma.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:91

Titel:Injury of the oculomotor nerve in craniocerebral trauma

Autoren: Pop E.(1),Folescu R.(1),Bolintineanu S.(1),Motoc A.(1),Sisu A.(2),Sargan I.(1),Petrescu C.(1),

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Abstract:
Oculomotor nerve arises from multiple subnuclei in the periaqueductal grey matter of the rostral mid-brain at the superior quadrigeminal colliculus level. Oculomotor lower portion paralysis is caused invariably by orbital trauma. Oculomotor nerve injury is not very frequent complication of head injuries, only 1-2% of cases.Oculomotor nerve is less frequently injured in closed head injuries than trochlear and abducens nerves. However, in 8-16% of adults and 13-20% of children with oculomotor nerve palsy, it has posttraumatic. Traumatic etiology is the most common cause of the intraorbital lesions of this nerve, lesions that probably are the most common cause of paralysis acquired in postnatal and childhood period.Severe head or frontal region trauma associated with skull base fractures and loss of consciousness frequently traumatizes oculomotor nerve at its entry into the cavernous sinus or orbit. An intracranial mass lesion expansioned, typically a subdural hematoma, can cause hernia of corpus callosum and may be accompanied by progressive deterioration of mental functions, and unstable vital signs, leading to death by compressing the brainstem.Impaired pupils are an early sign of cranial nerve compression in the tentorium edge and neurosurgical intervention may be life saving emergency situation. These lesions occur more frequently than oculomotor nerve direct trauma. CT examination is mandatory in this case.
Keywords:oculomotor nerve, subdural haematoma, cranial nerves.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:92

Titel:Peculiarities of topographical anatomy of steno-cartilage section of thoracic wall in thorascopic access to deep thoracic arteries

Autoren: Dydykin S.(1), Kuzmichev V.(2), Nikolaev A.(1), Mazurin V.(2), Bogoyavlenskaya T.(1),

Adressen:(1)Topographical anatomy and operative surgery|1)1st IM Sechenov Mosñow State Medical University; 2) MF Vladimirsky MONIKI|Moscow|Russia; email:dydykin_ss@mail.ru

Abstract:
Deep thoracic blood vessels are projected from stenoclavicular joint to the point on costal arch lateral by 4cm from xiphoid process. Under the Vth rib from the side of pleural cavity they are covered by dense tendinous fibers of thoracic cross muscle. The distance between artery and thoracic edge depended on the type of habitus. On every intercostal level from deep thoracic arteries 2 anterior intercostal arteries branched off with anterior perforating branches in II-VI intercostal spaces. Intercostal thoracic arteries participating in blood supply of mediastinum, pericardium branched off higher the Vth rib level in sagittal plane along mediastinal pleural leaflet. Terminal branches of deep thoracic arteries in the majority of cases were divided on the level of VIth intercostal space. Two deep thoracic veins (on the left – 77.6%, on the right – 74.3%), more rarely – three (on the left – 22.4%, on the right – 25.7%) were situated on both sides from the arteries, joining into one on the level of the III-IV ribs and then going further to the medial of arteries. Right deep thoracic vein in all the cases entered the right subclavian vein, the left one –into the left brachiocephalic vein.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:93

Titel:Hepatic arteries originating from the aorta and the superior mesenteric artery

Autoren: Barsan N.(1),Bordei P.(1),Craciun A.(1),Iliescu D.(1),

Adressen:(1)Department of Anatomy|Faculty of Medicine|Constanta|Romania

Abstract:
The assessment of morphological characteristics of the hepatic arteries originating from aorta and superior mesenteric artery, compared with hepatic arteries with origin from the celiac trunk.
The study was performed by dissection and plastic injection on adult and fetal cadavers, as well as organic sub-diaphragmatic blocks. We also studied abdominal aortic angiographies, simple and angio CT.
We describe 37 cases; in 18 cases the hepatic artery originated from the abdominal aorta, in 14 cases from the superior mesenteric artery and in 5 cases from a common, celio-mesenteric trunk. In 17 cases the hepatic artery was unique; in other cases there were two hepatic arteries, one originating from the celiac trunk, the other originating from the aorta (10 cases) or from the superior mesenteric artery (10 cases); in all 5 cases with hepatic artery from the celio-mesenteric trunk it was unique. When doubled the hepatic artery originating from the celiac trunk, the supplementary hepatic artery penetrated the liver by the hilum, further distributing to the right hepatic lobe and gallbladder and only in 6 cases gave branches for caudate and quadrate hepatic lobes and in 2 of these cases, giving branches to the left lobe of the liver. When the origin was aortic, in 3 cases the second hepatic artery is distributed only to the left liver, in other cases participating in the whole liver blood supply.
This vascular variation shows a major morphological importance, mostly for the for the partial hepatectomy and liver transplantation.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:94

