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Hamburg
March 26 – 29, 2010

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Abstracts

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Abstract Nr.:1

Titel: Differential effects of octopamine and tyramine on the central pattern generator for manduca flight

Autoren: Vierk R.(1),Pflüger H.(2),Duch C.(3),

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Abstract:
The biogenic amine octopamine (OA) is often regarded as the invertebrate analogue of epinephrine in vertebrates. In insects, effects of OA range from modulating neuromuscular transmission, sensitizing sensory neurons, altering muscle contraction kinetics, affecting states of aggression, mediating appetitive learning, influencing metabolism, as well as inducing motor output from central pattern generators. The biological precursor of OA is tyramine (TA), so that every octopaminergic neuron could potentially also release TA. Recently, TA receptors have been identified in the CNS of several insect species, and it has been demonstrated that both, OA and TA have distinct effects on various locomotor behaviors of invertebrates. However, it is not clear what aspects of the motor system are affected by TA. In this study, we tested whether TA affected the central pattern generating (CPG) for flight in the moth, Manduca sexta. We use a well established isolated ventral nerve cord preparation to induce fictive flight motor output in the absence of sensory feedback by bath application of the OA agonist chlordimeform to test potential effects of TA on the flight CPG by pharmacological manipulations. The results demonstrate that OA is sufficient to induce fictive flight, but TA is not. However, during fictive flight bath application of TA selectively increases synaptic drive to depressor motoneurons and increases the number of depressor spikes during each cycle. Conversely, blocking TA receptors selectively reduces drive to depressor motoneurons and causes spike failures. This demonstrates that TA modulates the depressor part of the Manduca flight CPG.

Kategorie: Poster

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

Titel: Identification of potential n-terminal binding partners of hcn1-channels by y2h-analysis

Autoren: Wilkars W.(1),Mohr E.(1),Bender R.(1),

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Abstract:
Purpose: HCN1 channels are important regulators of the neuronal membrane potential. Depending on the type of neuron that expresses the channels, they can be active at either dendritic, somatic or axonal locations. The mechanisms that govern this neuron-specific HCN1-trafficking to different compartments are unknown. However, data from the related potassium channel family suggest that specific binding proteins (beta-subunits), associated with the HCN1 N-terminus, could be involved. We performed a Yeast-Two-Hybrid-Analysis (Y2H), using HCN1 N-terminus as a bait, in order to identify potential candidates.
Methods: The Y2H-screen was performed with the Matchmaker Yeast Two Hybrid System (Clontech), using a human cDNA library encoding putative prey-proteins. Positive plasmids were extracted from yeast, sequenced and further tested to verify their interaction with the bait.
Results: We found 32 proteins interacting with the HCN1 N-terminal sequence. Many turned out to be members of intracellular signal cascades (4) or proteins associated with the cytoskeleton (5). In addition, several proteins with so far unknown function were identified.
Conclusions: Our search for N-terminal binding partners of HCN1 channels using Y2H-analysis revealed a considerable number of potential candidates. Currently, studies are on the way to further characterize the type of interaction of these proteins with HCN1 and to determine whether they may play a role in the regulation of HCN1 channel trafficking.

Kategorie: Poster

Rubrik: 1.Main Topic I
Abstract Nr.:3

Titel: Developmental and activity-dependent changes of adam22 expression in dentate gyrus granule cells

Autoren: Kohrs S.(1),Klapetke H.(1),Wilkars W.(1),Bender R.(1),

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Abstract:
Purpose: Perforant path–granule cell (PP-GC) synapses show a high degree of plasticity which is mediated by pre- and postsynaptic mechanisms. On the postsynaptic side, A-Disintegrine-And-Metalloproteinase-22 (ADAM22), a transmembrane protein that localizes to the postsynaptic density and serves as a receptor for presynaptic proteins, may be important. In order to further characterize its role, we studied the precise localization, development and activity-dependent regulation of ADAM22-expression in GCs.
Methods: Time course of ADAM22-expression was determined with immunohistochemistry using a commercially available antibody on sections from Wistar rats of different ages (P10, P17, P50). The effect of neuronal activity on ADAM-expression was studied in organotypic entorhinohippocampal slice cultures. Network activity was induced or reduced with kainic acid or TTX, respectively. Effect of treatment on expression was analyzed with an image analysis system.
Results: a) ADAM22 was specifically found in the middle molecular layer, the termination zone of perforant path fibers from medial entorhinal cortex. Transection of the perforant path in vitro did not abolish expression, suggesting that it is postsynaptic. b) Expression increased gradually with maturation and was stimulated (in vitro) when neuronal activity was induced.
Conclusions: The highly specific location in GCs and, particularly, the regulation of its expression by neuronal activity support the suggestion that ADAM22 may play an important role in mediating PP-GC synaptic plasticity.

Kategorie: Poster

Rubrik: 1.Main Topic I
Abstract 4

Titel: Postsynaptic Neuroligin-1 regulates presynaptic maturation

Autoren: Nina Wittenmayer[a], Kurt Gottmann[b] and Thomas Dresbach[a]

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Abstract:
Presynaptic boutons pass through several stages of structural and functional development before they form a mature presynaptic compartment. Immature presynaptic boutons differ from mature ones by several characteristics including the dependence on F-actin, the number of SVs per boutons undergoing exocytosis, the exocytosis rate and the responsiveness of the exocytotic machinery to stimulation. Postsynaptic adhesion molecules called Neuroligins play important roles in synapse formation and development.
Here we show that Neuroligin-1 regulates key steps of presynaptic maturation. Furthermore, knock down of the Neuroligin-interacting postsynaptic scaffolding protein S-SCAM/MAGI-2 in primary hippocampal neurons inhibited the effects of Neuroligin-1 on presynaptic biogenesis, implicating S-SCAM in Neuroligin-driven transsynaptic signalling.

Kategorie: Poster

Rubrik: 1.Main Topic I
Abstract Nr.:5

Titel: Functional interaction between formyl peptide receptor like 1 (fprl1) and receptor for advanced glycation end products (rage) in the amyloid-ß1-42-induced signal transduction in glial cells

Autoren: Slowik A.(1),Mohr F.(1),Wruck C.(1),Pufe T.(1),Brandenburg L.(1),

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Abstract:
Recent studies suggest that the chemotactic G-protein-coupled-receptor (GPCR) formyl-peptide-receptor-like-1 (FPRL1) or the receptor-for-advanced-glycation-end-products (RAGE) play an essential role in the inflammatory response of host defence mechanisms and neurodegenerative disorders such as Alzheimer's disease (AD).
Therefore, we analyzed the involvement of FPRL1 and RAGE in amyloid-ß1-42 (Aß1-42) induced signalling by extracellular signal regulated kinase 1/2 (ERK1/2) phosphorylation and cAMP level measurement in glial cells (microglia and astrocytes) and transfected HEK 293 cells. FPRL1 was inhibited by the specific antagonist WRW4 and by an inactive receptor variant ΔRAGE, lacking the transmembrane and intracytoplasmatic domains. Receptor deactivation by antagonists or the use of ΔRAGE verified the importance of FPRL1 for Aß1-42 mediated signal transduction by extracellular-signal regulated kinases 1/2 phoshorylation and cAMP level measurement in glial cells. In addition a possible physical interaction between FPRL1 and RAGE can be shown with coimmunoprecipitation and fluorescence microscopy measurements.
These results suggest that FPRL1 plays a pivotal role for Aß1-42 induced signal transduction in glial cells and the interaction with RAGE could explain broad ligand spectrum of formyl peptide receptors.

Kategorie: Poster

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

Titel: Conditional knock out of the type 2 tgf - beta receptor in neurons of the mouse retina results in increased ontogenetic cell death

Autoren: Braunger B. M.(1),Pielmeier S. M.(1),Tamm E. R.(1),

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Abstract:
Purpose: Combined TGF-beta 2/TGF-beta 3 deficient mice show a reduction in apoptotic cell death in the embryonic retina indicating a pro-apoptotic role of TGF-beta signaling (Dünker and Krieglstein CTR 2003). Since ontogenetic neuronal cell death in the mouse retina has its peak after birth between postnatal days (P) 4 to 12 (Young JCN 1984), and TGF-beta 2/TGF-beta 3 deficient mice die at birth, we developed an alternative animal model to investigate the role of TGF-beta signaling during the peak of ontogenetic cell death in the postnatal mouse retina.

Methods: Floxed TGFbr2 mice in which LoxP sites had been introduced in the coding sequences of the gene for type 2 TGF-beta receptor (TGFbr2) were crossed with alpha-Cre mice expressing Cre recombinase in retinal neurons under control of the alpha- enhancer of the Pax6 promoter. Apoptotic cell death in the retina was analyzed by TUNEL labeling of retinal neurons at P 5, 7 and 9.

Results: Immunohistochemistry of phosphorylated Smad2/3 (pSmad) in wild-type littermates showed immunoreactivity in nuclei of retinal ganglion cells indicating activated TGF-beta signaling. In contrast, immunoreactivity for pSmad2/3 was dramatically reduced in retinal ganglion cells of TGFbr2flox/flox/alpha-Cre mice. TUNEL analysis at P7 showed significant more TUNEL positive cells in the retina of TGFbr2flox/flox/alpha-Cre mice when compared to their wild-type littermates.

Conclusion: TGF-beta signaling seems to protect retinal neurons from apoptotic cell death in postnatal life, rather than promoting it, indicating different roles of TGF-beta signaling during embryonic and postnatal life.

Kategorie: Poster

Rubrik: 1.Main Topic I
Abstract Nr.:7

Titel: Effect of estrogen on mitochondria in the mouse spinal cord

Autoren: Johann S.(1),Beyer C.(2),Arnold S.(2),

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Abstract:
Purpose: The neurodegenerative disorder amyotrophic lateral sclerosis (ALS) is characterized by the degeneration of upper and lower motor neurons in the cortex, brainstem, and spinal cord. Gender is a well-known risk factor for ALS with a male/female ratio of 2:1. The involvement of sex hormones in ALS is also suggested by the observation that woman developing ALS show a late onset of menarche and an early beginning of menopause. Mitochondrial dysfunction often accompanies neurodegenerative diseases and might also be causative for ALS. Thus, therapeutic targeting of mitochondria and stabilization of mitochondrial energy metabolism appears to be essential for neuroprotection in ALS.
Methods: Regulation of transcription level of mitochondria-encoded subunits of respiratory chain complexes by estrogen in cultured spinal cord neurons and astrocytes and in in vivo experiments was analyzed by RT-PCR. Additionally intracellular ATP content was determined in cell culture.
Results: Estrogen increased the expression of selective mitochondrial respiratory chain enzyme subunits in spinal cord neurons but not in astrocytes. These data were verified by measuring mitochondrial energy production. These data were approved in in situ spinal cord experiments. The use of selective estrogen receptor (ER) agonists revealed that estrogen-induced transcription is differently regulated by ER subtypes.
Conclusions: Our data point at a stimulatory effect of estrogen on mitochondrial biogenesis and activity suggesting a putative protective role of this hormone during neurodegeneration. The potency of steroid-mediated neuroprotection in the spinal cord remains needs to be further studied in animal models such as ALS and other motor neuron degeneration mouse models.

Kategorie: Poster

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

Titel: Cxcr7, an alternative receptor for cxcl12 / sdf-1, is expressed in human glioma cells and mediates anti-apoptotic effects

Autoren: Hattermann K.(1),Held-Feindt J.(2),Lucius R.(1),Mentlein R.(1),

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Abstract:
Purpose: The chemokine CXCL12 / SDF-1 (stromal cell-derived factor) and its receptor CXCR4 play a major role in tumor invasion, proliferation and metastasis. Recently, CXCR7 was identified as a novel receptor for CXCL12 and CXCL11 / I-TAC. Since both chemokines are expressed abundantly in human astrocytomas and glioblastomas, we investigated occurrence and function of both receptors in astroglial tumors.
Methods: Quantitative RT-PCR, fluorescence IHC, Western blot and fluorescence ICC for expression analysis in solid human tissue samples and cell lines, Western blot and functional assays to investigate signal transduction, apoptosis and functional role.
Results: In situ, CXCR7 is highly expressed on tumor endothelial, microglial and glioma cells whereas CXCR4 expression is much more restricted. CXCR7-mRNA expression in homogenates increased with malignancy. In vitro, CXCR7 was highly expressed in all glioma cell lines investigated whereas CXCR4 was only scarcely transcribed on 1 of 8 lines. Stimulation of CXCR7-positive glioma cells (CXCR4- and CXCR3-negative) by CXCL12 induced transient phosphorylation of extracellular-signal regulated kinases Erk1/2 indicating that the receptor is functionally active. Whereas proliferation and migration were not influenced, CXCL12 stimulation prevented Camptothecin- and Temozolomide-induced apoptosis. The selective CXCR7-antagonist CCX733 reduced the anti-apoptotic effects of CXCL12.
Conclusion: Thus, CXCR7 is a highly expressed functional receptor for CXCL12 in astrocytomas / gliomas and mediates resistance to apoptosis.

Kategorie: Poster

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

Titel: Nkx2.1 transcription factor is necessary for the proper development and maintenance of hypothalamic neurons within the arcuate nucleus

Autoren: Kretz O.(1),Magno L.(2),Loreth D.(1),Monyer H.(3),Naumann T.(2),

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Abstract:
The transcription factor Nkx2.1 is expressed during brain development in proliferative regions which give rise to several types of telencephalic and diencephalic neurons, including GABAergic and cholinergic subtypes. Here we show that Nkx2.1 expression persist in several hypothalamic subregions including the paraventricular (PVN) and the arcuate (ARN) nucleus after birth. In these nuclei Nkx2.1+ neurons show a strong overlap with GAD67 expression. We generated conditional Nkx2.1 knockout mice with the cre-loxP system using a GAD67-cre line. In the telencephalon the prenatal loss of Nkx2.1 in GAD+ neurons strongly affects the number of parvalbumin+ cells. Surprisingly, also the amount of basal forebrain cholinergic neurons is reduced in these mutants. As a consequence, a reduction of cholinergic fibers innervating target structures including the hypothalamus is observed. Thus, impairment of a proper hypothalamic function might be due to two different effects in the mutants: (1) impairment of cholinergic innervation of the hypothalamus(2), loss of GABAergic neurons in the hypothalamus itself. We observed a disturbance of lung maturation in the mutants pointing to a lowered activation of the hypothalamic-pituitary-adrenal axis due to an impaired cholinergic innervation of the PVN. In addition, mutants show a strong reduction in the number of GABAergic neurons especially in the ARN. Since GABAergic neurons within the ARN co-express orexigenic factors NPY and agouti-related peptide this would explain the reduced postnatal bodyweigh gain in GADcre-Nkx2.1 mutants. Our findings suggest that proper development and function of PVN and ARN hypothalamic neurons are dependent on the expression of Nkx2.1.

Kategorie: Poster

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

Titel: Chemokine / chemokine receptor regulation by differentiation of glioblastoma-derived stem-like cells

Autoren: Held-Feindt J.(1),Mentlein R.(2),Hattermann K.(2),

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Abstract:
Purpose: According to the cancer stem-cell hypothesis, tumors arise from a small number of self-renewing stem-like cells that are responsible for cancer progression and recurrence. In glioblastoma multiforme (GBM), the most malignant glial tumor, stem-like cells can be isolated and then differentiated. Since chemokines and their receptors, e.g. the chemokine CXCL12 / SDF-1 (stromal cell-derived factor) and its receptor CXCR4, play a major role in brain development and in progression of peripheral tumors, we investigated their expression in GBM stem-like cells (GSCs) and their regulation upon differentiation.
Methods: GSCs were isolated from solid GBM samples by dissociation and cultivation in defined neural stem-cell medium containing growth factors (EGF, bFGF), and differentiated with 10% FCS. Expression was analyzed by quantitative RT-PCR and immunocytochemistry.
Results: GSCs cultures formed floating or semi-adherent aggregates (gliomaspheres) and were immunopositive for neural stem-cell markers, e.g. CD133, Nestin, Musashi, Sox2. Upon application of 10% FCS, GSCs differentiated to adherent cells which were partly immunopositive for glial fibrilary acidic protein (GFAP, astroglial marker), myelin basic protein (MBP, oligodendroglial marker), beta III tubulin (neuronal marker). GSCs expressed high levels of CXCR4 that is known to mediate chemotaxis and proliferation, differentiation switched to the alternative CXCL12-receptor CXCR7 that is anti-apoptotic. It also induced CXCL12 that enables paracrine anti-apoptotic loop.
Conclusion: Chemokines and their receptors are both expressed by glioblastoma-derived stem-like cells and more differentiated tumor cells. However, in stem-like cells expression patterns favor attraction and proliferation, whereas they mediate survival / resistance to apotosis in differentiated cells.

Kategorie: Poster

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

Titel: Changes in behaviour of hemiparkinsonian rats after intrastriatal injection of botulinum neurotoxin a

Autoren: Antipova V.(1),Hawlitschka A.(2),Dräger D.(1),Benecke R.(3),Mix E.(3),Wree A.(1),

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Abstract:
To test the potential of an intracerebral botulinum neurotoxin A (BoNT) treatment as a therapeutic option of Parkinson's disease (PD) we have investigated the consequences of intrastriatal injections of BoNT on motor functions in an animal model of PD. The rational of the idea to use BoNT is to decrease the hypercholinism of the striatum in PD by local injection. Adult Wistar rats, which had received 6-hydroxydopamine (6-OHDA) in the right medial forebrain bundle (Hemiparkinson model) 4 weeks before BoNT-treatment and healthy control rats were injected with 100 pg, 1 ng or 2 ng BoNT into the right striatum. Animal behaviour due to 6-OHDA and/ or BoNT were investigated by following tests: 1) apomorphine induced rotations, 2) cylinder test (forelimb preference), 3) activity test in open field, and 4) RotaRod test.
Hemiparkinsonian rats showed more than 8 apomorphine induced rotations per minute in anticlockwise direction. These rotations were completely abolished by ipsilateral injection of 1 ng and 2 ng BoNT, the effect lasting for at least 3 months. Six months after BoNT application a reduction of the BoNT effect in hemiparkinsonian rats occurred and a reappearance of pathological apomorphine rotations. However, BoNT injection did not alter the outcome of the cylinder test, the open field activity and the RotaRod tests during 6 months post injection significantly.
In conclusion, intrastriatal applicated BoNT can counteract at least some consequences of experimental PD induced missregulation of basal ganglia circuits.

Kategorie: Poster

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

Titel: Immunohistochemical studies on rat adenohypophysis: ii. cell populations intensely immunopositive to ezrin

Autoren: Pócsai K.(1),Bagyura Z.(2),Kálmán M.(1),

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Abstract:
The ezrin, radixin, and moesin (ERM proteins) are linkers between the plasma membrane and actin. They have been implicated in the epithelial morphogenesis, cytoplasm division, adhesion, integrity, modification of cell shape, microvilli formation, and segregation of the apical and basolateral cell domains. They may interact with the dystrophin-dystroglycan complex (DGC). In the present study the presence and distribution of ezrin, and its co-localisations with glia markers and components of DGC were investigated in the adenohypophysis. Rats were transcardially perfused with 4% paraformaldehyde in 0.1 M phosphate buffer (pH 7.4) in sublethal ether narcosis. Hypohyses were postfixed in the same solution for overnight, embedded into agarose, and sectioned with Vibratome in the horizontal plane. The immunoreactions were performed on floating sections and visualized with fluorescent secondary antibodies. Two cell populations were intensely immunoreactive to ezrin: the cell groups of the intermediate lobe and irregular, scattered cells in the distal part, mainly at its contacts to the intermediate lobe. These latter cells proved also to be immunoreactive to glial markers glutamine synthetase and S100-protein but not GFAP. They were supposed to be folliculo-stellate cells. The cells of the intermediate lobe were still immunoreactive to alpha1-dystrobrevin and alpha1-syntrophin absent from the folliculo-stellate cells. In the intermediate lobe cells displayed no immunoreactivity to glutamine synthetase. Dystroglycan and utrophin were detected only along their contours. However, immunoreaction against S100 protein stained them well. The functional importance of ezrin in these localizations remained to be investigated, as well as its ultrastructural localizations. Funded by OTKA 60930/2006.

Kategorie: Poster

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

Titel: Morphologic and immunohistochemical analysis of the mouse intrinsic cardiac nervous system

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

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Abstract:
Purpose: To determine the morphologic and immunohistochemical patterns of the epicardiac ganglionated neural plexus (EGNP) on the whole-mounted (non-sectioned) mouse hearts.
Methods: Quantitatively and qualitatively, the distribution of the cholinergic and adrenergic neural components was investigated using both the double and triple labeling of the general (protein gene product 9.5, PGP 9.5), cholinergic (choline acetyltransferase, ChAT) and adrenergic (tyrosine hydroxylase, TH) neuronal markers on whole-mount preparations of the mouse heart.
Results: Intrinsic cardiac neurons were revealed only on the heart (atrial) base and they were mostly concentrated near the inferior vena cava on the right atrium and near the pulmonary veins on the left atrium. The ganglion number per one mouse heart was 19 ± 3. The approximate number of the epicardiac neurons was 1082 ± 160. Most neuronal somata expressed ChAT immunoreactivity (IR) suggesting that 83% neurons were cholinergic. We found that 3.5% neuronal somata expressed exceptionally TH-IR and 13.5% of the ganglionic cells are bi-phenotypic ones, i.e. they were IR for ChAT and TH. Strong staining for ChAT was observed in the axonal varicosities around the postganglionic ChAT-IR neurons. The plentiful ChAT-IR and TH-IR nerve fibers were identified within both the atrial and ventricular EGNP, but the predominance of TH-IR nerve fibers on the left dorsal and ventral atrial regions as well as the predominance of ChAT-IR fibers in the sinoatrial nodal region were evident.
Conclusions: (1) In general, sympathetic and parasympathetic axons access the EGNP and distribute within it as the mixed nerve fibers, bundles and nerves; (2) there are symphatetic, parasympathetic and bi-phenotypic neurons in the mouse EGNP.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:14

Titel: Deletion of the complete neurexin 2 gene causes altered synaptic plasticity in mice

Autoren: Born G.(1),Langhorst H.(1),Niesmann K.(1),Weiqi Z.(2),Missler M.(1),

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Abstract:
Purpose: Investigating the functional effects of the first combined deletion of alpha- and beta-isoforms of neurexin 2 on synaptic transmission.
Methods: A novel knockout mouse line was characterised for basal synaptic transmission, short term-plasticity and spontaneous activity by whole-cell voltage clamp recordings in acute slices of neocortex and brainstem. In addition, synapse formation was quantitatively analysed in primary hippocampal neurons, using various pre- and postsynaptic markers.
Results: The comparison of wild-type and neurexin 2 alpha and beta knockout neurons showed no significant differences in evoked EPSCs and IPSCs, however, the frequency of mEPSCs and mIPSCs was reduced in mutant mice. While both control and KO mice showed paired-pulse depression during recordings of IPSCs as expected, the paired stimuli failed to induce any facilitation during recordings of EPSCs in mutant neurons. In contrast to the short-term plasticity, synapse formation as such was not impaired in the absence of neurexin 2.
Conclusions: Our data demonstrate that the impairment of only one neurexin gene is sufficient to produce significant defects in synaptic transmission, supporting the view that single-gene mutations in patients may result in cognitive diseases such as autism spectrum disorders (ASD). Our analysis also supports the view that the common mechanisms in ASDs are related to changes in the excitatory/inhibitory balance and important forms of synaptic plasticity in relevant brain areas.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:15

Titel: Localization of vasopressin-receptor subtype v1 in ocular tissues of different species: first results

Autoren: Schrödl F.(1),Bogner B.(2),Runge C.(2),Strohmaier C.(2),Brandtner H.(2),Reitsamer H.(2),

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Abstract:
Purpose: Ocular blood flow and aqueous humor dynamics are essential for the eye's homeostasis, but regulatory mechanisms are poorly understood. Physiological experiments revealed that vasopressin causes a dose-dependent decrease in ocular blood flow, and also a reduction of aqueous flow at low-dose application. Target tissues of vasopressin action in the eye have not been identified so far. Here, we screen for vasopressin receptor subtype V1 (V1a) in eyes of different species.
Methods: Eyes of rabbit and rat as well as human ciliary body were prepared for V1-receptor immunohistochemistry, followed by documentation with confocal laser-scanning microscopy.
Results: A strong V1-immunoreactivity was detected in ocular blood vessels (iris/ciliary body/choroid) of rabbit and rat. The ciliary body in human showed a clear immunoreactivity at the basal side of the non-pigmented epithelium (NPE), whereas in rat V1-receptors were found throughout the NPE without topographical preference. Immunoreactivity was absent in rabbit NPE, but detected throughout the pigmented epithelium.
Conclusions: V1-receptors on ocular blood vessels confirm the involvement of vasopressin-mediated vasoconstriction, as suggested by the functional data. The presence of V1-receptors in the ciliary epithelium indicates that secretion by the ciliary epithelium is also affected by vasopressin, as predicted by the change in aqueous flow. However, species differences in the distribution of V1-receptors in the ciliary body have to be considered. Further studies are required to investigate the participation of other vasopressin receptors subtypes in the regulation of blood flow and secretory mechanisms in the eye.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:16

Titel: Histologicaly profile of the brain arteries and the relationship with the aneurysm

Autoren: Dinulescu D.(1),Maghiar T.(2),Pop O.(3),

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Abstract:
The brain aneurism represent a desease with fast evolution and limited treatment possibilities since the moment it got broken.
Histopatological analysis was realised on two groups of exeresis pieces resulted from deadbody from Clinical Hospital of Oradea and Anathomy Department from Medicine Faculty of Oradea.
We have studied 39 Willis poligons that used for the pariethal morfological microscopic analysis.
Report estimation between smooth muscular tissue and conjunctive tissue, also the estimation about the conjunctive fiber types found in the structure of the medium tunic in the brain arteries, represents a predictible factor for the aneurism pathology.
The brain arteries can be split into 3 groups, based on the pariethal structural composition, with high, medium and low risks for the aparition of an aneurism.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:17

Titel: Reelin effects on process differentiation of hippocampal neurons in vitro

Autoren: Meseke M.(1),Trinkmann A.(1),Huber C.(1),Förster E.(2),

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Abstract:
During cortical development the positioning of radially migrating neurons is controlled by the glycoprotein reelin. In the reeler mutant not expressing Reelin, neurons fail to migrate to their proper positions. In addition, numerous malpositioned neurons have lost their correct process orientation. How Reelin interferes with the cytoskeletal dynamics of migrating and differentiating neurons is poorly understood. Recently, it has been shown that Reelin induces phosphorylation of the actin associated protein cofilin, suggesting a stabilizing effect on the actin cytoskeleton in the leading processes of migrating neurons by (Chai et al., 2009). Here we used dissociated hippocampal neurons to study Reelin effects on process differentiation in more detail. Our results suggest that dissociated hippocampal neurons are a suitable model to characterize Reelin effects on the cytoskeletal dynamics of differentiating neurons. This work was supported by DFG FO 223/6-1
Ref.: Chai, Förster et al.(2009) J. Neurosci. 29, 288-99.

Kategorie: Poster

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

Titel:Histological analysis of cerebral artery about brain aneurysms

Autoren: Dinulescu D.(1),Maghiar T.(1),Pop O.(1),Sabau M.(2),Frandes C.(3),

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Abstract:
Propose: cerebral aneurysm represent a rapidly evolving disease and limited treatment possibilities when it broke.
Method: histopathological analysis was performed on two batches of exeresis corps parts from Clinical County Hospital Oradea and Department of Anatomy of the Faculty of Medicine and Pharmacy Oradea. Were included in the study 39 of Willis polygons, which was analized from morphologicaly point of view .
Discusions: assessing the balance of smooth muscle tissue and connective tissue, and assessment type of connective fibers that meet in middle tunic structure of cerebral vessels may be a predictive factor for aneurysm pathology.
Conclusion: cerebral arteries splitting into three groups based on structural composition of the walls is a division into risk groups of aneurysm occurrence.

Kategorie: Poster

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

Titel: How do astrocytes respond to reelin in vitro?

Autoren: Baader B.(1),Meseke M.(1),Förster E.(2),

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Abstract:
The extracellular matrix protein Reelin controls neuronal positioning by acting on both radially migrating neurons and on radial glial cells required to guide neurons to their final destinations. Several authors have shown that component of the Reelin signalling cascade are present in radial glial cells. When radial neuronal migration is accomplished, radial glial cells transform into astrocytes. Based on the finding that GFAP-expressing cells with astrocytic morphology derived form hippocampal slice cultures preferentially settle on a Reelin coated substrate, we decided to study this astrocytic response to Reelin in more detail. Astrocyte cultures prepared from hippocampal tissue similarly responded to Reelin. We therefore used these astrocytic cultures as a model to analyze intracellular signalling in response to recombinant Reelin by western blotting. Initial data point to specific astrocytic responses to Reelin that differ from Reelin signalling in neurons. This work was supported by DFG FO 223/6-1

Kategorie: Poster

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

Titel: Immunohistochemical studies on rat adenohypophysis: i. components of basal lamina- and dystrophin-dystroglycan complex selective mark some cells of the pars distalis.

Autoren: Bagyura Z.(1),Pócsai K.(1),Kálmán M.(1),

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Abstract:
Beside integrins, the major laminin receptor system is the dystrophin-dystroglycan-complex (DGC), which interconnects cells and basal lamina, and anchors some signal transduction systems, water- and ion channels in the cell membrane facing the basal lamina. This system has been investigated mainly in muscles and brain. The present study extends the investigation on the adenohypophysis. Rats were transcardially perfused with 4% paraformaldehyde in 0.1 M phosphate buffer (pH 7.4) in sublethal ether narcosis. Hypophyses were postfixed in the same solution for overnight, embedded into agarose, and sectioned with Vibratome in the horizontal plane. The immunoreactions were performed on floating sections and visualized with fluorescent secondary antibodies. The following components were investigated: laminin, perlecan, agrin (of basal lamina) and beta-dystroglycan, utrophin, dystrophins, alpha1-syntrophin, alpha1-dystrobrevin (of DGC). In the distal part immunopositivities of laminin and beta-dystroglycan conspicuously delineated the walls of the sinusoids between the cell groups. Utrophin, dystrophins, agrin and perlecan were less intensely immunostained here, dystrobrevin and syntrophin not at all. Confocal microscope revealed that these components (for exemption the last two) labeled hypophyseal cells, too. Perlecan immunostaining labeled a large ovoid cell type adjacent to sinusoids. Dystroglycan and dystrophin labeled intensely some cells, weakly others. Laminin, utrophin and agrin were less distinguishing. Double labeling proved that the different immunostainings decorated leastways partially different cells. When detected in parallel with adenohypophyseal hormones, there was no consequent co-localisation between them. The importance of the immunopositivities to perlecan, etc. remains to be investigated, as well as their ultrastructural localizations. Funded by OTKA 60930/2006.

Kategorie: Poster

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

Titel: Central vestibular processing in rats neuronal tracing based on micro-pet studies

Autoren: Lange E.(1),Stier U.(1),Reuss S.(2),

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Abstract:
Purpose: Our previous study, using functional brain imaging showed thalamocortical connections involved in vestibular processing. The present investigations sought to further explore this pathway by anterograde and retrograde neuronal tracings.
Methods: Tracers were applied to certain brain regions identified in our previous 18F-FDG-PET study by vestibular stimulation as well as to the vestibular processing areas known from the literature.
Results: The anterograde tracer injected into the thalamic nucleus parafascicularis or the laterodorsal thalamic nucleus labelled terminal fields in the insular cortex and the primary somatosensory cortex. The retrograde tracing originating in primary somatosensory and cingulate cortex revealed labelling of neuronal somata in the latero-dorsal thalamic nucleus, the posterior thalamus and the ventral postero-lateral thalamus.
Conclusions: The neuronal tracings presented in this study strongly support the thalamocortical pathway to connect brain regions shown to process vestibular information. Our data indicate that the primary somatosensory, the insular and the cingulate cortex are integrated in vestibular processing regions of the cerebral cortex.

Kategorie: Poster

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

Titel: The morphological pattern of the marshall ligament in heart of humans, dogs and sheep

Autoren: Pauza D.(1),Saburkina I.(1),Rysevaite K.(1),Pauzaite J.(1),Pauziene N.(1),

Adressen: (1) Institute for Anatomy|Kaunas University of Medicine|Kaunas|Lithuania

Abstract:
Purpose. Since the left atrial neural fold or Marshall ligament (ML) is the most prominent and weighty neural pathway in many mammalians, this study was aimed to determine morpho-functional pattern of the ganglionated nerves extending within the human, canine and ovine ML.
Methods. The non-sectioned hearts were investigated applying a histochemical method for acetylcholinesterase and an imunohistochemistry for TH and ChAT on frozen sections of the human and canine ML.
Results. The ovine ML was supplied by nerves originated from the left thoracic sympathetic ganglia and parasympathetic fibers from the left vagal nerve. On avarege, the ML nerves were up to 0,01±0,001 mm2 in humans and 0,03±0,002 mm2 in dogs, and predominantly consisted of TH(+) fibers. The indirect negative correlation (R=-0,6; P<0,05) was determined between the diameter of nerve and density of ChAT(+) fibers in both species. In all species examined, the epicardiac ganglia associated anatomically with the ML were distributed scarcely along the whole ML and densely near the coronary sinus (CS). The cumulative areas of these ganglia were 0,47±0,02 mm2, 0,66±0,08 mm2, and 0,48±0,07 mm2, correspondingly.
Conclusions. (1) The human, canine and ovine ML involve mainly the sympathetic nerves while the parasympathetic ones are unitary; (2) the richest in epicardiac ganglia sites linked anatomically with the ML are concentrated near the CS; (3) the course of nerves, ganglion distribution and cumulative areas of ganglia associated with the ML may be considered as similar ones in humans, dogs and sheep.

Kategorie: Poster

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

Titel: Pathophysiology of urea in tear film

Autoren: Dunse M.(1),Friedrich P.(2),Andreas P.(1),Jäger K.(1),

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Abstract:
Several diseases that occur caused by L-arginine deficiency (diabetes, chronically kidney failure, psoriasis) are significantly associated with dry eye syndrome. In this context to this one important factor that has been neglected so far is the y+-transporter. In human- y+-transporter covers nearly 80% of the arginine transport carrying exclusively the cationic amino acids L-arginine, L-lysine and L-ornithine. y+-transporter is represented by cationic amino acid transporter proteins (CAT proteins). L-arginine is a precursor of the moistruizer urea. So far urea has been used to treat dry skin diseases. Although urea has also been shown to be part of the tear film it has yet not been paid attention there. Now we have first evidence that there is a direct correlation between dermatoses that are related to dry skin as well as dry eye syndrome. With regard to this a questionnaire based study revealed that 63 percent of patients (n > 300) with diagnosed dry eye suffer also from dry skin. Furthermore the detection of different enzymes in L-arginine urea metabolism was successful in tissue and cells of the ocular surface. These results and current literature lead to the assumption that the y+-transporter and urea is involved in dry eye pathologenesis. Therefore, our recent project aims to analyze, if the y+-transporter is involved in a causal regulation cascade of urea and dry eye syndrome to open new perspectives for the treatment of dry eye disease.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:24

Titel: Accurate muscle reinnervation and subsequent recovery of motor function after facial nerve injury require fibroblast growth factor 2 (fgf-2)

Autoren: Seitz M.(1),Seitz M.(1),Grosheva M.(2),Bendella H.(1),Angelova S.(2),Jungnickel J.(3),Grothe C.(3),Angelov D.(1),

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Abstract:
Purpose: The degree of functional recovery after facial nerve transection (FFA) correlates with the portion of poly-innervated neuromuscular junctions (NMJ). The terminal Schwann cells (TSC) grow out cell processes, attract axons and thus over bridge adjacent NMJ causing a pathological “kurzschluß”. To elucidate the molecular correlates of TSC sprouting, we decided to prove the role of FGF-2. This factor stimulates neurite outgrowth from the proximal stump of transected peripheral nerves in vivo, contributes to the enlargement of axon caliber and its local neutralization causes a significant decrease in the number of regenerating axons.
Methods: Following FFA, we studied (i) recovery of vibrissal motor performance (video-based motion analysis) and (ii) pattern of reinnervation in the levator labii superioris muscle (percentage of mono- or poly-innervated NMJ) in homozygous female adult mice constitutively deficient in the expression of FGF-2 (strain Fgf2<tm1Zllr>C57/Bl6, Jackson Laboratories). Wildtype (WT) littermates were used as controls.
Results: Two months after FFA the amplitude of vibrissae whisking in WT-mice was reduced to 49% (25±3°) of the value measured in intact WT-mice (51±8°). In the FGF-2-/- mice the amplitude was further reduced to 27% (16±4° vs. 59±7° in intact), i.e. recovery in FGF-2-/- -was poorer. Accordingly, whereas the proportion of polyinnervated NMJ in the WT-mice was 37±2% (0% in intact animals), the proportion of polyinnervated NMJ in the FGF-2-/- -mice was significantly higher (46±4% vs. 0% in the intact KO-mice).
Conclusions: These differences let us conclude that FGF-2 is necessary for re-establishment of proper target muscle reinnervation.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:25

Titel: Recovery of whisking function promoted by manual stimulation of the vibrissal muscles after facial nerve injury requires insulin-like growth factor 1 (igf-1)

Autoren: Kiryakova S.(1),Soehnchen J.(1),Grosheva M.(2),Schuetz U.(3),Dzhupanova R.(4),Marinova T.(4),Sinis N.(5),Hübbers C.(2),Skouras E.(6),Ankerne J.(1),Fries J.(7),Irintchev A.(8),Dunlop S.(9),Angelov D.(1),

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Abstract:
Purpose. Recently, we showed that manual stimulation (MS) of denervated vibrissal muscles enhanced functional recovery following facial nerve cut and suture (FFA) by reducing poly-innervation at the neuro-muscular junctions (NMJ). Although the cellular correlates of poly-innervation are established, with terminal Schwann cells (TSC) processes attracting axon sprouts to "bridge" adjacent NMJ, molecular correlates are poorly understood.
Methods. Quantitative RT-PCR revealed a rapid increase of IGF-1 mRNA in denervated muscles and we examined the effect of daily MS for 2 months after FFA in IGF-1+/- heterozygous mice; controls were wild-type (WT) littermates. We quantified vibrissal motor performance and percentage of NMJ bridged by S100-positive TSC.
Results. There were no differences between intact WT and IGF-1+/- mice for vibrissal whisking amplitude (48o and 49o) or the percentage of bridged NMJ (0%). After FFA and handling alone (i.e. no MS) in WT animals, vibrissal whisking amplitude was reduced (60% lower than intact) and the percentage of bridged NMJ increased (42% more than intact). MS improved both the amplitude of vibrissal whisking (not significantly different from intact) and the percentage of bridged NMJ (12% more than intact). After FFA and handling in IGF-1+/- mice, the pattern was similar (whisking amplitude 57% lower than intact; proportion of bridged NMJ 42% more than intact). However, MS did not improve outcome (whisking amplitude 47% lower than intact; proportion of bridged NMJ 40% more than intact).
Conclusion. We conclude that IGF-I is required to mediate the effects of MS on target muscle reinnervation and recovery of whisking function.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:26

Titel: Lack of fibroblast growth factor 2 (fgf-2) is not associated with reduced astrogliosis in the motor nucleus after facial nerve injury

Autoren: Hizay A.(1),Seitz M.(2),Grosheva M.(3),Jungnickel J.(4),Sarikcioglu L.(1),Grothe C.(4),Angelov D.(2),

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Abstract:
Purpose: After facial nerve transection and suture (FFA) activated astrogliocytes reversibly displace perisomatic synaptic terminals from the motoneuronal surface. Hence, the amount of GFAP-expressing astroglia provides indirect information about the recovering input to axotomized motoneurons. To elucidate the molecular correlates of astrocytic hypertrophy, we proved the role of FGF-2.