Titel:Morphology of the middle colic arteries

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Abstract:
The evaluation of middle colic artery in terms of origin, morphometry, branching and supplied territory and the type of paracolic arcade.
The study was performed on adult and fetal cadavers, as well as organic sub-diaphragmatic blocks, together with the study of abdominal aortic angiographies.
When present and unique, it arises, most frequently, from the superior mesenteric artery, but may have origin from the artery of the right colic angle. We evaluated the middle colic artery on 64 cases: in 32 cases it was unique, in 21 cases having its origin in the superior mesenteric artery, in 9 cases from the artery of the right colic angle and in 2 cases from the left colic artery; missing middle colic artery was assessed in 12 cases; two middle colic arteries were seen in 20 cases, finding four variations: both arteries from mesenteric artery in 9 cases; the second middle colic artery from the artery of the right colic angle while the first taking birth in mesenteric in 8 cases; the second middle colic artery from the ileocolic artery in 4 cases; one from the mesenteric artery or from the artery of the right colic angle and the other from the inferior mesenteric artery in 3 cases.
Arterial arches are frequently arranged on one row and less on two.
The middle colic artery shows the most variable morphology of the collateral's of the superior mesenteric artery. Frequently, the middle colic artery participates to form the two halves of the transverse marginal arcade.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:95

Titel:Pancreatic arterial supply- anatomical data

Autoren: Folescu R.(1),Pop E.(1),Petrescu C.(1),Sargan I.(1),Haivas C.(1),Samfirescu E.(1),Motoc A.(1),Sisu A.(1),

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Abstract:

Arterial sources of the pancreas are the celiac trunk with its branches: hepatic, splenic and superior mesenteric arteries. Large arcades between these two sources form the pancreas vascularisation. Left portion of the pancreas vascularisation is made by the dorsal pancreatic artery and lienalis artery. Following dissections performed (50 preserved human bodies) were highlighted the following origin variations of the pancreas arteries: dorsal pancreatic artery in 26-cases (52%) has origin from the lienalis artery. In 14 (28%) the origin was from the celiac trunk, 10 (20%) has the origin from common hepatic artery; from inferior pancreatico-duodenal artery 38 cases (76%) has origin from superior mesenteric artery; in 30 cases (60%) inferior pancreatico duodenal artery has arisen from the right side of the superior mesenteric artery, and in 8 cases (16%) has arisen from the anterior side of the superior mesenteric artery. On 7 cases (14%) it originated from the right accessory hepatic artery, branch of the superior mesenteric artery; in 5 cases (10%) has origin from dorsal pancreatic artery. Superoposterior pancreatico duodenal artery on 44 cases (88 %) had origin from gastroduodenal artery, branch of common hepatic artery; on 3cases (6%) had origin from common hepatic artery; on 2 cases (4%) had origin from dorsal pancreatic artery, and in 1 case (2 %) had origin from the right accessory hepatic artery, branch of superior mesenteric artery.
Kewwords: pancreas, lienalis artery, common hepatic artery.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:96

Titel:Types and variations in origin of the parietal branches of internal iliac artery

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Abstract:
There are 5 types of the parietal branches of the internal iliac artery and almost each has another 2 subtypes. The branches are: superior gluteal artery, inferior gluteal artery and pudendal artery. In type I, the superior gluteal artery arises separately from the internal iliac artery, and the inferior gluteal and the internal pudendal artery arise from a common trunk. In type II the superior and inferior gluteal arteries arise by a common trunk and the internal pudendal vessel separately. Subtype A includes those specimens in which the trunk common to the two gluteal arteries divides within the pelvis, and subtype B those in which the division occurs outside the pelvis. In type III the three branches arise separately from the internal iliac artery. In type IV the three arteries arise by a common trunk. The subtyping in this group is based on the sites of origin of the superior gluteal and the internal pudendal arteries from the parent stem. In subtype A the trunk first gives rise to the superior gluteal artery before bifurcating into the other two branches; in subtype B the internal pudendal is the first vessel to spring from the common trunk, which then divides into superior and inferior gluteal arteries. In type V the internal pudendal and the superior gluteal arteries arise from a common trunk, and the inferior gluteal has a separate origin.
Keywords: internal iliac artery, superior gluteal artery, internal pudendal artery

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:97

Titel:The influence of type of vascular anastomosis on postoperative haemodynamics – computer simulation method

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Abstract:
Background: Every vascular anastomosis is inevitably subject to formation of certain grade of neointimal hyperplasia at suture line. That process narrows the anastomosis itself and more or less influences hemodynamics. Eversion endarterectomy of carotid artery is a commonly performed procedure in vascular surgery as it is in our clinic. Due to technical reasons in some cases we were forced to modify the incision shape. In these cases we observed better postoperative hemodinamical parameters through operated artery.
Materials and methods: In this study we used computer simulation to analyse the flow through anastomoses of different incision shapes that are standardly used during this operative procedure with different grades of suture line stenosis.
Results and conclusion: The study showed that the shape of the suture line partially compensates hemodynamic changes and flow reduction caused by neointimal hyperplasia of the anastomosis.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:98

Titel:On the etiology and clinical issues of the piriformis syndrome

Autoren: Sisu A.(1),Stana L.(1),Folescu R.(1),Petrescu C.(1),Pop E.(1),Moise M.(1),Stancu G.(1),Motoc A.(1),

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Abstract:
Anatomically, the piriformis muscle lies under the gluteal muscle. The sciatic nerve passes in 85% under the piriformis muscle, but in 15% of cases it has been demonstrated that it travels through the muscle. Lot of cases irritates the sciatic nerve, either acute or chronic. The etiology of piriformis syndrome can be divided into the following categories: hyperlordosis, muscle anomalies with hypertrophy, fibrosis, partial or total nerve anatomical abnormalities, pseudoaneurysms of the inferior gluteal artery, and bilateral piriformis syndrome due to prolonged sitting during an extended neurosurgical procedure, hip arthroplasty, intense physical activity, myositis ossificans, and cerebral palsy. The clinical field is dominated by pain, which is known as sciatica. When sciatica is really due to radiculitis, a lesion in any part of the course of one or more of the long roots comprising the great sciatic nerve, anywhere between the origin of the root from the conus medullaris. Sciatica may be the result of advanced malignant disease in the pelvis, or a foreign body or an extruded intervertebral mass. Other causes are: vessels of a considerable size, irritated pudendal nerve, different causes of sciatica. Particular sciatica is described due to different tumors arisen in the gynecology area.
Keywords: piriformis muscle, pudendal nerve, sciatic nerve

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:99

Titel:The topography and shape of the mandibular canal in edentulous patients

Autoren: Didilescu A.(1),Rusu M.(2),Sandulescu M.(3),Ciuluvica R.(2),

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Abstract:
Aims. To examine the topography of the mandibular canal (MC) in vertical and horizontal dimensions, as well as its shape variations, in edentulous patients. Material and Methods. Twenty patients were analyzed using computer tomography. The distances from the MC to the buccal and lingual compact plates, as well as to the alveolar crest and inferior border of the mandible, were assessed in the molar and premolar regions. Results. The mean distance from the MC to the lingual compact plate was similar in the two regions (3.11.3mm and 31.3mm, respectively), whilst the same distance measured to the buccal compact plate varied from 4.61.3mm in the molar area to 2.81.2mm in the premolar area. When comparing the distances to the alveolar crest, MC was closer to this in the molar area (6.72.6mm) than in the premolar area (9.23.7mm). The mean distance between the MC and the inferior border of the mandible was slightly higher in the premolar region (7.51.4mm), when compared to that measured in the molar region (7.31.8mm). The MC was rather tall and narrow in the molar region, and it became almost circular in the premolar area. A strong positive correlation between the vertical and horizontal diameters of the MC was found in the molar area ($r=0.72$, $p=0.0003$, $n=20$). Conclusion. In edentulous patients, the distances from the MC to the lingual compact plate and mandibular inferior border were comparable in the two regions, while the other evaluations were different.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:100

Titel:Morphometric anatomy of the relationships between the upper first molar and maxillary sinus floor