Methods: Following FFA, we studied (i) recovery of vibrissal motor performance and (ii) total amount of activated astrocytes (intensity of fluorescence after immunostaining for glial fibrillary acidic protein, GFAP) in the facial nucleus of 6 homozygous adult mice constitutively deficient in the expression of FGF-2 (strain Fgf2<tm1Zllr>C57/Bl6, Jackson Laboratories). Six wildtype (WT) littermates were used as controls.

Results: Two months after FFA the amplitude of vibrissae whisking in WT-mice was reduced to 49% (25±3°) of the value measured in intact WT-mice (51±8°). In the FGF-2-/- mice the amplitude was further reduced to 27% (16±4° vs. 59±7° in intact), i.e. recovery in FGF-2-/- mice was poorer. There was no difference in the amount of GFAP-Cy3-fluorescence (pixel number within a gray value range of 17-103) between intact WT animals (21,18 ± 3,71 Mio) and FGF-2-/-mice (21,21 ± 2,72 Mio). No differences were detected also after FFA: the total fluorescence in WT animals was 40,61 ± 3,17 Mio and 43,88 ± 1,70 Mio in FGF-2-/- -mice.

Conclusions: FGF-2 may not be necessary for the activation of astroglia in the lesioned nucleus of origin. The amount of astrogliosis may not be directly correlated with the recovery of motor function.

Kategorie: Poster

Rubrik: 5.Experimental Morphology
Abstract Nr.:27

Titel: Impact of uranylnitrate intoxication on renal morphology in rat, an immuno electron microscopical study

Autoren: Oehring H.(1),Widder J.(1),Appenroth D.(2),Fleck C.(2),Jirikowski G.(3),

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Abstract:
Heavy metals are known to have serious nephrotoxic effects, resulting in a wide variety of well known symptoms. The underlying cellular and molecular events however are not entirely understood to date. Here we studied adult male rats that had been treated with uranylnitrate for functional and morphological changes of kidney function. Animals showed proteinuria and increased creatinine levels. With immuno electron microscopy we could establish that impressive changes in protein content and morphology occur. Podocytes show cellular inclusion bodies and thickening of basement membranes. The perivascular gaps between podocyte processes seem to vanish. With immuno gold labelling we observed clustering of collagen IV in basement membranes. Cells of the parietal portion of the Bowman capsule contained high amounts of immunoreactive -actin. Epithelia of proximal tubules showed loss of contact with the basement membrane and appearance of intercellular clefts, accompanied by moderate staining for -actin. Cells of the proximal tubules showed luminal dilation and partial loss of brush border. Some of the tubules were lined by flattened epithelia. Furthermore we observed intracellular accumulation of immunoreactive -actin, vimentin and extracellular concentrations of collagen I.
Our findings indicate that uranyl nitrate intoxication results in a wide spectrum of cellular and molecular changes in kidney. While cell death does not seem to be pronounced, glomerular and in the tubular epithelia are likely to undergo a mesenchymal transition since they express extracellular matrix proteins and loose their contact with the basement membrane. It is likely that similar changes occur with other heavy metals.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:28

Titel: Post-lesional alterations of dystrophin-dystroglycan complex detected by fluorescent immunohistochemical reactions following freezing lesions in rat brains.

Autoren: Mahalek J.(1),Sadeghian S.(1),Kálmán M.(1),

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Abstract:
Receptors of basal lamina have important functions in post-lesional processes, including revascularisation. This study investigates alterations of a major laminin-receptor system, the dystrophin-dystroglycan complex, following cryogenic cerebral injury. Dystroglycan-beta, utrophin (autosomal homologue of dystrophins) and alpha1-dystrobrevin were investigated as members of the complex, and laminin and fibronectin as basal lamina components. The skull having been drilled, the lesions were performed in deep anaesthesia, by a 20-sec contact of a copper rod adjusted to a stereotaxic instrument and cooled in carbondioxyde 'snow'. Survival periods were 2-30 days. The animals were perfused with 4% phosphate-buffered paraformaldehyde and fluorescent immunohistochemical reactions were performed on Vibratome sections. Immunoreactions were visualized with fluorescent antibodies. In intact brains dystrobrevin and dystroglycan immunostainings visualized the vascular system of brain whereas utrophin, laminin and fibronectin were detected only at the entering segments of vessels, and in circumventrivular organs. Around lesions intense laminin immunopositivity appeared. Utrophin and fibronectin immunopositivities were also detected. Dystroglycan and dystrobrevin immunopositivities disappeared. The most characteristic alterations were found during the 4-14 days. In the case of laminin and dystroglycan similar alterations have been observed following other brain lesions (e.g. Szabó and Kálmán 2008), and attributed to the activity of metalloproteinases on the transmembran dystroglycan and the separation of glial and vascular basal laminae. The alterations of the intracellular dystrobrevin and utrophin immunopositivities remained to be explained. Steric changes in their configuration which influences immunoreactivity are conceivable. These results may promote investigations of post-lesional vascular reactions and monitoring their process. Granted by OTKA 60930/2006.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:29

Titel: Intrinsic connectivity analysis of the rat amygdala

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Abstract:
Generating atlases of brains are done in many projects. Most use single modalities (structural/functional MRI/DTI or histological structures, connectivities, terminologies, ontologies, chemoarchitectures) and a specific type of a brain (human, rat, mouse, macaque brains). These atlases are restricted to certain terminologies (e.g. BAMS), however, brain terminologies develop very rapid and do not cover the entire CNS and PNS (levels). Furthermore,many structural and functional mapping problems are addressed to comparisons of genetically modified animals, changes in development and experimental conditions (states) which are not considered in atlas projects. Hence, we developed a framework that can cope with different nervous systems (types), modalities, states and levels with regard to 2D and 3D multimodality structural and connectional information. The connectivity of the amygdaloid complex of the rat has been integrated into the system and analyzed using local, global and specific explorative parameter sets (motifs). 5200 brain regions regions are linked by 24000 connections. These connections are characterized by strength and density information obtained from 450 publications. Visualization of three dimensional structures was realized by integrating the VTK package into our Java based mapping system whereby different import and export interfaces were realized to use different graph formats in this open system and to visualize with optimized graph visualization tools complex neural network connectivity (CGV, Cytoscape, Protege, SVG). In this contribution we will provide an overview of the capabilities of the mapping managing system neuroVIISAS and present first results of connectivity analysis of the amygdaloid complex.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:30

Titel: Matrix metalloproteinase-19 (mmp19) is highly expressed in astrocytomas and promotes invasion of glioma cells

Autoren: Lettau I.(1),Hattermann K.(1),Held-Feindt J.(2),Radislav S.(3),Mentlein R.(1),

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Abstract:
Purpose: Glial tumors exhibit a high morbidity and mortality due to their invasive nature. MMP19 (matrix metalloproteinase 19) is a recently discovered secreted protease that together with MMP28 (epilysin) forms a structural subgroup of MMPs. Since the occurrence and physiological functions of these specialized MMPs are largely unknown, we investigated their role in astroglial tumors.
Methods: MMP expression was analyzed by quantitative RT-PCR, Western blot and immunohistochemistry. Cell invasion without / with silencing MMP19 by siRNA was assayed by Boyden chamber assays and by migration of fluorescently colored cells through brain slices. Brevican degradation was monitored by Western blots.
Results: MMP28 was evenly transcribed in normal and malignant brain, but was undetectable in cultivated glioblastoma cell lines. In contrast, MMP19 was detected in normal brain only in endothelial cells, but found at high levels in astrocytomas as well as in malignant cells in situ and in vitro. In cultured glioblastoma cells, MMP19 was upregulated after exposure to pro-inflammatory cytokines. In Transwell invasion assays, MMP19-silenced cells migrated slower through laminin-, basal lamina- and brevican-coated membranes. Furthermore, MMP19-silenced cells were less effective in invading tissue from brain slices in comparison to control cells. Brevican, a brain-specific proteoglycan and major component of brain extracellular matrix, was efficiently processed by the recombinant human protease. Conclusion: These experiments show that MMP19 is highly upregulated in proliferating astrocytoma / glioma cells and that MMP19 expression facilitates tumor cell invasion by degrading brain extracellular matrix and basal lamina components.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:31

Titel: Deletion of srgap3 affects brain architecture

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Abstract:
There is evidence that alterations in the signalling pathways involving the Rho family of small GTPases (Rho-GAPs) contribute to both syndromic and non-syndromic mental retardation disorder. It is known that this family plays important roles in various aspects of neuronal development, including dendritic branching dendritic spine formation and maintenance neurite outgrowth and differentiation and synaptic functions. Inactivation of the SLIT-ROBO Rho GTPase-activating protein 3 (srGAP3 [alternative name: Megap]) in humans can lead to mental retardation. It should be noted that srGAP3 shares homology with oligophrenin-1, another RhoGAP-containing protein previously identified in a patient with X-specific mental retardation. Oligophrenin-1 deficiency has been found to alter dendritic spine length and to induce ventricular enlargement.
We investigated srGAP3 deficient mice in order to see whether deletion of srGAP3 has an impact upon brain architecture. The srGAP3 deficient mice display a higher brain weight as compared to controls. The volumes (as well as the cross-section area and length) of the lateral ventricles are strongly increase in the srGAP3-deficient mice. In addition, the mean thickness of white matter tracts (as e.g. the corpus callosum, alveus, external capsule) is also increased in the mutant mice.
Comparable to results obtained in mouse models of X-linked mental retardation, no change in spine densities within the hippocampal area CA1 was noted, but a significant change in the mean spine length. However, whether these alterations can be linked to alterations in neuronal plasticity or to pathopsychological disturbances need to be investigated in detail.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:32

Titel: Vegf signalling in the neuronal growth cone

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Abstract:
Axonal outgrowth is of paramount significance for building the huge neuronal network in both embryogenesis and nerve regeneration. At the tip of growing axons the growth cone receives the guiding signals, translates them into new cytoskeletal arrangements and leads the axon. Recently some groups revealed that the vascular endothelial growth factor (VEGF) that is essential for vascular pathfinding and highly involved in cancer development has also a trophic activity on neurons, which leads to an increased axonal outgrowth. Although two receptors named VEGFR2 and neuropilin1, potentially mediating these effects, were identified on neurons, the signalling pathways are not well understood.
To study the influence of VEGF on the neuronal growth cone we cultivated chicken dorsal root ganglia in medium containing mouse VEGF in a concentration of 0.1 µg/ml and analysed growth cone size in line with immunostaining. Our data show an increasing effect of VEGF on growth cone size, and time-lapse imaging illustrated that VEGF directly attracts the neuronal growth cone and therefore influences growth direction.
To get more insights about VEGF signalling in growth cones, we blocked either the extracellular domain of neuropilin1 or the tyrosine-residue 1214 of VEGFR2 with corresponding antibodies. Subsequent to this blocking experiment, growth cone size was significantly diminished, which leads to the suggestion that both receptors are important in VEGF signalling in growth cones. Based on these data we further propose a potential role of the pathway downstream of tyr1214, influencing actin-organisation in growth cones.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:33

Titel: Comparison and combination of enzyme-based cytochemical and fluorescence in situ hybridization for peptide and monoamine receptor mrna in rat brain: chances and limitations

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Abstract:
Expression of specific monoamine receptor subtypes presumably underlies differential responses of target neurons to monoaminergic input. Double in situ hybridization (ISH) enables analysis of the receptor equipment of identified neurons. In the present study, we assessed the suitability of signal amplified fluorescence ISH (FISH) and of enzyme-based cytochemical ISH (CISH) for simultaneous detection of peptide (corticotropin releasing factor, CRF; neuropeptide Y, NPY) and monoamine (serotonin or dopamine) receptor mRNAs in neurons of limbic brain areas.
Double FISH yielded clear and stable signals for peptide and monoamine receptor mRNAs expressed at high to moderate abundance. Combining FISH with CISH enabled detection of peptide mRNA coexpression also in neurons with low expression of receptor mRNAs, since the signal-to-noise ratio was superior to FISH, but limited stability of the chromogen under UV light complicated analysis and documentation. Coexpression studies thus should be preceded by comparative single FISH and CISH to establish receptor mRNA expression levels in order to choose appropriate double ISH methods.
First quantitative studies using these methods documented that NPY mRNA-producing interneurons of hippocampus and amygdaloid nuclei differ in their expression profiles of serotonin receptor 1A, 2C and 3A mRNAs. Further analyses will address expression of additional monoamine receptor mRNAs in these functionally important interneurons and will provide a basis for electrophysiological studies elucidating in detail the effects of monoaminergic innervation.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:34

Titel: Microcircuitry in the medial entorhinal cortex reveals a cell-type–specific and modular organization

Autoren: Beed P.*(1),Bendels M.*(2),Wiegand H.(1),Leibold C.(3),Schmitz D.*(4),Johenning F.*(5),

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Abstract:
Projection neurons in layer II (L2) of the medial entorhinal cortex (MEC) show place-specific responses in vivo that are organized in spatial hexagonal grids. The MEC grid fields have been proposed to underly the metric representation of external space. Anatomical studies as well as theoretical models of grid field activity suggest intralaminar recurrent connections, ascending interlaminar feedback connections, and the organization of ascending inputs in modules. Using scanning photostimulation, we investigate the functional microcircuitry of the two main excitatory cell types in L2 MEC, stellate and pyramidal cells. Our results reveal excitatory microcircuits with a cell-type–specific separation of intralaminar recurrent connections and ascending interlaminar feedback connections, and modular organization in sliding gaussian columns. Both cell types receive a larger proportion of intralaminar recurrent connectivity. When compared directly, stellate cells receive more intralaminar recurrent connectivity than pyramidal cells; in comparison, pyramidal cells receive a larger fraction of ascending interlaminar feedback connectivity from deep layers of the MEC, constituting the hippocampal feedback loop. Ascending interlaminar feedback connections to L2 are spatially organized in modules with distinct properties for the two cell types.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:35

Titel: Functional relationship between cationic amino acid transporters and β-defensins

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Abstract:
The ocular surface, constantly exposed to environmental pathogens, is particularly vulnerable to infection. Hence an advanced immune defence system is essential in protecting the eye from microbial attack. Antimicrobial peptides, such as beta-defensins, are essential components of the innate immune system and are the first line of defence against invaders of the eye. High concentrations of l-arginine and l-lysine are necessary for the expression of beta-defensins. These are supplied by epithelial cells in inflammatory processes. The limiting factor for initiation of beta-defensin-production is the transport of l-arginine and l-lysine into the cell. This transport is performed to 80 percent by only one transporter system in the human, this being the y^+-transporter. This protein group exclusively transports the cationic amino acids l-arginine, l-lysine and l-ornithine and is also known as cationic amino acid transporter proteins (CAT-proteins). Various infections associated with l-arginine deficiency (for example psoriasis, keratoconjuctivitis sicca) are also associated with an increase in beta-defensins-production. For the first time, preliminary work has shown the expression of human CATs in ocular surface epithelia and tissues of the lacrimal apparatus and their relevance for diseases of the ocular surface. In this review we summarize current knowledge on the human CATs that appear to be integrated in causal regulation cascades of beta-defensins, thereby offering novel concepts for therapeutic perspectives.

Kategorie: Poster

Rubrik: 7.Neuroimmunology
Abstract Nr.:36

Titel: Delineating the impact of neuroantigen vs genetic diversity on mp4-induced autoimmune encephalomyelitis of c57bl/6 and b6.129 mice

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Abstract:
Purpose: To investigate whether the peripheral and central immune pathology in MP4-induced EAE is more dependent upon genetic variables, the nature of the neuroantigen itself or the interplay between both factors.

Methods: C57BL/6 and B6.129 wild-type mice were immunized with the MBP-PLP fusion protein MP4. ELISPOT assays were performed to measure the cytokine response of antigen-specific T cells, focussing on IFN-gamma, IL-2, IL-4 and IL-5. CNS pathology was evaluated by haematoxylin/eosin and luxol fast blue staining as well as immunhistochemistry.

Results: In comparison to C57BL/6 mice, the B6.129 group showed significantly attenuated MP4-EAE with later onset and diminished severity of the disease. Regarding the cytokine profile both groups demonstrated a similar peripheral TH1 immune response. Histopathologically, CNS lesion topography, kinetics and the cellular composition of infiltrates in acute and chronic EAE showed remarkable differences between the two groups.

Conclusion: Our data imply that (i) the interplay between both the antigenic trigger and genetic variables can define the outcome of MP4-induced EAE in C57BL/6 and B6.129 mice and (ii) that MP4 is not only a strong neuroantigen when it comes to reproducing the dynamics in effector mechanisms as is typical of the disease but also a promising agent for studying interindividual heterogeneity derived from the genetic diversity in EAE/MS.

Kategorie: Poster

Rubrik: 8.Neuroregeneration/neurodegeneration
Abstract Nr.:37

Titel: Cardiac autonomic neuropathy in diabetic bb rats and its protection by ginkgo biloba extract. a semiquantitative morphologic, immunohistochemical, and in-vivo scintigraphic study.

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Abstract:
Purpose: Clinical background is the ultrastructural-morphometric, immunohistochemical, and in-vivo scintigraphic characterization of cardiac autonomic nerves in diabetic BB rats, and use of Ginkgo biloba extract EGb 761 as a possible protectant against cardiac autonomic neuropathy.
Methods: Ultrastructural-morphological and morphometric parameters, immunohistochemical demonstration of protein gene product 9,5, S-100 protein, and thyroxinhydroxylase as neuronal markers were evaluated in healthy, diabetic, and EGb-protected hearts of BB rats.
Cardiac sympathetic activity in these experimental groups were measured using the in- vivo
123 I-metaiodbenzylguanidine imaging, and immunofluorescent labelling of beta-1- adrener-gic receptors (AR), and adenylate cyclase (AC).
Results: A) Diabetes results in different ultrastructural lesions until partial loss of autonomic mainly sympathetic) nerve fibers and related Schwann cells in the rat heart.
B) Cardiac sympathetic integrity and activity is impaired by alterations in presynaptic terminals, and in the postsynaptic beta 1-AR-AC-coupling system;
C) Pretreatment of diabetic BB rats with EGb was able to improve more or less many of the above mentioned parameters.
Conclusions: The morphological and in-vivo scintigraphic techniques applied are able to demonstrate diabetic cardiac neuropathy and its gradual prevention by EGb-761 pretreatment.

Kategorie: Poster

Rubrik: 8.Neuroregeneration/neurodegeneration
Abstract Nr.:38

Titel: Evaluation of periodical electrodiagnostical measurements to monitor recovery of motor function in rat models of peripheral nerve regeneration

Autoren: N. Korte[1], H. Schenk[2], C. Grothe[1,3], A. Tipold[2,3], K. Haastert[1,3,4]

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Abstract:
In rat sciatic nerve models of peripheral nerve regeneration (PNR), footprint analysis is well accepted to evaluate motor recovery. This technique is most reliable in crush lesion models. However, it has draw-backs (e.g., clenching toes) in models using more severe injuries. We investigated periodical electrodiagnostic measurement as an alternative tool to monitor ongoing motor recovery in rat PNR-models.
Twenty-five adult female Lewis rats underwent either unilateral crush-injury (n=10), end-to-end-coaptation (n=5) or 10mm gap nerve autotransplantation (n=10) in the sciatic nerve. Motor nerve conduction velocity (mNCV) and spontaneous muscle activity of the gastrocnemius muscle were recorded weekly in anaesthetized animals using subcutaneously inserted stimulation and recording needle-electrodes (diameter 0.3mm) over a period of six to twelve weeks (the unlesioned contralateral nerve served as control). Results were compared to additional footprint analysis (Static Siatic Index, SSI) and evaluation of sensory recovery (pinch test). Furthermore, nerve morphometry is currently used to correlate the electrodiagnostical outcome (plus direct nerve stimulation and mNCV recording (end of the observation period) to the quantity and quality of axonal regeneration.
Starting three weeks after crush-lesion, SSI values increased while first mNCV-signals were recorded one week later. Both techniques demonstrated continuous recovery thereafter. However, after end-to-end-coaptation, continuously increasing mNCV-signals were recorded from six weeks after surgery onward in all animals, while only single animals showed motor function improvement in the SSI, starting five weeks after surgery.
These preliminary results demonstrate that periodical electrodiagnostic measurements are useful tools to monitor improving motor functions after severe injury in rat PNR-models.

Kategorie: Poster

Rubrik: 8.Neuroregeneration/neurodegeneration
Abstract Nr.:39

Titel: Norrin mediates neuroprotective effects on retinal ganglion cells (rgc) via activation of the wnt/(beta)-catenin pathway and the induction of neurotrophic growth factors

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Abstract:
Purpose: Norrin is a secreted protein that activates Wnt/(beta)-Catenin signaling. Because Norrin deficient mice show a continuous loss of RGC, we analyzed if Norrin has neuroprotective properties on RGC survival in mouse eyes.
Methods: To induce RGC damage N-methyl-D-aspartate (NMDA) was injected into the vitreous body of mice while the fellow eye received NMDA in combination with Norrin and/or Dickkopf (DKK)-1, an inhibitor of Wnt/(beta)-Catenin signaling. The number of axons in the optic nerve, as well as the number of RGC perikarya and of apoptotic RGC was analyzed in retinae of treated animals. The levels of (beta)-Catenin, and that of several growth factors were investigated by real-time RT-PCR and western blot analyses of treated retinae, and of cultured Müller cells after incubation with Norrin.
Results: After injection of NMDA, the number of optic nerve axons and the number of perikarya of surviving RGC were significantly higher in NMDA/Norrin injected eyes as compared to NMDA treated eyes, an effect that could be blocked with DKK-1. Comparable results were obtained by TUNEL labeling. Treatment of cultured Müller cells with Norrin or of mouse eyes with Norrin/NMDA activated Wnt/(beta)-Catenin signaling. In addition, the expression of LIF and endothelin-2 was increased, as well as that of FGF2, BDNF, LEDGF and CNTF.
Conclusion: Norrin has pronounced neurotrophic properties on RGC via activation of Wnt/(beta)-Catenin signaling and subsequent induction of neurotrophic growth factors in Müller cells.
Supported by DFG Forschergruppe 1075

Kategorie: Poster

Rubrik: 8.Neuroregeneration/neurodegeneration
Abstract Nr.:40

Titel: Mice with a targeted mutation in pancortin are more susceptible to light-induced photoreceptor damage

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Abstract:
Purpose: To characterize the retinal phenotype of mice with a targeted mutation in Pancortin. This mouse strain has been previously shown to be protected from ischemic neuronal cell death (Cheng et al., JNS 2007).
Methods: The retinal phenotype was analyzed by microscopy, real time RT-PCR and Western blotting. Death of retinal ganglion cells was analyzed after NMDA-mediated excitotoxic damage by counting axons in the optic nerve. In addition, thickness of the outer nuclear layer was analyzed throughout the entire retina after light-induced photoreceptor damage, an animal model of photoreceptor degeneration.
Results: By immunohistochemistry, Pancortin could be detected in the interphotoreceptor matrix (IPRM) between photoreceptor outer segments. In contrast to data of others (Cheng et al., JNS 2007), we observed that Pancortin mutant mice are not modified by a null mutation, but rather express a mutated form of Pancortin, which lacks its M- and Y-regions and is secreted. Mutant mice are not protected from NMDA-induced excitotoxic cell death. Still, a significant reduction of neurons in the outer nuclear layer was observed in mutant mice after light-induced damage, when compared to damage in retinae of wildtype littermates.
Conclusions: Pancortins play an essential role for homeostasis of the IPRM and for survival of photoreceptors after retinal damage.

Supported by DFG Forschergruppe 1075

Kategorie: Poster

Rubrik: 8.Neuroregeneration/neurodegeneration
Abstract Nr.:41

Titel: Differential proteome analysis of 6-ohda hemi-lesioned rats

Autoren: Lessner G.(1),Haas S.(1),Wree A.(1),Michael K.(2),Mikkat S.(2),Glocker M.(2),Schmitt O.(1),

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Abstract:
There exists no data of proteome changes after unilateral 6-OHDA lesions of the substantia nigra by stereotactic injection into the medial forebrain bundle. We are interested in differential changes of functional proteins involved in behavior in the 6-OHDA hemiparkinsonian lesion model. Adult male rats were lesioned in the MFB and verified by behavioural testing (apomorphine-induced rotations) after a survival time of 3 months. 6 rats showed a significant increase of rotations per minute. These animals and 6 untreated controls were transcardially perfused with saline and the olfactory bulb, the striatum and the substantia nigra were dissected. We used 18 cm, nonlinear IPG-strips (pH 3-10). 6 control probes and 6 lesioned probes were processed at the same time (identical conditions). Gels were stained with colloidal coomassie. Digitization was performed under controlled densitometric conditions at 300 dpi. The detection of differentially expressed spots was done by comparing gels using Progenesis. Spot edition and alignment need to be performed semiautomatic due to complex spot distribution of average 1000 spots / gel. 2.5 fold up- and down-regulated spots of lesioned tissues were considered to be differentially expressed if they occur in almost 3 of 6 gels. Protein identification was performed by MALDI-TOF method and spectrums analysed by using SwissProt and Swall via Mascott. In the striatum we found 242 differentially expressed proteins. As expected tyrosine hydroylase (Mw 56330, pI 5.74) was downregulated in the striatum of lesioned animals. The olfactory bulb has 120 differentially expressed spots and the substantia nigra 102.
Currently, we are searching functionally relevant proteins that are related to the neurotoxic model of Parkinson disease in the adult rat.

Kategorie: Poster

Rubrik: 8.Neuroregeneration/neurodegeneration
Abstract Nr.:42

Titel: Differential regulation of endocannabinoids after entorhinal cortex lesion in organotypic hippocampal slice cultures

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Abstract:
Endocannabinoids (eCB) play an important role in preservation of the homeostatic and regulatory balance of the central nervous system (CNS). Recent studies demonstrate the potency of eCB to control neuronal demise and immune responses in processes associated with secondary damage. Entorhinal cortex lesion (ECL) or perforant pathway transection are established models to study denervation-induced gliosis, transneuronal degeneration or plasticity related changes in the hippocampal formation. In the present study we investigated the time dependent regulation of eCB in dentate gyrus and entorhinal cortex in organotypic hippocampal slice cultures (OHSC) that were subjected to ECL. At 4h, 24h and 72h post ECL the dentate gyrus and the entorhinal cortex were precisely dissected and the amount of eCB was measured by liquid chromatography/tandem mass spectromety (LC/MS/MS). A different time-dependent pattern in all eCB investigated were observed in lesioned OHSC when compared to controls. Whereas high concentrations of PEA were observed at 4h post ECL, AEA, OEA, and 2-AG reached their maximum after 24h and decreased gradually until 72h. These findings demonstrate that 1.) eCB respond to the injury induced by ECL, 2.) the increases in eCB concentrations show a time dependent regulation and 3.) the endocannabinoid responses are differentially regulated. Taken together, the endocannabinoid system may represent an endogenous system that becomes activated in the aftermath of neuronal injury to protect neuronal tissue and to prevent secondary damage.

Kategorie: Poster

Rubrik: 8.Neuroregeneration/neurodegeneration
Abstract Nr.:43

Titel: C3 peptide treatment enhances functional recovery from spinal cord injury by improved regenerative growth of corticospinal and raphespinal fibers

Autoren: Höltje M.(1),Boato F.(1),Hendrix S.(1),Huelsenbeck S.(2),Klimaschewski L.(3),Auer M.(3),Just I.(2),Ahnert-Hilger G.(1),

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Abstract:
PURPOSE: To investigate beneficial effects of Clostridium botulinum C3 protein-derived fragments on CNS repair mechanisms following spinal cord injury.
METHODS: Using spinal cord contusion injury and dorsal hemisection models in mice we analyzed functional recovery in behavioural tests as well as regenerative fiber growth and muscle innervation by histological methods.
RESULTS: Application of C3bot154-182 resulted in an enhanced functional recovery of mice that underwent spinal cord injury by contusion or hemisection. Compared to control animals, an enhanced regenerative axon growth was detected for descending corticospinal and raphespinal fibers. Also, the lesion size was reduced by the peptide following contusion injury. Moreover, degenerative effects on neuromuscular junctions were reduced in treated animals. The C3 peptide was also effective in enhancing axon outgrowth of alpha-motoneurons and hippocampal cells cultivated on growth-inhibitory substrates. Pull-down experiments indicate that the peptide may exert its effects by non-enzymatical inhibition of RhoA.
CONCLUSIONS: Taken together, these data indicate that this short C3bot-derived amino acid fragment C3bot154-182 is a novel and promising tool to specifically enhance process outgrowth of central neurons and promote recovery after traumatic injury to the CNS.

Kategorie: Poster

Rubrik: 8.Neuroregeneration/neurodegeneration
Abstract Nr.:44

Titel: (human) tissue slice cultures: a novel tool to evaluate biological effects of heavy ions

Autoren: Merz F.(1),Bechmann I.(1),

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Abstract:
Treatment of brain tumors with heavy ions (HI) has been introduced successfully at GSI, Darmstadt, and first patient have been treated at HIT in Heidelberg in November 2009. In order to study the biological effects of HI and to develop systems for testing susceptibility of individual tumors, we use human and rodent slice culture preparations which we expose to HI compared to X-rays. The advantage of such slices relies on the conservation of an organotypic environment, the open access allowing easy treatment and observation via live-imaging microscopy, and the independency from genetic immortalization-strategies used to generate cell lines. Rat brains as well as human tumors are cut into 300 µm thick sections and cultivated in an incubator in a humidified atmosphere at 37°C. This is realized by a membrane based culture system with a liquid-air-interface. With this system, it is possible to keep slices viable for several weeks. Even human brain tumor slices remain vital for at least 21 days. Slices were irradiated with X-rays at the radiation facility of the University Hospital in Frankfurt/Main at doses up to 40 Gy. Heavy ion irradiations were performed at the UNILAC and SIS facilities at GSI with different ions of different energies and fluences ranging 0.5 x 106 – 8 x 107 particles/cm². The irradiated slices are analysed with regard to cell death, DNA damage, proliferation and immune cell activation by using 3D-confocal microscopy. The pathway of death-induction and resistance will be determined upon isolation and genetic analysis of specific populations of cells from the slices. (Supported by BMBF)

Kategorie: Poster

Rubrik: 8.Neuroregeneration/neurodegeneration
Abstract Nr.:45

Titel: Recovery of motor functions after compression spinal cord injury in rats. a video based assessment.

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Abstract:
Purpose. Most methods for motor function evaluation after spinal cord injury (SCI) in rats are semi-quantitative and estimate different aspects of locomotion, such as plantar stepping, limb coordination and trunk stability. Here we tested the potential of a novel numerical approach in a rat compression SCI model.

Methods. Young adult female Wistar rats (n = 10) were subjected to a moderate spinal cord compression at T8 level. Prior to operation and 1-9 weeks thereafter, the rats were video recorded during unforced beam walking and inclined ladder climbing. Using selected video frames we measured foot-stepping angle (FSA), rump-height index (RHI) and number of correct steps during ladder climbing.

Results. One week after SCI, the rats developed severe disabilities. Compared with intact animals, the FSA was increased by a factor of 8, the RHI decreased two-fold and the number of correct steps with the hind limbs on the ladder declined from 6 to 0. All three parameters improved during the 9-week recovery period, however, to markedly different degrees. The FSA, an estimate of the plantar stepping ability, recovered to nearly 100% of control. The RHI, a measure of the ability for coordinated limb movements and body weight support, improved to 70% of normal. The number of correct steps, a parameter dependant on central connectivity and proprioception, recovered to only 28%.

Conclusion. Our findings indicate the potential of the novel approach for precise evaluation of motor abilities requiring different levels of spinal and supra-spinal control after SCI in rats.

Kategorie: Poster

Rubrik: 8.Neuroregeneration/neurodegeneration
Abstract Nr.:46

Titel: Neuroprotection of n-arachidonyl-dopamine is mediated by cannabinoid (cb)1 receptor and transient receptor potential (trp)v1.

Autoren: Grabiec U.(1),Koch M.(1),Kallendrusch S.(1),Ghadban C.(1),Dehghani F.(1),

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Abstract:
Pathological events within the CNS like trauma or stroke involve inflammatory processes that strongly account for further neurodegeneration. Classical endocannabinoids like 2-AG are known to exert neuroprotective effects after brain injuries. Since N-arachidonyl-dopamine (NADA), a recently identified endocannabinoid, displayed anti-oxidative and anti-inflammatory effects in primary microglial cells, we asked whether NADA affects microglial cells and protects dentate gyrus granule cells after excitotoxic lesion. Organotypic hippocampal slice cultures (OHSC) were lesioned by application of NMDA (50µM) and subsequently treated with five different NADA concentrations (0.0001-10µM). NADA reduced the amount of IB4 positive microglial cells most effectively at 0.1µM. The number of degenerated neurons was also decreased showing an inverse Gaussian dose-response most effectively at 0.001µM. To identify the responsive receptor type we applied the cannabinoid (CB)1 receptor antagonist AM251 and the transient receptor potential (TRP)V1 antagonist 6-iodonordihydrocapsaicin. Neuroprotective properties of NADA in low concentration (0.001µM) were effectively blocked by AM251. The TRPV1 antagonist 6-iodonordihydrocapsaicin reversed the efficacy of high NADA (10µM) concentrations. In conclusion, our findings showed that NADA reduced the amount of IB4 positive microglial cells and protected dentate gyrus cells. The mechanisms behind NADA-mediated neuroprotection seem to involve interactions between CB1 receptor and TRPV1-mediated signaling cascades.

Kategorie: Poster

Rubrik: 13.Pheripheral and vegetative nervous system
Abstract Nr.:47

Titel: Expression and distribution of mas-related gene (mrg) receptors e and f in the normal and inflamed murine ileum.

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Abstract:
Mrg receptors constitute a family of GPCRs of which some are suggested to be involved in nociception. Mrg receptors are also hypothesized to mediate IgE-independent activation of mast-cells. A role for MrgE was reported in the development of neuropathic pain. MrgE deletion affected the expression of MrgF and of a few genes linked to nociception. This study aimed to investigate the expression of Mrg receptors in the murine ileum and to unravel their putative function during intestinal inflammation. The expression and distribution of MrgE and MrgF in the ileum of two murine models of intestinal inflammation - acute intestinal schistosomiasis and TNBS-induced ileitis - were compared with healthy wild type controls using immunohistochemistry and qPCR. Expression of MrgE and MrgF was demonstrated in a subpopulation of enteric neurons in inflamed and non-inflamed ileum. A downregulation of MrgE and MrgF was observed in the ileitis model. RT-PCR showed expression of MrgE and MrgF mRNAs in non-inflamed and inflamed ileum. qPCR showed no significant differential expression of MrgE and MrgF mRNA during schistosomiasis, but showed significant downregulation of both MrgE and MrgF mRNAs during ileitis. This is the first report on the expression and distribution of MrgE and MrgF in the non-inflamed and inflamed murine ileum. During intestinal schistosomiasis the mRNA expression levels of both receptors remain unaltered whereas during ileitis the expression is significantly reduced. These results suggest a role of MrgE and MrgF in enteric neuronal pathways and in the inflammatory response during ileitis.

Kategorie: Poster

Rubrik: 13.Pheripheral and vegetative nervous system
Abstract Nr.:48

Titel: A possible excitatory co-innervation of striated muscle in the mouse esophagus

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Abstract:
Purpose: Striated muscle of the esophagus is innervated by both vagal cholinergic motoneurons and nitrergic/peptidergic enteric neurons (Wörl and Neuhuber 2005). Results from functional studies on in vitro preparations of rodent esophagus indicated inhibitory modulatin of vagally induced striated muscle contraction by enteric co-innervating neurons (Izumi et al. 2003; Boudaka et al. 2007). However, myenteric ganglia in the esophagus, as in stomach and intestines, harbour also cholinergic neurons that often use tachykinins as co-transmitters. It is unknown if these excitatory neurons also contribute to enteric co-innervation of motor endplates. Thus, we searched for presumed excitatory enteric co-innervation.
Methods: Multilabel immunofluorescence combined with confocal laser scanning microscopy.
Results: Seven percent of motor endplates were endowed with varicose axons containg substance P and three percent were contacted by neurokinin A positive axons. These tachykinins were often colocalized with VAChT. Myenteric ganglia contained neuronal cell bodies with the same chemical coding whereas neurons of the nucleus ambiguus did not show any of the tachykinins.
Conclusions: These data suggest modest cholinergic/tachykininergic enteric co-innervation of esophageal striated muscle. This presumably excitatory enteric component may play a minor role as compared to the predominant vagal excitatory innervation from the nucleus ambiguus. (Supported by DFG Ne 534/3-1).

Kategorie: Poster

Rubrik: 13.Pheripheral and vegetative nervous system
Abstract Nr.:49

Titel: Serotoninergic neurons in the mouse esophagus: focus on enteric co-innervation of striated muscle

Autoren: Hempfling C.(1),Neuhuber W.(1),Wörl J.(1),

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Abstract:
Purpose: Serotonin (5-HT) is widely distributed in the gastrointestinal tract and functions as a transmitter mainly of interneurons (Furness 2006). The esophagus, in particular its muscularis mucosae serves as a standard bioassay to test 5-HT receptor ligands (Baxter et al. 1991). However, anatomical data on serotoninergic neurons and their axonal projections in the esophagus are virtually lacking. Thus, the aim of this study was to provide basic chemoanatomical data on a possible serotoninergic innervation of the esophagus.
Methods: Immunofluorescence was combined with multichannel confocal laser scanning microscopy.
Results: Serotonin-immunoreactive neuronal cell bodies represented a significant proportion of myenteric neurons (10-20%). 5-HT positive varicose axons were present in the ganglionic neuropil, in interconnecting strands, between muscle fibers of outer and inner layers of the tunica muscularis, in the muscularis mucosae and around blood vessels. In particular, 5-HT positive varicose axons were found in about 10% of motor endplates where they were completey separated from VAChT positive vagal motor terminals. 5-HT was also present in mast cells of the submucosa.
Conclusions: Thus, 5-HT is present in interneurons, muscularis mucosae motorneurons, vasomotor neurons and myenteric neurons co-innervating striated esophageal muscle. (Supported by DFG Ne 534/3-1).

Kategorie: Poster

Rubrik: 13.Pheripheral and vegetative nervous system
Abstract Nr.:50

Titel: Proline-rich synapse-associated protein-1 and 2 (prosap1 and prosap2) - scaffolding proteins also in the postsynaptic density of the peripheral nervous system (pns)

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Abstract:
ProSAP1/2 were originally isolated from synaptic junctional protein preparations of rat brain, and ultrastructurally localized within the postsynaptic density (PSD). ProSAP1 has been described to be specifically expressed in brain tissue primarily at excitatory asymmetric type 1 synapses. Functionally, ProSAP may be one of the key elements that link the postsynaptic signalling apparatus, e.g. NMDA-receptors, to the actin-based cytoskeleton. This functional significance for synaptic transmission and the lack of data on the molecular infrastructure of the PSD in synapses of the PNS stimulated us to investigate neuromuscular junctions, synapses in the superior cervical ganglion (SCG), and synapses in myenteric ganglia as representative synaptic junctions of the PNS.
Double and triple channel confocal imaging revealed ProSAP1/2-immunoreactivity (-iry) in the PSD of neuromuscular junctions of rat and mouse sternomastoid and tibialis anterior muscles. In contrast ProSAP1/2-iry was only negligibly found within the postsynaptic membrane of motor endplates of the esophagus. ProSAP1/2-iry was furthermore detected on cell bodies and dendrites of SCG neurons and on cell bodies and dendrites of myenteric neurons of the esophagus and stomach. Because of the close relationship of ProSAP1/2-iry and enteric, but also glial and vagal afferent markers within the myenteric ganglia and the limited resolution of the confocal technique ultrastructural analysis of ProSAP1/2 within myenteric ganglia were additionally performed.
Thus, scaffolding proteins ProSAP1/2 were found within the PSD of several peripheral synapses, indicating similarities to central excitatory synapses also in this respect.