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Abstract:
A good knowledge of the relationships between the upper posterior teeth and the maxillary sinus floor is essential for dental practice. The aim of the study was to assess the relationships between the upper first molar and the maxillary sinus floor in a group of patients referred to a dental clinic. Material and methods: Ninety-seven patients were recruited for this study. The distances between the examined roots (mesio-buccal, disto-buccal and palatal) as well as furcations, and the sinus floor, were evaluated using cone beam computed tomography, and grouped as follows: class 0: distance (d)=0 mm; class 1: 0 mm<d<2 mm; class 2: 2 mm<= d<4 mm; class 3: 4 mm<=d< 6 mm; class 4: 6 mm<=d. The Spearman's Rank Correlation coefficient was used to test the univariate associations between furcation-sinus floor distance and each root class. Results: The prevalence of class 0 was the highest for the palatal root (44.33%), followed in descending order by mesio-buccal (40.21%), and distobuccal (38.14%) roots. The highest correlation coefficient was recorded when assessing the relationship between furcation-sinus floor distance and palatal root classes (rho=0.66, p<0.001, n=97). Conclusions: Altogether, the results suggest that the palatal root of the upper first molar not only had the closest relationship with the sinus floor, but also proved to be the best predictor for the furcation-sinus floor distance. The clinician should be aware of the anatomical and morphological details of this root, especially when taking surgical decisions.

Kategorie: Poster

Rubrik: 5.Experimental Morphology
Abstract Nr.:101

Titel:The biological aspects of the soft tissue around a dental implant: a study on dogs

Autoren: Nimigean V.(1),Nimigean V.(2),Moraru S.(2),

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Abstract:
Objectives: study of the soft tissue around a dental implant placed in the lateral maxillary zone with immediately and delayed loading.
Material and methods: six middle size dogs, commune race, canis familiaris were used in the study.Three implants were placed after the extraction of the first three premolars, at the same time with teeth removal, or after 80-90 days. Some implants were immediately loaded and some implants were delayed loaded. After three months of loading the animals were euthanized and samples were prepared for the histological study of the implant-gum interface.
Results:
It was described a collagen rich zone of connective tissue adjacent to the dental implant, with fibroblasts oriented parallel to the long axis of the implant, extending from the periostium crest toward the peri-implant mucosa.
We described a non inflamed collagen rich connective tissue region 1-1.5mm wide adjacent to the dental implant surface and the interaction between collagen and the titanium prevented further apical epithelial proliferation.
No vascular plexus, or high density venules are observed in the interface between the implant and the connective tissue.
Decisive in defects closing is the epithelium migration which contributes to the re-establishment of the superficial structures integrity and to the proliferation of neoformed capillaries.
Conclusions:
An appreciation of these studies and a thorough understanding of the microstructure of dental implant soft tissue interface will aid the clinician in choosing a dental implant system and improve the clinical longevity of the dental implant.
Key words: dental implant, soft tissue, interface.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:102

Titel:Alveolar maxillary defect: clinical management

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Abstract:
Anatomical variations existing in the alveolar process morphology may contribute to failure of the root canal therapy. Knowledge of the alveolar defects is an extremely important issue in planning and performing endodontic therapy.

This work reports the case of a 14 year old girl who presented with the apical third of the buccal first superior right premolar root penetrating the external buccal alveolar compacta and alveolar mucosa. In this case the clinical diagnosis was chronical apical periodontitis.
Using computer tomography we establishead the bone volume of the interested area, in order to find out if this condition was a result of the endodontic pathology or appeared on a bone thickness deficiency. A bone thickness defect was determined through clinical and imagistic data correlations.
Root canal and surgical therapy case management to preserve the tooth are described. Postoperative evolution was favorable while the alveolar and mucosal defect were corrected through tissue regeneration and remodeling.
Keywords: alveolar processes, alveolar maxillary defect, oral surgery procedures.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:103

Titel:Morphological analysis of the palatine ridges

Autoren: Sapte E.(1),Stefanescu C.(1),

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Abstract:
The aim of this study is to describe the shape and the biometrical characteristics of the palatine ridges, analyzing their prevalence in a sample of 72 adult subjects, 64 were dentate subjects and 8 were totally edentate subjects.
We obtained casts, and the location of the palatine ridges was marked on the surface with a graphite soft pencil. Each cast was analyzed in terms of total number of ridges, primary, secondary and fragmented, shape, unification and direction.
In terms of total number of ridges, the smallest number of ridges was 6, and the largest 18. A feature of the dentate group was the asymmetry of the ridges; even if they are in even number they do not form pairs. Among the total number of dentate samples, only 12 showed paired ridges. Among the non-dentate group we noticed that the total number of ridges is higher in females than in males. The length of the palatine ridges is mainly of a primary type, followed by the secondary type and the fragmentary one. Concerning the shape of the palatine rugae, we noticed, among all the age groups that the linear ridges are predominant, followed by the wavy, curved, angular, punctiform and circular type. The only aspect that may differentiate them is the variety of shapes and their number, which gives them individuality.
The individuality of each ridge drawing is certain as long as we did not encounter identical model.Keywords: palarine ridges ,rugae, palatoscopy