Kategorie: Poster

Rubrik: 13.Pheripheral and vegetative nervous system
Abstract Nr.:51

Titel: Pituitary adenylate cyclase-activating polypeptide (pacap) influences the synthesis of apolipoprotein d (apod) and adiponectin in 3t3-l1-adipocytes

Autoren: Schröder T.(1),Schröder T.(1),Kosacka J.(2),Klöting N.(2),Gericke M.(1),Spanel-Borowski K.(1),

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Abstract:
Peripheral nerve lesion induces an up-regulation of PACAP. PACAP is released at the lesion site and along the nerve and supports axonal elongation and sprouting. We suppose that PACAP might support the neural regeneration process also indirectly through the stimulation of cells in the nerve sheath such as epineural adipocytes or endoneural vascular cells.
Purpose: In this study we stimulated 3T3-L1-adipocytes with the neuropeptide PACAP (1nM) for 48h to evaluate the protein synthesis of adipokines such as ApoD, ApoE, Adiponectin and Resistin. Furthermore we co-cultured PACAP-stimulated or non-stimulated 3T3-L1-adipocytes with dorsal root ganglia (DRG).
Methods: The adipokines in the monoculture and the neurofilament (NF) in the co-culture were determined by Western blot analysis. Additionally, neurite outgrowth was detected by immunofluorescence in the co-culture.
Results: PACAP stimulation induced a decrease in protein level of Adiponectin and an increase of ApoD in the 3T3-L1-adipocytes. This increase of ApoD synthesis was blocked by a specific antagonist (PACAP6-38) of the PAC-1-receptor. The DRGs co-cultured with the stimulated adipocytes showed a significant increase of NF68 in the western blot and higher percentage of NF200 positive neurites by the immunofluorescence.
Conclusion: Our results show that PACAP stimulation leads to an increase of ApoD in 3T3-L1 adipocytes. Recently we showed that ApoD acts as a neurotrophic factor. PACAP might stimulate the epineural adipocytes to synthesis ApoD. Additionally, PACAP decreases the expression of Adiponectin. Adiponectin has an anti-inflammatory capability and may modulate the endoneural angiogenesis of the regenerating nerve.

Kategorie: Poster

Rubrik: 14.Central nervous system/signal transduction and connections
Abstract Nr.:52

Titel: Anatomists from europe honored with a medal from ottoman-turkish empire

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Abstract:
Purpose: In Ottoman-Turkish Medicine, anatomy education traditionally continued for ages. In medical education Galenos (199-200) and Avicenna's (980-1037) applications were main keystones of medical approach. The period until the beginning of 19th century anatomy education was only theoretic and no cadaver dissection was performed.
Methods: Modernization of educational systems of medicine in Ottoman Empire started with the reign Sultan Selim 3rd (1789-1807. In 1839 Galatasaray Medical School was established and some Austrian anatomist gave lectures in this school.
Results: Dr. Bernard (1808-1844) and Dr. Spitzer (1813-1895) made very essential renovation to anatomy education in Ottoman Empire. Especially, Dr. Spitzer (1813-1895) concentrated on anatomy dissections and in his class all students also attended dissections directly.
The lecturers mentioned above were recommended by the famous anatomist Dr. Hyrtl (1810-1894) from Austria. All these lectures and Dr. Hyrtl were honored with the medal of the Empire by Sultan Abdulmecid (1823-1861).
Oh the other hand, Willam Henry Flower (1831-1899) was the another anatomist and surgeon who had the medal from Ottoman Empire. This medal was given to him on his medical efforts in Great Britain army. There was no contribution of him to the Ottoman-Turkish medical education but Great Britain and Ottoman Empire were allied forces against Russian army in 1854 Crimean war.
Conclusion: In the first half of 19th century, modernization of educational systems of medicine in Ottoman Empire showed fast improvement by the effects of European physicians.

Kategorie: Poster

Rubrik: 3.Methods/Teaching
Abstract Nr.:53

Titel: Actuarial prediction in an anatomical body donation program; ‘last-minute’ donations markedly influence the number of incoming bodies

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Abstract:
At some American and European universities the dissection program is threatened by a shortage of anatomical specimens. In contrast, the annual numbers of registrations at the University Medical Center Groningen (UMCG) in the Netherlands increased substantially in recent years. Uncontrolled body registrations and an increasing number of incoming bodies urge institutes to halt registration. This is usually carried out at an ad hoc basis because to date no analyses were available to predict the consequences of such a stop, resulting in uncertainty about the number of incoming bodies or even a shortage. The UMCG holds a database consisting of two different data sets: registered potential body donors and records of deceased body donors. This database currently consists of 2357 potential body donors and 1363 deceased donors. These data were used for an actuarial predictive model. On average 29 percent of the registered persons between 2003-2008 deceased within 1 year after registration and seemed to make a ‘last-minute’ donation decision. These last-minute registrations are significantly more likely to be males than females (n=155 vs. n=85, p<0•01 percent). This new information markedly influenced final modeling. In coherence with standard models of mortality, it was possible to construct a prediction for the incoming bodies for the coming years. The present study provides the first method for actuarial (future) predictions of the number of incoming bodies in an anatomical body donation program for five years and to orchestrate these numbers by partial donor registration stops.

Kategorie: Poster

Rubrik: 3.Methods/Teaching
Abstract Nr.:54

Titel: Should we teach abernethy and zuckerkandl?

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Abstract:
Eponyms, i.e. terms derived from personal names, have been excluded from the official anatomical terminology in the past. The latest edition of Terminologia Anatomica (TA), however, reintroduced an index of eponyms. This acknowledges the ongoing use of such terms, particularly by clinicians. We looked for a basis to decide which eponyms should be part of active teaching in anatomy.
A Medline search was performed for the 404 eponyms in gross anatomy listed in TA and for the Latin and English terms designating the corresponding structures. The number of hits for a single eponym ranged from 0 to 23410 (median 3) with "islets of Langerhans" giving the highest score. 230 eponyms produced less than 4 hits, of which 150 did not appear in Medline at all. 79% of the titles and abstracts using eponyms do not supply an additional descriptive term for the designated structure.
While results from a Medline search are largely restricted to the English language and will not entirely represent clinical usage they can give an impression of how frequently certain anatomical terms are used. We conclude that many eponyms are unnecessary knowledge for medical students and can therefore be confined to textbook indices while some will have to be part of active teaching to prepare students for their clinical years.

Kategorie: Poster

Rubrik: 3.Methods/Teaching
Abstract Nr.:55

Titel: The ultrasound: preoperative predictive factor for conversion of mini cholecystectomy into classic cholecystectomy

Autoren: Motoc A.(1),Ilie A.(2),Jianu A.(1),Stana L.(1),Sisu A.(1),Selaru M.(1),Sava A.(2),

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Abstract:
Cholecystectomy is considered to be the treatment of choice in symptomatic biliary lithiasis. Lately, due to medical progress, classic cholecystectomy has been gradually replaced by laparoscopic cholecystectomy and by mini cholecystectomy. Therefore, it is very important to determine certain preoperative factors which might predict the conversion of mini cholecystectomy into classic cholecystectomy. In our study we used ultrasound as a preoperative predictive factor for conversion. In this study, we examined a group of 1190 patients by ultrasound. The tests recorded six parameters: the diameter of the biliary duct (mm), the number of calculi, the diameter of the largest calculus (mm), the contracted aspect of the gallbladder, the distance between the tegument and the gallbladder fundus (cm) and the distance between the tegument and the cystic duct (cm). The significant predictive conversion factors to classic cholecystectomy, quantified on the basis of regression analysis, are: age >70; calculus with a diameter >20; biliary duct with a diameter >6; contracted gallbladder; distance between the tegument and the gallbladder fundus >7.2 cm; distance between the tegument and cystic duct >17.1 cm. Being a procedure that can be carried out on an outpatient basis with rather low costs, ultrasound should, thus, be considered not just a diagnostic method, but also a preoperative predictive factor in mini cholecystectomy.

Kategorie: Poster

Rubrik: 3.Methods/Teaching
Abstract Nr.:56

Titel: Transtumoral esophageal endoprosthesis by minilaparotomy after endoscopic failure

Autoren: Motoc A.(1),Sava A.(2),Ilie A.(2),Jianu A.(1),Stana L.(1),Selaru M.(1),Valceanu A.(2),

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Abstract:
Purpose: Palliative surgery of esophageal cancer requires pragmatism on the part of surgeon. We talk about those cases in which no radical surgical technique is anymore possible. Patient's highly degraded and deficient body requires minimally invasive techniques to re-establish the esophageal transit.
Methods: Between 1993-2008, 145 patients with advanced tumour esophageal stenoses (dysphagy) were taken into account for experimental therapy. Endoscopic endoprosthesing techniques couldn`t be performed, the only solution for feeding being gastrostomy.
For this reason in 8 cases transtumoral endoprosthesis by retrograde catheterisation (anisoperistaltic) was carried out. A personal technique of transtumoral esophageal prosthesing using an own plastic prosthesis model (derived from Atkinson-Celestine model) was applied. The surgical technique started with the median supra-umbilical cutaneous minimal incision of approximately 3-4 cm and marking of the anterior surface of the gastric body. This prosthesis must be anchored to a vector that is capable to proceed transtumoural and isoperistaltic.
Results: The success rate in re-establishing the post-intervention esophageal passage is comparable with that obtained by using modern methods, even better than the latter, when facing difficult cases with complete malignant stenosis, as well as from the point of view of cost/efficiency ratio.
Conclusions: Post surgery evolution is minimally influenced by a minilaparotomy incision, the pacient being able feeding after only 2-3 day surgery.

Kategorie: Poster

Rubrik: 3.Methods/Teaching
Abstract Nr.:57

Titel: In vivo mri stem cell tracking using iron oxide particles – size is of concern

Autoren: Nohroudi K.(1),Addicks K.(1),Jordan A.(2),Himmelreich u.(3),

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Abstract:
Beyond controversy, during development of regenerative cell based therapies, MRI is the most powerful technique for in vivo tracking of stem cells, which is a precondition in their way from bench to bedside. Iron oxide particles are preferred as cell labeling agent to gain the necessary contrast for MRI, however, there is ongoing dispute about which of the different kinds of iron particles available serves best for in vivo tracking of single cells. As a major difference refers to the size of the particles, we investigated the influence of large (1.63 µm) and small (20 nm) particles on key parameters for stem cell therapy on rat bone marrow stromal cells (rBMSC). We here show, that both kinds of particles are taken up by phagocytosis with no need of transfection agents and therefore match an important prerequisite for clinical use. Micrometer-sized particles negatively interfere with cell viability and migratory capacity of rBMSC even at low dose labeling, whereas the nanometer-sized particles used here are well tolerated in high amounts and hamper migration to a much lesser extent. Electron microscopic studies revealed that the large particles lead to cell necrosis presumably by mechanical stress. Both kinds of iron particles allowed single cell detection in vitro with labeling amounts consistent with cell viability, highlighting the superiority of larger iron cores with regard to the detection limit. But, as micrometer-sized particles interfere with the actin cytoskeleton even at low dose labeling, nanometer-sized particles seem to be superior concerning preservation of cell viability during migration.

Kategorie: Poster

Rubrik: 5.Experimental Morphology
Abstract Nr.:58

Titel: The morphology of temporomandibular joint (tmj) ankylosis in children

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Abstract:
The ankylosis of TMJ is a reason for decrease of functions in this region of face following by surgical treatment not always effective in long time period. Chondroid hyperplasia, transformation of the cartilage cells into osteocytes, and also some growth factors like BMP and genes like Shox2 are mentioned to play a role in morphopathogenesis of this disease. Our aim was complex detection of appearance and distribution of growth factors, facial bone growth stimulating genes and ground substance proteins in ankylotic tissues of TMJ.
Ankylotic tissue was obtained during the arthroplastic surgery from two 6 and 12 years old children. One child underwent the repeated surgery due to the same diagnosis 5 years after the rib bone/cartilage autotransplantation in TMJ. Material was proceeded for detection of BMP2/4, TGFbeta, Msx2, osteopontin, osteocalcin immunohistochemically, and apoptosis.
Results demonstrated massive compact bone formation mixed by neochondrogenesis and dense connective tissue fragments, especially after autotransplantation. TGFbeta was richly secreted by osteocytes, endost, endotheliocytes and connective tissue cells in all cases, while BMP2/4 was absent at all. Osteopontin was abundant in supportive tissue cells. Osteocalcin demonstrated variable appearance predominantly in the child after autotransplantation. The last material showed also inhomogeneous Msx2 and apoptosis that was not detected in ankylotic bone.
Conclusions. The lack of BMP2/4, inhomogeneous distribution of Msx2, osteocalcin and apoptosis in continuing ankylosis of supportive tissue after the autotransplantation suggest about the disordered growth/mineralization and cell death in TMJ. TGFbeta and osteopontin seems not to be involved in ankylotic bone remodelling after autotransplantation.

Kategorie: Poster

Rubrik: 5.Experimental Morphology
Abstract Nr.:59

Titel: Left ventricular fibrillar collagenous network remodeling in rabbits' ischemic myocardium

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Abstract:
Purpose: To estimate the changes of the rabbits myocardial interstitial collagenous matrix arising in chronic myocardial ischemia caused by experimental hypercholesterolemia.
Methods: As Sirius Red in saturated picric acid solution is specifically binding to interstitial collagen fibres, we employed this quality in quantification of myocardial interstitial collagen. The percentage volume, perimeter and the number of separate fibers per field of myocardial interstitial fibrillar collagenous matrix were calculated by computerized image analysis system (motorized Olympus BX61 microscope, Media Cybernetics Evolution QEi camera and ImagePro AMS software). Collagen types were measured by labeling with the monoclonal antibodies against collagen type I (Col I, Abcam) and type III (III-53, Acris Antibodies) using immunohistochemistry staining.
Results: The chronic myocardial ischemia was induced by experimental atherosclerosis of long duration (12 months). The histomorphometric parameters of total interstitial collagenous matrix in rabbits of this group were higher than those of control group rabbits of the same age: the percentage volume of collagenous matrix in the left ventricle was 1.2 times (p<.05), perimeter – 1.34 times (p<.05) and the number of separate fibers – 1.31 times (p<.05) higher. Type I and type III collagen volume were increased in experimental atherosclerosis group.
Conclusions: In chronic myocardial ischemia caused by experimental hypercholesterolemia, the volume of the collagenous fibers occurring on the volume unit of cardiomyocytes, increases, i.e. the interstitial myocardial fibrosis is being formed.

Kategorie: Poster

Rubrik: 5.Experimental Morphology
Abstract Nr.:60

Titel: Commitment of scapular precursor cells after epithelio-mesenchymal transition of the dermomyotome

Autoren: Wang B.(1),De R.(2),Patel K.(3),Wilting J.(1),Huang R.(2),

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Abstract:
Epithelio-mesenchymal transition (EMT) occurs in numerous physiological and pathological processes including embryonic development, organ fibrosis and tumor metastasis. During embryonic development EMT is usually associated with changes of cell shape and cell motility, but does not seem to be related to cell differentiation. We have previously shown that the development of the scapula blade of birds is reliant on the dermomyotome undergoing EMT. In the present study we investigated whether EMT is linked to the determination process leading to scapula development. Our results shown that the hypaxial dermomyotome, which normally forms the scapula, does not generate scapula after being grafted to the epaxial domain, while the reciprocal graft of the epaxial dermomyotome to the hypaxial domain gives rise to scapula. Furthermore, the hypaxial subectodermal mesenchyme (SEM), which is formed by the hypaxial dermomyotome after EMT, generates scapula in the epaxial domain, whereas in the reciprocal grafting experiments, the epaxial SEM cannot form scapula in the hypaxial domain. Our results indicate that the scapular precursors are committed to differentiate into chondrocytes only after EMT of the dermomyotome, and provide new insights into the role of EMT in embryonic development.

Kategorie: Poster

Rubrik: 5.Experimental Morphology
Abstract Nr.:61

Titel: Structural changes of retinal cell layers in two rat glaucoma models

Autoren: Radtke J.(1),Kuerten S.(1),Nohroudi K.(1),Addicks K.(1),Arnhold S.(2),

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Abstract:
Purpose: Elevated intraocular pressure (IOP) is a major risk factor for glaucoma. Several rat models are known to investigate acute in vitro glaucoma models. Here we compared two invasive methods, elevation of IOP (HIOP) in the anterior chamber and surgical transient optical nerve occlusion (crush).
Methods: We utilized groups of six animals per method treating each right retina, contralateral eyes were left untreated. Untreated animals served as a control group. Histological patterns were analyzed by haematoxylin-eosin staining and measured with image analysis programs.
Results: Overall retina diameter was significantly decreased in the HIOP vs crush and control group, while the diameter of the left retina did not show any significant alterations. The diameter of the inner plexiform layer (IPL) likewise appeared significantly thinned in the HIOP vs the control group. The same applied to the crush group. Comparing HIOP to crush there was no significant difference. The outer plexiforme layer (OPL) only showed a decline in the HIOP vs the control group.
Conclusion: We demonstrate that decreasing thickness of overall retina, induced by two different models is the morphometric correlate of glaucoma. In addition, the HIOP model resembles glaucoma by using an anterior chamber pressure elevation and is thus a favourable model to define changes in overall retina thickness. It could also be shown, that the crush model induces retinal thinning. A detailed view on each cell layer delineated that only IPL and OPL were responsible for a decline while ganglion and nuclear cell layers were not significantly affected.

Kategorie: Poster

Rubrik: 5.Experimental Morphology
Abstract Nr.:62

Titel: [18f]fluoro-deoxy-glucose and [18f]fluoro-l-thymidine positron emission tomography-computed tomography and magnetic resonance imaging of human neuroblastomas in a scid mouse xenograft model

Autoren: Haane C.(1),Peldschus K.(2),Brenner W.(3),Wilke F.(3),Pommert A.(4),Schumacher U.(1),Valentiner U.(5),

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Abstract:
Purpose: Finding new therapeutic agents is of great clinical interest in neuroblastoma research because prognosis of children with disseminated stages of disease is still poor. As xenograft mouse models are frequently used for studying anticancer drugs in vivo, small animal imaging is an important method of monitoring in anticancer research.
Methods: SCID mice inoculated with human neuroblastoma SK-N-SH cells were examined with positron emission tomography-computed tomography using [18F]fluoro-deoxy-glucose (FDG) or [18F]fluoro-L-thymidine (FLT) and with magnetic resonance imaging.
Results: All neuoblastomas were detected by magnetic resonance imaging. In positron emission tomography-computed tomography no tumour was visualized with [18F]FDG, but 13 of 14 (93%) were found with [18F]FLT. Uptake of [18F]FLT was significantly associated with tumour weight. Necrotic areas could not be identified either by magnetic resonance imaging or on positron emission tomography-computed tomography scans.
Conclusions: Both magnetic resonance and positron emission tomography-computed tomography imaging with [18F]FLT are highly qualified for the detection of neuroblastomas grown in SCID mice. However, [18F]FDG, which is the standard tracer in clinical positron emission tomography-computed tomography imaging, is not suited for positron emission tomography-computed tomography imaging in the neuroblastoma xenograft model.

Kategorie: Poster

Rubrik: 5.Experimental Morphology
Abstract Nr.:63

Titel: Vegf and gfap mediate vascular outgrowth and glia matrix changes in rat glaucoma models

Autoren: Radtke J.(1),Kuerten S.(1),Nohroudi K.(1),Arnhold S.(2),Addicks K.(1),

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Abstract:
Purpose: Glaucoma culminates in various hypoxic effects like an increase in vascular endothelial growth factor (VEGF) and changes in Mueller cell distribution, expressed by an elevation of glial fibrillary acidic protein (GFAP). Based on these effects we compared a high intraocular pressure model (HIOP) vs transient ischemia by ligation of Arteria centralis retinae (Crush).
Methods: Glaucoma was induced unilaterally. Cryosections from right retinas of six animals per method were immunhistochemically stained for VEGF and GFAP. Contralateral eyes were used as controls. A group of untreated retinas served as controls.
Results: We found increased VEGF immunoreactivity in inner (IPL) and outer plexiforme layer (OPL) and in the inner (INL) and outer nuclear layer (ONL). In the IPL VEGF was significantly increased in the HIOP vs Crush vs control group, while Crush vs control did not show a significant increase of VEGF. In the nuclear layers HIOP and Crush both induced VEGF up to 40 percent vs. controls and vs contralateral eyes. Compared with controls the activation of Mueller glia cells was significantly elevated in HIOP population vs Crush and vs controls in the INL. There was also an significant increase in the Crush group and in HIOP in the ganglion cell layer (GCL) vs controls.
Conclusion: Elevation of intraocular pressure by HIOP, but not similar significantly by using Crush, leads to an significant increase in VEGF levels in the glaucomatous retina. We also suggest that hypoxia after glaucoma wreaks neurodegeneration by glial cell degeneration in GCL and in Mueller-cell localized layers.

Kategorie: Poster

Rubrik: 5.Experimental Morphology
Abstract Nr.:64

Titel: Allometry of the mammalian pulmonary surfactant system

Autoren: Wirkes A.(1),Ochs M.(2),Mühlfeld C.(1),

Adressen: (1) Institute of Anatomy and Cell Biology|Justus-Liebig-University Giessen|Giessen|Germany; (2) Institut für Funktionelle und Angewandte Anatomie|Medizinische Hochschule Hannover|Hannover|Germany; email:christian.muehlfeld@anatomie.med.uni-giessen.de

Abstract:
Lung volume, alveolar epithelial and capillary endothelial surface area are closely correlated with body weight across a broad range of mammalian species. The alveolar epithelium is covered by a continuous surfactant lining layer which is produced by alveolar type II (AE2) cells. We hypothesized that the total number of AE2 cells and the volume of intracellular surfactant-storing lamellar bodies are positively correlated with alveolar surface area.
Therefore, we used light and electron microscopic stereology to estimate the number and volume of AE2 cells and the volume of different AE2 cell compartments (lamellar bodies, nucleus, mitochondria, cytoplasm) in 12 different mammalian species ranging from 2-3 g (Etruscan shrew) to 400-500 kg (horse) body weight.
The mean volume of AE2 cells was around 500-600 microm³ in most species but was higher in the Etruscan shrew, the guinea pig and the human lung. Similarly, the mean volume of lamellar bodies per AE2 cell was less than 100 microm³ in most species - with the same exceptions, here including the dog. However, the total number of AE2 cells and the total volume of lamellar bodies in the lungs increased in proportion to body weight and showed a close correlation with lung volume (r^2=0.99) and alveolar surface area (r^2=0.96).
In conclusion, our study shows that, with few exceptions, the cellular characteristics of AE2 cells are independent of body mass. The adaptation of the intracellular surfactant pool size to body mass is obtained by the variation of the number of AE2 cells in the lung.

Kategorie: Poster

Rubrik: 5.Experimental Morphology
Abstract Nr.:65

Titel: Corneal and retinal morphology in a mouse model of npc1 disease

Autoren: Hovakimyan M.(1),Stachs O.(2),Reichard M.(2),Rolfs A.(3),Lukas J.(3),Frech M.(3),Guthoff R.(2),Witt M.(4),Wree A.(4),

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Abstract:
Purpose: Niemann-Pick disease type C1 is a fatal hereditary disorder that develops in an autosomal recessive manner. NPC1 is characterized by a deficiency in NPC1 gene resulting in a progressive accumulation of unesterified cholesterol in lysosomes in multiple tissues. Here, the involvement of ocular tissue in NPC1 disease in a mouse model was investigated.
Methods: NPC1 knock-out mice (NPC1-/-) aged 6 to 11 weeks and age-matched controls (NPC1+/+) were included. In vivo laser-scanning microscopy (CLSM) was performed on both eyes. Thereafter, the eyes were processed for histological and electronmicroscopical examination.
Results: With in vivo CLSM corneal changes confined to the epithelium were visualised. Hematoxylin/Eosin (H.E.) staining did not show any particular differences between corneae of NPC1-/- and NPC1+/+ mice. However, electron microscopy revealed cytoplasmic vacuolated inclusions in corneal epithelium and keratocytes. Inclusions, 200-500 nm in size were loaded with electron dense material.
In spite of a normal appearance of the retina in H.E. staining, filipin staining showed it also involved in NPC1-/- pathology: massive accumulation of unesterified cholesterol was detected in ganglion cells. Electron microscopy showed vacuolated cytoplasmic inclusions in ganglion cells, and inner nuclear and plexiform layers.
Conclusions: The findings of the in vivo CLSM were confirmed at the ultrastructural level in NPC1-/- mice. Thus, in vivo CLSM can be successfully used in NPC1 patients for diagnostical purposes.

Kategorie: Poster

Rubrik: 5.Experimental Morphology
Abstract Nr.:66

Titel: The effect of ppar-gamma agonists on human neuroblastoma cell growth in vitro and in a xenograft mouse model

Autoren: Krieger-Hinck N.(1),Carlsson M.(1),Müller A.(2),Schumacher U.(1),Valentiner U.(1),

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Abstract:
Purpose: The thiazolidinedione class of peroxisome proliferator-activated-gamma (PPAR-gamma) ligands were shown to exert growth inhibitory effects on several carcinoma cell lines. In the current study the effect of PPAR-gamma agonists on the cell growth of human neuroblastoma cell lines was investigated in vitro and in a SCID mouse model.
Methods: Cell proliferation of seven human neuroblastoma cell lines under treatment with several PPAR-gamma agonists (ciglitazone, pioglitazone, troglitazone, rosiglitazone) was assessed by a colorimetric XTT-based assay. Subsequently, the influence of rosiglitazone on SK-N-SH neuroblastoma cell growth was examined in a spontaneous metastatic SCID mouse model. Expression of PPAR-gamma protein was examined by immunohistochemistry and Western blot analysis.
Results: All glitazones inhibited in vitro growth and viability of the human neuroblastoma cell lines in a dose-dependent manner. Effectiveness of the glitazones on neuroblastoma cell growth differed depending on the cell line and the agent. The presence of PPAR-gamma protein was demonstrated in all cell lines. In the SCID mouse model rosiglitazone significantly decreased cell proliferation of the SK-N-SH neuroblastomas. However, primary tumor weight, apoptosis and metastasis were not considerably influenced.
Conclusions: Our findings indicate that ligands for PPAR-gamma have considerable inhibitory effects on neuroblastoma cell growth in vitro. In contrast to the in vitro results, the PPAR-gamma agonist rosiglitazone has only slight anti-tumor activities on SK-N-SH neuroblastoma growth in the SCID mouse model and is therefore not qualified for the therapy of neuroblastoma in vivo.

Kategorie: Poster

Rubrik: 5.Experimental Morphology
Abstract Nr.:67

Titel: Detection of human tumor cells in mouse blood: molecular biology (quantitative rt-pcr) versus cell biology (laser scanning cytometry) - which method should be applied?

Autoren: Nehmann N.(1),Wicklein D.(2),Schumacher U.(1),Müller R.(1),

Adressen: (1) Department of Anatomy II: Experimental Morphology|University Hospital Hamburg-Eppendorf|Hamburg|Germany; email:nnehmann@uke.uni-hamburg.de; (2) Diagnostic Center, Department of Clinical Chemistry,|University Hospital Hamburg-Eppendorf|Hamburg|Germany

Abstract:
Background: Dissiminated tumor cells detected in the blood are of predictive relevance for development of distant metastases in some tumor entities. As the formation of metastases is often investigated in xenografted human tumors in mice the need arises to detect such single human tumor cells in small volumes of mouse blood. Methods: Two techniques, namely quantitative real time polymerase chain reaction (qRT-PCR) and Laser Scanning Cytometry (LSC) were compared for screening of blood samples from immunodeficient mice spiked with a defined number of fluorescence labelled human HT29 colon carcinoma cells. Results: With both techniques, it was possible to quantify disseminated human tumour cells in 100 µl mouse blood, even at the single cell level. If one cell per 100 µl blood was added this cell was detected in 8 out of 12 samples using the qRT-PCR, while it was detected in 6 times using LSC. In all other samples a recovery rate of nearly 100% with the qRT-PCR technique was found. In contrast, the median recovery rate of the LSC technique varied between 20% (10 cell added) and 7,5% (10000 cells added), similar levels of detection were obtained by FACS analysis. Conclusion: Thus, it is advisable to quantify the number of human tumor cells in mouse blood by qRT-PCR and to analyse them phenotypically by using the LSC.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:68

Titel: Morphological considerations on arteries that forms the cerebral arterial circle

Autoren: Dina C., Bulbuc I., Dimitriu C.P., Bordei P.

Adressen: Department of Anatomy|Faculty of Medicine|University “Ovidius” Constanța|Romania

Abstract:
We assessed the cerebral arterial circle on a number of 88 fresh or formalin preserved human brains, using as study method the dissection and the plastic injection (Tehnovit), noting some morphological features of the arteries involved within its formation, the aspect, the number and their dimensions. The *anterior communicating artery* is, most frequently, single and straight, but we found it double in 14 cases, triple one in 2 cases and with a plexiform aspect in 3 cases. In only 2 cases we encountered a latero-lateral anastomosis, between the two anterior cerebral arteries, a situation when the anterior communicating artery was absent. The artery was hypoplasic (with the caliber under 1 mm) in only 2 cases. The *left anterior cerebral artery* is often more voluminous than the right one, while on the right side we found a hypoplasic artery in two cases. We encountered one case with bilateral hypoplasia of the anterior cerebral artery. The *posterior communicating artery* is the longest artery of the circle, the right one can reach up to 26 mm and the left one up to 34 mm. The right is often more voluminous than the left one; cases of hypoplasia were found 3 on the right and 6 on the left side. Also rarely, there may be a bilateral hypoplasia. The absence of the anastomosis of this artery with the posterior cerebral artery was encountered in 8 cases on the right side and only in one case on the left, situations when the artery divided near its origin from the internal carotid artery in thin branches that supplied the optic chiasm and the posterior perforated space. The *posterior cerebral artery* was hypoplasic in 2 cases on the left and also in 2 cases on the right.
The arterial branches that forms the cerebral arterial circle rarely described a symmetric polygon; most often, the polygon is totally asymmetrical, both in terms of length of its component branches and in terms of their caliber.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:69

Titel: Peculiar morphological aspects of the intracranial trigeminal nerve

Autoren: Dina E., Iliescu D., Ionescu C., Bordei P.

Adressen: Department of Anatomy|Faculty of Medicine|University “Ovidius” Constanța|Romania

Abstract:
Using as study method the dissection of a total of 82 cases (adult and fetal human cadavers), we assessed the intracranial trigeminal nerve in what concerns its apparent origin, its traject and the relations with neighboring nerves, the trigeminal ganglia morphologic features and of its three terminal branches. The apparent origin of the motor root may be composed of two bundles that will merge closer to the origin (fig. 1) or approximately halfway between the origin and the upper border of the petrous part of the temporal bone (fig. 2), two bundles can be approximately the same thickness or, more often, unequal. The sensorial root can disperse within a triangular plexus behind the upper border of the petrous part of the temporal bone (fig. 4,5), and its cords, of different thicknesses and rarely equal, may be parallel (fig. 2,4) or irregular, crossing between them; a nervous cord may cross one or more of the neighboring bundles (fig. 3,6,7). The trigeminal ganglion may show incisures between the corresponding segments of the three terminal branches of the trigeminal nerve, a "three-lobed” ganglion (fig. 5,8,9). Sometimes, the separation of the three terminal branches of the trigeminal nerve is performed from the upper border of the petrous part of the temporal bone, with appropriate segmentation of the trigeminal ganglia (fig. 10). In other cases, more frequent, we assessed only the individualization of the ophthalmic nerve from the other lateral 2/3, which will receive within the concavity the plexus fibers that would give rise to maxillary and mandibular nerves, a "two-lobed ganglion” (fig. 11,12), from the upper border of the petrous part of the temporal bone (fig. 13), with separation of the medial 1/3 of the trigeminal ganglia that corresponds to the ophthalmic nerve. The mandibular nerve may divide intracranially within its terminal branches, a situation which includes proper bony passages for one or more of the nerve branches.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:70

Titel: BMP2 and BMP4 Expression in Early Stages of Neural Tube Formation in Human Embryos

Autoren: Aimar Namm 1,2 Andres Arend 1 Marina Aunapuu 1

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Abstract:
Development, regional specification and morphogenesis of the human brain seem to be controlled by Bone Morhogenetic Proteins (BMP-s). BMP-s are members of TGF superfamily and play important roles in multiple biological events. BMP-s were originally identified by an ability to induce the formation of bone and cartilage. BMP-s have also a important roles during embryonic development of the embryonic pattering, in particular they participate in several stages of neural pattering. In human embryonic development BMP2 and BMP4 are critical signaling molecules required for the early differentiation of the embryo and the establisment 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. Sixteen human embryos of Carnegie stages 14 - 23 were obtained by medical obortions. Tissue blocks were serially cut in transversal direction, mounted in glass-slides and stained with H&E and thionine for general orientation to section. The sections were washed in PBS and 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 neural tube formation.

Kategorie: Poster

Rubrik: 6.Neuroanatomy/Neurobiology
Abstract Nr.:71

Titel: Differentiation of radial glia and vascularization under the chronic hypobaric hypoxia and chronic ethanol treatment of pregnant rat dams in prosencephalon and telencephalon

Autoren: H. Brichova[1] and T. Zima[2]

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Abstarct
Differentiation of radial glia (RG) and tissue vascularization in prosencephalon and telencephalon has been studied in 3 groups of Wistar rat embryos and fetuses: a) under chronic hypobaric hypoxia treatment of pregnant dams, b) under chronic ethanol treatment of pregnant dams, c) controls. Tissue samples were studied using biochemical, EM and immunocytochemical methods (vimentin, nestin, Ox2, NF01, β-III-tubulin and lectins). In early development RG plays a role of a pool for neural and glial progenitors and scaffolding for neuroblast migration. At E12 the basal 1/4 of ventricular zone was not vascularized. In this layer, in both experimental groups, RG cells and its progeny were damaged due to extracellular oedema derived in avascular part of ventricular zone. The drainage of tissue fluid was decreased and oedema conditioned changes in the metabolism of tissue: a) decrease of O2 supply and the direct influence of high concentration of lactate and ions and lack of glucose in the tissue fluid, b) tissue hypoxia and primary direct toxic effect of ethanol and its metabolites on the cells. At E16-18 in both a) and b) the structural changes in the developing basis of cortical plate were seen. Whilst in the hypoxic tissue retarded cell and blood vessel differentiation mostly conditioned alterations in the corticogenesis, with (perhaps) the prospective possibility of development; in the alcohol treated tissue the basic structure of cortical plate was defective, high reduction of extracellular spaces hindered transport of O2 and growth factors, vessel sprout growth, neuroblast migration and synaptic contact formation.

Kategorie: Poster

Rubrik: 2.Main Topic II
Abstract Nr.:72

Titel: Human prostate cancer xenografts in pfp/rag2 double knock out mice: modelling spontaneous metastasis

Autoren: Müller I.(1),Ullrich S.(1),Hellwinkel O.(2),Schumacher U.(1),

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Abstract:
Purpose: Prostate cancer (PCa) is the most common malignancy in males. Curability at the time of surgery is mainly related to the size of the primary tumour and limited by early development of distant metastases. In pfp/rag2 double knock out mice the formation of spontaneous lung metastasis of different PCa cell lines was investigated.

Methods: One million human PCa cells (PC-3 or LNCaP) were injected subcutaneously into each male pfp/rag2 double knock out mice. Animals were sacrificed when they exceeded 120% of total initial body weight, or the tumour ulcerated the skin. The mouse lungs were processes for standard histological evaluation of metastasis.

Results: Both cell lines resulted in local tumour growth as well as formation of spontaneous lung metastasis (10/10 and 8/8 pfp/rag2 mice from PC-3 and LNCaP cells, respectively). PC-3 tumours developed and fulfilled the termination criteria within 41 to 50 days and tumours weighed 0,6 to 2,1 g. LNCaP tumours fulfilled the termination criteria within 48 to 139 days and tumour weight was 1,0 to 2,2 g. The total number of lung metastases from PC-3 xenografts ranged from 38 to 355 metastases whereas in LNCaP xenografted mice 348 to 4606 metastases per lung were counted.

Conclusions: The pfp/rag2 double knock out mouse is a suitable xenograft host to study spontaneous lung metastasis of PCa after subcutaneous implantation in vivo. This model can now be used to analyse the different steps of the metastatic cascade and to test potential anti-metastatic treatments.

Kategorie: Poster

Rubrik: 2.Main Topic II
Abstract Nr.:73

Titel: Effects of purified mistletoe lectin i (ml-i) compared with aqueous mistletoe extracts on melanoma growth and metastasis in a scid mouse model

Autoren: Dahl A.(1),Meyer A.(1),Dautel P.(1),Pfüller U.(1),Sander F.(1),Ehm A.(1),Nehmann N.(1),Krieger-Hinck N.(1),Schumacher U.(1),

Adressen: (1) Institut für Anatomie II: Experimentelle Morphologie|Universitätsklinikum Hamburg-Eppendorf|Hamburg|Germany; email:thies@uke.uni-hamburg.de

Abstract:
Purpose: To assess the effects of purified mistletoe lectin I (pML-I) in comparison to that of the aqueous mistletoe extract Iscador M ® standardised for ML-I content on melanoma growth and spread in vivo.
Methods: Human melanoma MV3 cells were subcutaneously xenografted into scid mice, and pML-I or ML-I equivalent doses of Iscador® were administered i. p. at 30, 150, and 500 ng/kg, respectively for 19 days.
Results: Evaluation of tumour weight and number of lung metastases revealed a significant inhibition of both primary melanoma growth (35% reduction; P = 0.03) and number of lung metastases (55% reduction; P = 0.016) for 30 ng pML-I/kg but not for 150 and 500 ng pML-I/kg. Low dose pML-I (i) induced apoptosis in the melanoma cells, (ii) increased the number of tumour infiltrating dendritic cells (DCs), and (iii) protected DCs against apoptosis, while higher ML-I doses induced apoptosis not only in the melanoma cells but also in the DCs. Iscador® treatment had no significant influence on tumour growth or metastasis.
Conclusions: These results demonstrate the high impact of the non-specific immune system in melanoma defence. As whole mistletoe extracts contain several biologically active substances, our results suggest that these components exert counterproductive mechanisms, which abrogate beneficial ML-I effects. These results might explain the contradictory results of mistletoe extract effects in cancer therapy and point out that future studies should concentrate on the mechanisms underlying purified ML-I in melanoma therapy.