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:104

Titel:Scapulohumeral joint ligaments- variability of morphofunctional parameters

Autoren: Sisu A.(1),Petrescu C.(1),Stana L.(1),Folescu R.(1),Pop E.(1),Motoc A.(1),

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Abstract:
Macroscopic dissection is performed for this study, using the delto pectoral approach and cutting the following muscles: deltoid, pectoralis major, coraco brachialis, biceps brachialis (short head), latissimus dorsi, teres major. It have been performed the following measurements: coraco humeral ligament, inferior gleno humeral ligament, apparent diameter of the humeral head, greater axis of the humeral head, greater and smaller axes of the glenoid cavity, and the distance between the two humeral insertions of the gleno humeral ligament and inferior coraco humeral ligament, the distance between the two glenoidal insertions of the two ligaments. Were successfully dissected the scapulo humeral joints of the 20 formalized bodies, 10 females and 10 males. The conclusion was that there was no difference between the size of the parameters of the right and left upper limbs. For each parameter there is an average value between the minimum and maximum. The coraco humeral ligament has an average length right / left = 3.8/4.0 cm; the inferior gleno humeral ligament has an average length right / left = 5.1/5.3 cm; the humeral insertion has an average size right / left of 5.4/5.6 cm; the glenoidal insertion has an average size right / left = 4.5/4.7 cm. The study highlights a set of intercorrelated average values.
Keywords: ligament, upper limb, scapulo humeral joint.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:105

Titel:Synovial cyst in popliteal fossa- incidence, clinical anatomy and differential diagnosis

Autoren: Stana L.(1),Sisu A.(1),Moise M.(1),Folescu R.(1),Selaru M.(1),Motoc A.(1),

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Abstract:
The prevalence rate of popliteal cysts in adults was between 5 - 19% (according to a large series of knee MRI) children were 6.3% (according to a study of child knee MRI. There are two age-incidence peaks observed in patients with politeal cysts - first one from 4.5 to 7 years and the other from 35 to 71 years. It can be classified anatomically and clinically as primary – there is no communication between the distension of the bursa and the knee joint, no associated knee lesionst, majority are seen in children; secondary – communicates freely between the gastrocnemius-semimembranosus bursa and the knee joint, almost all popliteal cysts are secondary. Patients with a synovial cyst had a higher incidence of medial meniscal tears, 17-61%, and of chondral lesions, 25-86%; tears of the lateral meniscus 26-37%, the lesion of the hyaline cartilage, until 90%. Synovial cysts are more frequent in patients with knee joint arthritis, in patients with high or moderate activity of the rheumatoid process, in the II and III anatomical stages and patients with knee arthrosis. Gout, hemophilia, lupus, psoriasis, septic arthritis, Reiter’s syndrome, trauma to the knee joint, represent disorders which could lead to form a synovial cyst. Differential diagnosis established by MRI or histological examination includes: tibial neuroma, leiomyoma, schwannoma, muscular tumors, thrombosis.
Keywords: synovial cyst, knee joint, cartilage, gastrocnemius muscle.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:106

Titel:Correlation between the ki 67 proliferation index and angiogenesis in endometrial cancer

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Abstract:
Angiogenesis is a process that occurs in 41 cases histopathological diagnosed with endometrial cancer of different stages. We have analyzed angiogenesis using immunohistochemical CD 34-staining of endothelial cells and quantitative assessment of proliferation index Ki67 after MIB 1 nuclear staining. Our results point out a positive correlation between the angiogenetic index the proliferation index KI67. In conclusion, the extension of endometrial cancer is in correlation with the angiogenesis, as a supporting factor for tumor extension and is important to stress upon the role of angiogenetic inhibitors in controlling the tumoral growth and invasion.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:107

Titel:The immunohistochemical study of the vascular structures in the malignant tumoral pathology of the uterus.