Kategorie: Poster

Rubrik: 2.Main Topic II
Abstract Nr.:74

Titel: Altered proliferation, cell death and fibrosis in desmoglein 2 mutant mice

Autoren: Kant S.(1),Holthöfer B.(1),Hofe V.(1),Eshkind L.(2),Windoffer R.(1),Leube R.(3),Krusche C.(1),

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Abstract:
Purpose: Mutations in desmosomal proteins lead to arrhythmogenic right ventricular cardiomyopathy (ARVC), which is characterized by loss of cardiomyocytes and fibrofatty transformation of the ventricular wall. Using mice with mutated desmoglein 2 allele(s) as a model, pathogenetic mechanisms were investigated focusing on alterations proliferation, cell death and fibrosis.
Methods: Tissue sections of hearts from 8 and 12 week old animals (homozygous DSG2 mutated, heterozygous DSG2 mutated and wild type mice) were examined by histological stains and by immunohistology using markers for proliferation (Ki67) and apoptosis (cleaved caspase 3). Apoptosis was also studied by TUNEL. In addition, the expression of CTGF, a cytokine enhancing fibrosis, was examined by real time RT-PCR.
Results: Interstitial fibrosis and fibrous scars in the muscular wall were detected in hearts of homozygous mutated mice from 2 weeks onwards by gross inspection and histological staining. Kossa-positive areas, indicative of calcification, were noted in ventricular walls and the septum. At 8 weeks significantly more Ki67-positive fibroblasts were detected in homozygous mutated mice than in the wild type littermates. Cleaved caspase 3- and TUNEL-positive cells were found in areas close to fibrous scars. CTGF mRNA expression was 3.16 ± 0.55 fold higher at 8 weeks and 13.1 ± 8.6 fold higher at 12 weeks in homozygous mutated mice than in wild type controls.
Conclusion: Our observations show that cardiomyocytes die in homozygous mutated mice and are replaced by connective tissue. Our DSG2 mutant mice will serve as valuable tools to delineate the underlying molecular mechanisms.

Kategorie: Poster

Rubrik: 2.Main Topic II
Abstract Nr.:75

Titel: Role of rac1 in camp-mediated reorganization of intercellular junctions – first insights from electron microscopy

Autoren: Peter D.(1),Spindler V.(1),Asan E.(1),Waschke J.(1),

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Abstract:
cAMP stabilizes the endothelial barrier, in part by activation of Rac1. However, the effects on intercellular contacts on the ultrastructural level are largely unknown. Here, in human dermal microvascular endothelial cells, we used forskolin/rolipram (F/R) to increase cAMP as well as O-Me-cAMP to stimulate Epac/Rap 1 signaling. Under both conditions, endothelial barrier properties were enhanced as detected by increased transendothelial electrical resistance (TER) which was paralleled by activation of Rac 1. Concurrently, increased immunofluorescence intensity and a linearization of the signals at cell borders were observed for intercellular junction proteins VE-cadherin and claudin 5. Electron microscopy revealed a significantly higher frequency of complex interdigitations stabilized by numerous intercellular junctions between adjacent cells exposed to F/R or O-Me-cAMP as compared to non-stimulated cells. Finally, both barrier stabilization as well as junction reorganization in response to O-Me-cAMP but not to F/R were completely abolished in the presence of NSC-23766 which specifically interferes with Rac1 activation. These results indicate that Rac1-mediated reorganization of intercellular contact morphology was required for Epac/Rap1-mediated cAMP-induced barrier stabilization. DFG SFB688, TP A4

Kategorie: Poster

Rubrik: 2.Main Topic II
Abstract Nr.:76

Titel: Increased camp protects against pemphigus-igg-mediated loss of keratinocyte cohesion

Autoren: Vielmuth F.(1),Waschke J.(1),Spindler V.(1),

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Abstract:
The autoimmune disease pemphigus is characterized by blister formation within the epidermis and mucous membranes. Autoantibodies bind to the intercellular cadherin-type adhesion molecules desmoglein (Dsg) 1 and 3 on keratinocytes. This results in loss of intercellular adhesion which is at least in part mediated by alteration of intracellular signaling pathways. Because cAMP is well known to enhance intercellular adhesion of endothelial cells, we investigated in this study whether cAMP strengthens keratinocyte cohesion and thus may be able to counteract the pathogenic effects of pemphigus-IgG. We found that increase of cellular cAMP levels both via activation of beta-adrenergic receptors with isoproterenol (Iso) and by adenylate cyclase activator forskolin and phosphodiesterase inhibitor rolipram (F/R) reduced pemphigus-IgG-induced fragmentation of Dsg3 immunostaining in cultured keratinocytes. Furthermore, depletion of cellular Dsg3 levels was inhibited by treatment with both Iso and F/R as indicated by Western blot experiments. Importantly, in keratinocyte dissociation assays as measure for intercellular adhesion Iso and F/R reduced pemphigus-IgG-induced loss of cell cohesion. These data indicate that pharmacological modulation of cAMP levels may represent a novel and more specific approach in treatment of pemphigus patients.

Kategorie: Poster

Rubrik: 2.Main Topic II
Abstract Nr.:77

Titel: Characterization of epcam-expression in breast cancer spread

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Abstract:
Purpose: To developed human breast cancer xenograft mouse models to analyze the molecular mechanisms of the metastatic spread of breast cancer cells. We focused on cell adhesion molecule EpCAM, which is expressed on many epithelial tumor cells.

Methods: The breast cancer cell line DU4475 was injected subcutaneously into pfp/rag2 mice. The animals were sacrificed when the tumors started to ulcerate or when the weight of the mouse exceeded 120 percent of the body weight at the beginning of the experiment. Blood and bone marrow of the animals as high potential metastatic sites in breast cancer were screened for circulating and disseminated tumor cells, respectively. Expression of EpCAM transcripts in blood, lung tissue and tumor was assessed in a RealTime-PCR. Bone marrow was investigated for DTC by flow cytometry analysis and immunocytochemistry using a human EpCAM specific antibody. The number of lung metastases was counted microscopically in Hematoxylin and Eosin stained serial lung sections.

Results: DU4475 tumors developed in all of the pfp/rag2 mice with a tumor weight ranging from 1.01 to 2.47 gram. Spontaneous metastases were found both in the lungs and bone marrow. In particular EpCAM positive DTC's were detected in a third of the animals in bone marrow. For the detection of these DTC's a threshold of 1.8 gram for the weight of the primary tumor was determined.

Conclusion: EpCAM is a potential diagnostic marker for detection of disseminated tumor cells in a human DU4475 breast cancer pfp/rag2 xenograft model.

Kategorie: Poster

Rubrik: 2.Main Topic II
Abstract Nr.:78

Titel: Expression of cd44 is associated with metastatic pattern of human neuroblastoma cells in a scid mouse xenograft model

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Abstract:
Purpose: In this study a scid mouse model of human neuroblastoma was established and CD44 expression was analysed. CD44 is a transmembrane glycoprotein involved in cell-cell and cell-matrix interactions and is associated with the growth and metastatic behaviour in several malignant tumours. In clinical studies absence of CD44 expression characterizes aggressive neuroblastomas.
Methods: Cells of seven human neuroblastoma cell lines (IMR-32, Kelly, LAN-1, LAN-5, LS, SH-SY5Y, SK-N-SH) were injected subcutaneously into scid mice and their growth and metastatic behaviour were analysed. CD44 expression was examined by immunohistochemistry.
Results: All neuroblastoma cells engrafted in the scid mouse, but primary tumour growth and metastatic potential varied considerably. Expression of CD44 was associated with the metastatic pattern of the neuroblastoma cell lines. CD44 positive neuroblastomas produced multi-cellular metastases predominantly located in the intra- and periarterial space of the lung. CD44 negative neuroblastomas developed numerous micrometastases in the lung interstitium. Conclusions: The entire spectrum of metastatic pattern can be modeled in scid mice with the human neuroblastoma cell lines chosen in this study. Our xenograft model provides a basis for investigating the complex process of metastasis formation and for testing new anti-metastatic drugs. In particular, the role of CD44 in the formation of metastasis can be evaluated.

Kategorie: Poster

Rubrik: 2.Main Topic II
Abstract Nr.:79

Titel: Initial loss of cell adhesion in pemphigus vulgaris does not require depletion of desmoglein 3

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Abstract:
Pemphigus vulgaris (PV) is an autoimmune blister-forming disease affecting mucous membranes and the epidermis. Autoantibodies targeting the cadherin-type adhesion molecules desmoglein (Dsg) 1 and 3 cause loss of intercellular adhesion by both direct inhibition of desmoglein binding as well as by signaling mechanisms like activation of p38MAPK. However, the relevance of other mechanisms such as Dsg3 depletion in PV pathogenesis is unclear at present. In this study, we performed time course experiments in vitro to correlate cell dissociation and Dsg3-mediated binding with changes of Dsg3 levels and p38MAPK activation. Addition of IgG-fractions from PV-patients (PV-IgG) to confluent cultured keratinocytes (HaCaT) resulted in increasing cell dissociation from 30-120 min which was most prominent after 24h. Similarly, loss of Dsg3-mediated binding as revealed by laser trapping of Dsg3-coated microbeads to the keratinocyte surface proceeded from 30-120 min. During this time course p38MAPK activity was drastically augmented in response to PV-IgG. In contrast, reorganization of Dsg3 immunostaining was not visible before 90 min. Furthermore, a significant reduction of non cytoskeletal-bound (Triton-soluble) Dsg3 was not detectable during the first 120 min but was present after 24h whereas cytoskeleton-bound (Triton-insoluble) Dsg3 did not change at all. These data indicate that depletion of Dsg3 is not required for initial PV-IgG-induced loss of Dsg3-binding and cell cohesion. Rather, cell dissociation may be caused by other mechanisms downstream of signaling events which may involve p38MAPK activation.

Kategorie: Poster

Rubrik: 8.Cell Biology
Abstract Nr.:80

Titel: Characterization of a rat model with suppressed v2 vasopressin receptor signalling in the thick ascending limb and distal convoluted tubule.

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Abstract:
Vasopressin promotes urinary concentration by activating the V2 vasopressin receptors (V2R). Major expression of V2R was localized to the thick ascending limb (TAL), distal convoluted tubule (DCT), and collecting duct. Inactivating mutations in the V2R gene result a severe kidney disease termed Nephrogenic diabetes insipidus (NDI) and are characterized by the loss of renal urine concentrating ability.
To discriminate between the pathogenetic mechanisms originating from the collecting duct and distal tubule we generated a transgenic rat model with selective overexpression of a dominant-negative mutant of V2R (Glu242 stop; identified in human patients with NDI) in TAL and early DCT under the control of the Tamm-Horsfall protein promoter. Overexpression of the mutated V2R was confirmed by immunohistochemistry and Western blot. Physiological analysis revealed that transgenic rats displayed polyuria (+54% in steady state and +260% under water deprivation for 18h, p<0.05). Morphological evaluation of adult transgenic kidneys demonstrated a size reduction of the inner stripe and fibrotic areas within the medullary rays. Biochemical profiling revealed decreased mRNA and protein abundance of the major distal ion cotransporters, NKCC2 (-55% and –64% respectively, p<0.05) and NCC (-76% and –48% respectively, p<0.05).
These data indicate that suppression of the V2R signalling in the distal tubule results in impaired urinary concentration and morphological abnormalities.

Kategorie: Poster

Rubrik: 8.Cell Biology
Abstract Nr.:81

Titel: Fibroblast growth factor - 2 (fgf-2) influences the dynamics of nuclear proteins

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Abstract:
Nuclear bodies are distinct subnuclear structures. The survival of motoneuron (SMN) gene, which is mutated in patients with the neurodegenerative disease spinal muscular atrophy (SMA), is a marker protein for one class of nuclear bodies denoted nuclear gems. SMN has also been found in Cajal bodies, which colocalize with nuclear gems in many cell types. Interestingly, SMA patients display a reduced number of nuclear gems. Little is known about the regulation of nuclear body formation and stabilization. We have previously shown that a nuclear isoform of the fibroblast growth factor FGF-2 [FGF-2(23)] binds directly to SMN. Moreover, we analyzed the consequences of FGF-2(23) binding to SMN with regard to nuclear body formation and the influence on nuclear dynamics. In this study, we applied fluroescence recovery after photobleaching (FRAP) as well as fluorescence resonance energy transfer (FRET)-based strategies to analyze the nuclear dynamics of SMN.
On a molecular level, we could show that FGF-2(23) competed with Gemin2 – a component of the SMN complex, which is necessary for nuclear gem stabilization – for binding to SMN. The competition of FGF-2(23) and Gemin2 for binding to SMN is reflected on a cellular and in vivo system level by a negative regulative function of FGF-2 in nuclear body formation. This study is the first demonstration of a new functional role of a growth factor in regulating structural entities of the nucleus.

Kategorie: Poster

Rubrik: 9.Cell Biology
Abstract Nr.:82

Titel: Contribution of vascular wall-resident progenitor cells (vw-epcs) to tumor vascularization

Autoren: Mertins S.(1),Kleff V.(1),Hohn H.(1),Singer B.(1),Ergün S.(1),

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Abstract:
Purpose: To evaluate the contribution of the VW-EPCs to tumor vascularization and the disintegration of the vasculogenic zone (VZ).
Methods: We examined human urothelial tumors of different staging using immunohistochemical staining for CD34 followed by statistical analysis in order to judge the pattern of CD34+ cells in the VZ of the blood vessels and evaluated the number of blood vessels with and without intact VZ with respect to their distance to tumor tissue. We also used a mouse model to evaluate the migration and differentiation of VW-EPCs during tumor vascularisation and to distinguish VW-EPCs from BM-derived EPC. C57Bl/6 mice were lethally irradiated and intravenously transplanted with 2x106 murine EGFP-expressing BM cells from EGFP-5Nagy donor mice. After hematopoietic reconstitution, tumor cells (B16F10 cells) were subcutaneously transplanted into the flank of the mice. Tumor and surrounding tissues were removed and analyzed.
Results: The degree of disintegration varied in dependence to the distance between blood vessels and tumor tissue. Within the tumor tissue all blood vessels were found to be without VZ and blood vessels in close vicinity to tumor tissue exhibited a partially disintegrated VZ almost all large and middle sized blood vessels far from the tumor tissue displayed an intact VZ. Comparable results were obtained for glioblastoma, sarcoma and testicular tumors.
Conclusions: Our results suggest that VW-EPCs are involved directly in new vessel formation and may serve as a local source for tumor vascularization. Thus, the VW-EPCs have to be considered in future strategies for anti-angiogenic tumor therapy.

Kategorie: Poster

Rubrik: 9.Cell Biology
Abstract Nr.:83

Titel: Isolation and characterization of stem cells from adult lacrimal glands

Autoren: Ackermann P.(1),Richter A.(2),Schröder I.(1),Keller N.(3),Schicht M.(1),Paulsen F.(1),

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Abstract:
Previous studies of our group analyzed existence of stem cells in adult lacrimal glands of mice. As the amount of stem cells in differentiated tissue is particularly low, it is needed to separate stem cells from adult cells e.g. lacrimal gland cells and fibroblasts to further show pluripotency. Using a unique technique of the Fraunhofer-Institut of Marine Biotechnology/Lübeck with mechanical and enzymatic digestion of adult tissues we were able to isolate potential lacrimal stem cells and culture them over a longer period. After 48 hours of culturing in the isolation mix adherent cells were detected between apoptotic bodies. These cells were then grown until confluence in 7-10 days. Before and after splitting the cells they were photographed to visualize changes in cell morphology. To demonstrate cell migration we used time-lapse microscopy. To analyze pluripotency of the cells RT-PCR and immunohisto-chemistry as well as Western blot analysis were used to demonstrate mRNA and protein of different pluripotency markers such as Oct-4, Nanog, or SSEA-1. Additionally, the ability of the cells to differentiate into all 3 germ layers was tested by analysing early and late lineage-markers such as BMP-4, albumin, nestin and lactotransferrin. The results are a first step to get deeper insights into lacrimal gland stem cell physiology.

Kategorie: Poster

Rubrik: 9.Cell Biology
Abstract Nr.:84

Titel: First detection of surfactant proteins a, b, c and d in tissues of the human brain and in cerebrospinal fluid

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Abstract:
Objectives:
The presence and importance of the surfactant proteins (SP) A, B, C and D in the respiratory system, the lacrimal apparatus and in a bulk of different tissues with regard to immunological functions and surface activity has already been described. The purpose of this study was to evaluate the expression and presence of the surfactant proteins in different tissues of the human brain and brain related structures like the meninges, cerebral vessels and choroid plexus.
Methods:
The expression of mRNA was detected by RT-PCR in various specimens of 7 healthy human brains and brain related structures from body donors. Moreover, the presence of the four surfactant proteins on protein level was determined by immunohistochemistry and Western blot analysis.
Results:
The expression of mRNA was evidenced for all investigated surfactant proteins in different tissues of the human brain. Immunohistochemistry revealed distribution of SP-B, SP-C and SP-D especially in the choroid plexus, in ependymal cells which cover the walls of the ventricular system of the brain and in particular in endothelial cells of small cerebral vessels. SP-A is mainly located in stromal cells of the choroid plexus.
Conclusions:
Regarding the immunological functions known from other organs, SP-A and SP-D seem to be part of the innate immune system of the brain, especially because they are obvious components of blood-brain-barrier forming structures. In contrast SP-B and SP-C seem to be secreted by the ependymal cells and the choroid plexus to maintain the surface tension features of the cerebrospinal fluid.

Kategorie: Poster

Rubrik: 9.Cell Biology
Abstract Nr.:85

Titel: Ultrastructure of human thrombocytes after pathogen reduction treatment in blood bank preparations

Autoren: Barham M.(1),Picker S.(2),Oustianskaja L.(2),Krafczyk T.(1),Gathof B.(2),Neiss W.(1),

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Abstract:
Each transfusion carries a minimal but real risk to transmit viruses or bacteria. Pathogen reduction may reduce this risk by log 5 to 6 and in addition may replace gamma-irradiation of blood components for the prevention of graft versus host disease. We have studied the effect of two different pathogen reduction technologies on the ultrastructure of fresh and stored human blood platelets. – 24 doses of human platelets from 8 donors were treated using UV light with either psoralen (INTERCEPT, I) or riboflavin (MIRASOL, M) or remained untreated (C). Samples taken on days 0, 1 and 7 were analysed for mitochondrial metabolic activity and the volume fraction of mitochondria in percent of cell volume was estimated in electron micrographs.– In qualitative examination the platelets of all groups C, I and M showed no signs of ultrastructural pathology up to 7 days of storage. Platelets prior to treatment contained 2.4 vol% mitochondria and 4.5 vol% open canalicular system (OCS). Storage for 24h led to loss of up to 37% of mitochondrial content (1.3-1.6%) and increase of up to 88% (7.0-8.6%) of OCS in all groups. Storage of platelets for further 6 days did not change the contents of mitochondria and OCS. The mitochondrial content remained 1.3-1.5% and OCS 6.3-8.3%. Though there was a tendency in favour of group M, this was not statistically significant. – The morphological differences between groups correlate well with metabolic differences measured in the same material (Picker et al. Transfusion 2009, Picker et al. Vox Sang 2009).

Kategorie: Poster

Rubrik: 9.Cell Biology
Abstract Nr.:86

Titel: Regulation of nbce1-a and nbce1-b in mouse hippocampal neurons in vitro.

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Abstract:
In the brain, pH is regulated in a narrow range, because many ion channels and transporters associated with neuronal activity are sensitive to changes in intra- or extracellular pH. Additionally, changes in pH affect neuronal activity and portray a common hallmark in many pathological conditions, including epilepsy. The factors that provoke and halt seizures are not well understood, but changes in the CO2/HCO3- buffer system may affect seizure occurrence.
In the present study, we have investigated distribution and regulation of N-terminal variants of electrogenic sodium-bicarbonate-cotransporter 1 A and B (NBCe1-A and -B) under physiological and pathological conditions in vitro.
A mouse E18.5 primary hippocampal cell culture serves as experimental model. After 12 days in vitro, transporter distribution is monitored under different conditions: controls, stimulating neuronal activity by KCl, induction of acid or alkali load by changing pH of the culture medium, or treatment with bicuculline to mimic epilepsy.
Acute extracellular acidosis resulted in transporter redistribution from the cytosol towards the plasma membrane, a process mediated by distinct small GTPases (Rab proteins), shown by specific knock-down of individual Rabs. No changes in transporter mRNA or protein expression can be observed. However, NBCe1-A and -B show differential activity-dependent regulation, as well as after bicuculline treatment.
The results suggest redistribution of NBCe1-A and NBCe1-B as a major regulatory mechanism during acid-base disturbances and in an in vitro model of epilepsy. Moreover, NBCe1 may be involved in pH regulation during neuronal activity.