Autoren: Radu A.(1),Frandes C.(1),

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Abstract:
INTRODUCTION: Angiogenesis is a sinequanon factor in tumor growth and the emergence of metastases. The process could be the result of an imbalance between vascular factors of adjustment of the host cells and those of the tumor cells.
MATERIAL AND METHOD: Development of immunomarking techniques has led to the diagnosis in the early stages of malignant tumours. The hereby study covers a number of 37 patients presenting endometrioid adenocarcinoma of the uterus and 29 patients previously diagnosed with endocervical adenocarcinoma. In this study, the immunohistochemical marking was made using the monoclonal antibody, anti–CD34.
RESULTS AND DISCUSSIONS: Tumor vascularisation contributes to cancer staging, useful in establishing a prognosis.
The new formed vessels present their own particularities. For example, neoformation vessels do not have muscular layer, this being the explanation for the impossibility of vascular contraction.
The study of microvascularisation based on CD34 immunomarcking has certain limitations due to the heterogeneity of the endothelial cells that will be marked, not only newly formed vessels will be marked but also isolated endothelial cells.
CD34 immunomarcking, despite having certain limitations, showed statistically significant variability.
CONCLUSIONS: Angiogenesis plays a primordial role in the growth and progression of malignant tumors. Anti-CD34 marking analysis reveals a greater number of vascular structures in normal lining compared to the neoplastic malignant lining, which is why the isolated analysis of the markers is not relevant and can lead to diagnostic errors.
Key words: endometrium, anti-CD34, vascular density.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:108

Titel:Role of scintigraphy in diagnosis of the endometrial cancer

Autoren: Fatu C.(1),Fatu I.(2),Fatu Vascu A.(3),Vascu M.(3),Haliciu Cefalan A.(1),Moscu M.(3),

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Abstract:
Scintigraphy is a new and useful method in early detecting of the endometrial cancer. Method is simple and consists in introducing the Tc-99 pyrophosphate in the brachial vein and its detection with the gamma-scintillator into the endometrium. In endometrial neoplasia the captation is higher, the test is highly sensitive and less expansive as cost than CT and IRM. We have studied 50 cases using that method. The cases were included in the studied with endometrial thickness more than 15 mm. After performing scintigraphy, 35 cases had a high iodine-captation than the 15 case with iodine capitation in low levels. In all the 50 cases the biopsic uterine curettage was subsequently performed. In 35 cases the histopathological findings confirmed the endometrial cancer, in concordance with the high iodine captation. In 15 cases histopathological examination diagnosed an endometrial hyperplasia of different stages, with low iodine-captation of the radiotracer. In conclusion, scintigraphy is a harmless, high sensitivity and low-cost method in early detection of endometrial cancer.

Kategorie: Poster

Rubrik:
Abstract Nr.:109

Titel:DNA preservation under experimental human tissue Mummification

Autoren: Shved N.(1), Haas C.(2), Warinner C.(1), Papageorgopoulou C.(1), Rühli F.(1), Zurich (Switzerland)

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Abstract:
Mummification can occur under a wide range of dessication or anoxic conditions, but only dessication generally preserves high quality ancient (a)DNA. We analyzed the degree of post-mortem DNA alterations in different tissues to improve the low knowledge of DNA degradation during salt mummification. A human lower limb amputated 24h post-mortem (approved by Ethics committee) was preserved by ancient Egyptian-like artificial mummification using natron and skeletal muscle and skin were sampled at days 0-322 *post mortem*. The level of nuclear and mitochondrial DNA (nDNA and mtDNA) preservation was assessed. PCR amplification of different fragment sizes of mtDNA and nDNA, sex identification, and autosomal chromosome genotyping with short tandem repeats (STR)-multiplex system and sequence analysis were undertaken. Our results indicate that salt dessication is an effective method for slowing DNA damage and improving long-term preservation of human tissues at the molecular level. Preservation was better for tissues in direct contact with natron salt, such as skin, most likely because these tissues were more efficiently dessicated than interior tissues, such as muscle. Genetic analysis also indicates that DNA damage was lower in skin than in muscle. In both skin and muscle, however, DNA preservation was observed to be excellent, with damage-free DNA fragments in excess of 4000bp, more than one year *post mortem.*

Supported by Swiss National Science Foundation (Nr. 325130_120662); Mäxi-Foundation

Kategorie: Poster