Kategorie: Poster

Rubrik: 9.Cell Biology
Abstract Nr.:87

Titel: Bipotent endothelial progenitor cells from the adult mouse lung

Autoren: Buttler K.(1),Wilting J.(1),Schniedermann J.(2),Rennecke M.(2),Richter G.(2),Städtler A.(2),Norgall S.(2),Badar M.(2),Barleon B.(3),May T.(2),Weich H.(2),

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Abstract:
Postnatal endothelial progenitor cells (EPCs) have been isolated from bone marrow, blood and walls of conduit vessels. They can, therefore, be classified into circulating and resident progenitor cells. In an attempt to isolate differentiated mature endothelial cells from the mouse lung we found that the lung contains EPCs with a high vasculogenic capacity for both blood and lymph vessels. Mouse lung microvascular endothelial cells were isolated by selection of CD31+ cells. Whereas the majority of the CD31+ cells did not divide, some scattered cells started to proliferate giving rise to large colonies. These highly proliferative cells possessed the capacity to integrate into blood and lymph vessels, unveiling the existence of resident microvascular endothelial progenitor cells in the adult mouse lung. EPCs expressed panendothelial markers as well as progenitor cell antigens, but not antigens for immune cells and hematopoietic stem cells. A high percentage of these cells are also positive for Lyve1, Prox1, Podoplanin and VEGFR-3 indicating that a considerable fraction of the cells are committed to lymphatic endothelium. Established single cell clones were also bipotent and expressed panendothelial (CD31) and, in part, lymphendothelial (Prox1, Lyve-1, Podoplanin) markers. Combined in vitro and in vivo spheroid and matrigel assays revealed that these EPCs possessed vasculogenic capacity by forming functional blood and lymph vessels. Our studies provide evidence for resident microvascular EPCs in the adult mouse lung that display vasculogenic competence for both types of vessels. Both blood and lymphatic endothelial cells derive from a single progenitor cell.

Kategorie: Poster

Rubrik: 9.Cell Biology
Abstract Nr.:88

Titel: Mechanical injury of meniscal tissue: an in vitro model

Autoren: Hufeland M.(1),Schünke M.(1),Grodzinsky A.(2),Kurz B.(1),

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Abstract:
Objective: The knee menisci play a crucial role in the joint function, since meniscal damage is associated with the development of osteoarthritis. Since little is known about the influence of mechanical overload and inflammatory cytokines (e.g. Interleukin-1) on meniscal tissue, we established an in-vitro injury model in order to study the pathomechanisms of meniscal destruction.
Methods: Bovine meniscal explants were injured by a single compression (strain rate 1 mm/s, strain 25% -75% of sample thickness) followed by an incubation for 3 days with or without the addition of Interleukin-1 (10 ng/ml) or antioxidants (MnTMPyP = SOD-mimetic or N Acetyl Cystein).
Results: Injurious compression resulted in cell death, a dose-dependent increase in loss of glycosaminoglycans (GAG) and a reduced synthesis of nitric oxide (NO), while MMP-2 and -3 and ADAMTS-4 expression (mRNA) was lowered. IL-1 resulted in an increase in GAG depletion, NO-synthesis, MMP-2, -3, -9, -13, ADAMTS-4 and -5 expression, and decreased the synthesis of the matrix molecules aggrecan and collagen type II. A combination of IL-1 and injurious compression reduced the IL-1 effects on the release of GAG and NO. The addition of antioxidants did not affect the compression-induced alterations, except for a NAC-dependent increase in the NO-synthesis.
Conclusion: Mechanical injury has a dose-dependent influence on the viability, cell activity, and matrix integrity of bovine meniscal tissue. Antioxidants do not show any protective effect on tissue destruction and might therefore not be suitable as therapeutic agents.

Kategorie: Poster

Rubrik: 9.Cell Biology
Abstract Nr.:89

Titel: Temperatur-sensing by the human conjunctival epithelium through activation of transient receptor potential vanilloid (trpv) channels

Autoren: Garreis F.(1),Valtink M.(2),Paulsen F.(1),Pleyer U.(3),Mergler S.(3),

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Abstract:
Purpose. The members of transient receptor potential vanilloid (TRPV) subfamily are non-selective cation ion channels and are important membrane sensors, responding to thermal, chemical, osmotic or mechanical stress. This is sustained by a number of different regulatory mechanisms and responses to various stimuli. Temperature changes may have a major impact on the physiology of the ocular surface epithelium.This study was undertaken to examine conjunctival epithelial (HCjE) cells as well as human conjunctival tissue for TRPV channel activity.
Methods. Gene expression of putative TRPVs in cultured HCjE cells and human conjunctiva was investigated by RT-PCR. Responses from these cells to drugs and heat-stimuli were investigated by measurements of intracellular free Ca2+ with fura-2. TRP channel currents were detected with a novel high throughput patch-clamp system.
Results. RT-PCR analysis of RNA isolates from HCjE cells revealed the expression of TRPV1, TRPV2 as well as the osmosensor TRPV4. In addition, TRPV1, -2 and -4 transcripts could also be detected in human conjunctiva from body donors. Furthermore, temperature rises from 25 °C to over 45 °C clearly induced an increase in fluorescence ratio corresponding to a transient increase of [Ca2+]i in HCjE cells. This Ca2+ transient was significantly reduced in the presence of the TRP channel blocker ruthenium-red (RuR) (10 µM) and another blocker, lanthanum chloride (La3+) (100 µM). Finally, increasing the temperature over 45 °C induced reversible rises in non-selective cation currents in HCjE cells.
Conclusions. TRPV channels are functionally expressed in HCjE cells and also in human conjunctiva. These findings may have direct physiological and clinical implication.

Kategorie: Poster

Rubrik: 9.Cell Biology
Abstract Nr.:90

Titel: Cxcr4 and cxcr7 – two potential receptors for tff3 at the ocular surface

Autoren: Dieckow J.(1),Schulze U.(1),Paulsen F.(1),

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Abstract:
Trefoil factor family (TFF) peptides, and in particular TFF3, are characteristic secretory products of mucous epithelia promoting antiapoptosis, epithelial migration, restitution and wound healing processes. So far, a receptor has not yet been identified. However, recently the chemokine receptor CXCR4 was shown as a low affinity receptor for TFF2. Furthermore, CXCR7, which is able to form heterodimers with CXCR4, has also been discussed as a potential receptor for TFF2. Since there are distinct structure similarities between the three known TFF peptides, this study aims to evaluate whether CXCR4 and CXCR7 may also act as putative TFF3 receptors and thereby are able to enhance corneal wound healing processes. To evaluate expression of both CXCR4 and CXCR7 in samples of human lacrimal gland, cornea, conjunctiva and nasolacrimal duct as well as in a human corneal epithelial cell line (HCE) and a human conjunctival epithelial cell line (HCjE), studies were performed by means of RT-PCR and immunohistochemistry. Western blot analysis and functional studies are currently ongoing. So far, CXCR4 as well CXCR7 could be detected on mRNA level in all observed tissues and cell lines. Immunohistochemical analysis revealed protein expression of both receptors in all tissues and cell lines under investigation. Until now this study could reveal expression of the receptors CXCR4 and CXCR7 in tissues of the human ocular surface and lacrimal apparatus. Subsequent functional studies analyzing the potential interaction between TFF3 and CXCR4 as well as CXCR7 are currently ongoing.

Kategorie: Poster

Rubrik: 9.Cell Biology
Abstract Nr.:91

Titel: Tff3 promotes migration and effects corneal extracellular matrix remodeling

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Abstract:
Dry eye syndrome is characterized by chronic inflammation, hyperosmolarity of the tear fluid and extracellular matrix remodeling (ECM). Previous results have indicated a protective role of trefoil factor family peptide 3 (TFF3) under acute inflammatory conditions but opposed effects in chronically inflamed environments. Therefor, we studied the role of TFF3 under experimental dry eye conditions analyzing the effect of rhTFF3 on migration and matrix metalloproteinases (MMPs).
After treatment with ocular stress conditions, TFF3 expression was analyzed in corneal epithelial cells by immunofluorescence. rhTFF3 effect on cell migration was studied performing an in vitro scratch assay. To study the rhTFF3 effect on ECM remodeling MMP mRNA expression levels were evaluated by real time PCR after stimulation with IL-1beta and hyperosmolar medium together with rhTFF3 for 6h and 24h.
TFF3 expression was induced under simulated ocular stress conditions. rhTFF3 treatment enhances migration, further increased IL-1beta-induced MMP9 expression levels after 6h and 24h and decreased IL-1beta-induced MMP1 mRNA after 6h and MMP13 expression after 6h and 24h. The hyperosmolarity-induced changes in MMP9 and MMP13 expression levels were further induced after 6h TFF3 treatment. Single stimulation of corneal epithelial cells only with rhTFF3 resulted in upregulated MMP9 expression after 6h and 24h and decreased MMP1 expression after 6h treatment.
Induction of TFF3 under stress conditions supports a protective function of TFF3 at the ocular surface. rhTFF3 effects on cell migration and on MMP expression seem to sustain this role. However, changes in MMP expression need further elucidation.

Kategorie: Poster

Rubrik: 9.Cell Biology
Abstract Nr.:92

Titel: Influence of 17beta-estradiol on pre-inflammatory cytokine induced degradation of meniscal tissue

Autoren: Ewald K.(1),Naujokat H.(1),Schünke M.(1),Kurz B.(1),

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Abstract:
Purpose: Osteoarthritis (OA) affects all articular tissues, including the meniscus, and finally leads to joint failure. The rise in OA prevalence among postmenopausal woman suggests a link between OA and the breakdown of estradiol (E2) production. The objective was to evaluate the influence of E2 on the pre-inflammatory cytokine-dependent expression of matrix degrading enzymes and proteoglycan degradation in meniscal tissues.
Methods: Bovine meniscal cells and tissue were isolated from 2 year-old cows and treated for 24 and 72 hrs with IL-1alpha and E2. Expression of mRNA for MMP-3, -13 and ADAMTS-4 was analyzed by quantitative RT-PCR. The concentration of glycosaminoglycans (GAG) and NO in the culture supernatant was determined by photometric DMMB and Griess assay, respectively.
Results: E2 (10-11M) decreases significantly the IL-1alpha-dependent GAG release in meniscal tissue. The E2 receptor antagonist ICI 182,780 inhibits this effect. IL-1alpha-induced NO release from meniscal cells is also significantly reduced. The IL-1alpha-dependent expression of ADAMTS-4 and MMP-13, but not MMP-3 are down regulated.
Conclusions: E2 seems to play a relevant role in the homeostasis of meniscal tissues under pre-inflammatory conditions. These effects might be mediated by intracellular estradiol receptors. E2 could be a therapeutic option in joint destructing diseases due to its effects upon different joint structures like the meniscus. Further studies should target the joint as a whole organ rather than focusing only on cartilage damage.

Kategorie: Poster

Rubrik: 9.Cell Biology
Abstract Nr.:93

Titel: 17beta-estradiol reduces il-1alpha-mediated matrix-degradation via intracellular receptors in bovine articular cartilage

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Abstract:
Purpose: Osteoarthritis is a disease with rising incidence in postmenopausal women. Degradation of cartilage seems to be associated with the deficit of 17beta-estradiol (E2). The aim is to investigate, how E2 can mediate cartilage protection under pre-inflammatory conditions.
Methods: Bovine articular cartilage explants (3 mm diameter and 1 mm thickness) from the femoral condyles of 2 year-old cows were treated with IL-1alpha (10ng/ml), different concentrations of E2, and estradiol-receptor-antagonists ICI 182,780 and Tamoxifen for 4 days. Expression of MMP-3, ADAMTS4 and iNOS mRNA were investigated by realtime rtPCR. Concentrations of glycosaminoglycans (GAG) and NO were detected in the culture supernatants using the DMMB and Griess assay, respectively.
Results: E2 reduces the IL-1 alpha-dependent release of GAG and NO into the supernatant dose-dependently with the highest effect at 10-13M. The enzymes MMP-3 and ADAMTS4 are induced by IL-1alpha, and E2 lowers this effect about 50% at the concentrations 10-9M and 10-7M. Decrease of the IL-1alpha-dependent iNOS expression is also mediated by E2 dose-dependently. All these effects of estradiol are inhibited by ICI and Tamoxifen.
Conclusions: E2 reduces the cytokine-dependent matrix-degradation in cartilage explants by a receptor-mediated pathway. Further research into the signalling pathways could help to characterize drug targets for future therapeutic intervention.

Kategorie: Poster

Rubrik: 9.Cell Biology
Abstract Nr.:94

Titel: Characterization of lapine achilles and supraspinatus tendons in terms to establish a tendon healing model in the rabbit

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Abstract:
The rabbit is a commonly used orthopaedic animal model to study tendon repair using diverse tendons. The aim of the present study was to establish a suitable in vitro model using rabbit tenocytes for tendon tissue engineering in terms to establish later a cell-based tendon healing model in the New Zealand white rabbit.
Rabbit derived M. supraspinatus and Achilles tendon tissue was analyzed histologically (Hematoxylin Eosin (HE), Alcian blue (AB) staining) in comparison to human tendons (M. supraspinatus, Hamstring tendons). Human and rabbit tenocytes were isolated and investigated for extracellular matrix protein expression using immunohistochemistry (type I collagen, decorin, tenomodulin). Rabbit Achilles tendon derived tenocytes were seeded on PolyGlycolicAcid (PGA) scaffolds under static and dynamic conditions. Tissue engineered tenocyte-PGA constructs were analysed for tenocyte vitality using live-death assay and for matrix formation using HE-staining.
In contrast to human supraspinatus tendon, rabbit supraspinatus tendon midsubstance was strongly mixed with fibrocartilage. Tenocytes isolated from rabbit supraspinatus tendon produced less type I collagen, decorin and fibronectin compared with rabbit Achilles tendon tenocytes. Rabbit Achilles tenocyte adherence and vitality was superior on PGA scaffolds seeded under static compared with dynamic conditions.
Taking in account that the human Achilles tendon is the most frequently ruptured tendon in humans and that the shoulder anatomy differs substantially between humans and rabbits as well as the fibrocartilaginous structure of supraspinatus midsubstance tendon in the rabbits we established a rabbit Achilles tenocyte scaffold associated culture suitable for a cell-based tendon healing model in the New Zealand white rabbit.

Kategorie: Poster

Rubrik: 9.Cell Biology
Abstract Nr.:95

Titel: Hassall's corpuscles of camel thymus (camelus dromedaries)

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Abstract:
The thymic hassall's corpuscles of the one humped camel (6 months - 20 years) were studied. They showed different forms. 1- Newly formed form, characterized by hypertrophied type-VI epithelial reticular cells with large empty or filled vesicle in its cytoplasm. 2- Concentric form, was the common form, having a central core of dead homogenous material of degenerated epithelial cells surrounded by several concentric lamellae of degenerated flattened cells. The central cells sometimes, showed intercellular spaces into which short microvilli were projected. The surrounding lamellae showed different electron densities surrounded by hypertrophic epithelial reticular cells with peripheral tonofibrils. 3- Cystic form, characterized by one or more alveolar-like spaces, which may be empty or filled with homogenous acidophilic material. The wall of the cyst was lined by thick complete layer of electron dense material showing some projections and surrounded by less dense layer.4- Branched form, it was rarely seen and formed of hypertrophied epithelial reticular cells fused together forming branched structureless mass showing some nuclear remnants.5- Lymphocyte rich form, it was rarely seen, characterized by clusters of lymphocytes mixed with the corpuscular acidophilic material and occupied one pole in general.6- Hayalinied form, characterized by compact, homogenous acidophilic material with no clear cellular content. 7- Degenerated form, showed degeneration in its core caused by invasion by many macrophages in addition to multinucleated giant cells. In the aged-involuted thymus, the hyalinzed, the cystic and the degenerated forms were the most frequent types.

Kategorie: Poster

Rubrik: 9.Cell Biology
Abstract Nr.:96

Titel: Posttranscriptional inhibition of the na+-d-glucose cotransporter hsglt1 by transporter regulator hrs1 is modulated by pkc and camk2

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Abstract:
The intracellular 67 kDa-protein hRS1 encoded by gene RSC1A1 is a transcriptional and posttranscriptional down-regulator of the Na+-D-glucose cotransporter SGLT1.We reported that posttranscriptional down-regulation of hSGLT1 by hRS1 occurs at the trans-Golgi-network (TGN), is stimulated by PKC and is modulated by intracellular D-glucose (Veyhl et al., Am J Physiol Renal Physiol 291, 2006). Employing oocytes of Xenopus laevis as expression system we identified two tripeptides (Gln-Cys-Pro (QCP) and Gln-Ser-Pro (QSP)) in hRS1 that mediate high affinity posttranscriptional down-regulation of hSGLT1. (Vernaleken et al., J Biol Chem 282, 2007). Similar to total hRS1 protein down-regulation by QCP and QSP is glucose dependent. QCP is located in the middle of the hRS1 sequence and QSP is located NH2-terminal. QSP is framed by consensus sequences for PKC and CamK2 phosphorylation. Within this NH2-terminal domain of hRS1 (a.a. 16-98) we identified the octapeptide Ser-Asp-Ser-Asp-Arg-Ile-Glu-Pro (SDSDRIEP) that is also capable to down-regulate hSGLT1 at the TGN with nanomolar affinity. Posttranscriptional down-regulation of hSGLT1 by aa. 16-98 of hRS1 was enhanced i) after stimulation of PKC and ii) after inhibition of Cam K2. The down-regulation showed also glucose dependency. Our data suggest that hRS1 at the TGN contains a complex regulatory interaction surface (RIS) that is modulated by phosphorylation/dephosphorylation of the RIS and by binding of a glucose-binding protein to hRS1. Detailed knowledge about the RS1-mediated regulation of hSGLT1 will help to develope drugs to down-regulate glucose uptake in small intestine or glucose reabsorption in kidney during obesity or diabetes.

Kategorie: Poster

Rubrik: 12.Reproductive Biology
Abstract Nr.:97

Titel: Induction of obesity and impairment of fertility by di-(2-ethylhexyl)phthalate (dehp) exposure

Autoren: Hart K.(1),Schmidt J.(1),Kurz R.(2),Robitzki A.(2),Fischer B.(1),

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Abstract:
Purpose: Analysis of the effects of DEHP exposure in “real world” concentrations on female fertility, early embryonic development and metabolism
Methods: We designed two parallel studies: (1) Long-term per os DEHP exposure (8 weeks) in a single- and multi generation approach in C3H/N mice. The female mice were exposed via food containing environmentally relevant and high doses of DEHP [0, 0.05, 5 and 500 mg/kg bw/day]. General health parameters like daily food intake, weight gain and litter size were recorded. Blastocysts of day 3.5 were analyzed for expression of marker genes. (2) In the second approach P19 murine embryonic carcinoma cells were differentiated into terminally differentiated beating cardiomyocytes. This cell culture model serves as an in vitro model for early embryonic development. We exposed the P19 cells during 4 days of undifferentiated growth. Contraction rates of the cardiomyocytes were measured with the multielectrode array (MEA) technology. In all experiments expression patterns of metabolic and functional markers were analyzed by qRT-PCR.
Results: Exp. 1: Exposed dams showed significant increases in weight, food intake and visceral fat tissue and a 100% abortion rate in the highest dose group.
Exp. 2: Terminally differentiated cardiomyocytes exhibited significantly altered gene expression profiles in key metabolic (PPARgamma, PPARalpha, GLUT4, FABP4, aldolase) and functional (alpha-MHC, Cx43) markers in the high and low dose DEHP groups.
Conclusion: DEHP acts as an obesogen and impairs fertility.

Supported by EU (FP7-REEF N°212885)

Kategorie: Poster

Rubrik: 12.Reproductive Biology
Abstract Nr.:98

Titel: Effect of hormonal induced delayed ovulation on the fertility and embryonic development in mice

Autoren: Bittner A.(1),Horsthemke B.(2),Winterhager E.(1),Grümmer R.(1),

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Abstract:
Oocyte quality is acquired during folliculogenesis and oocyte maturation and may affect blastocyst survival, establishment and maintenance of pregnancy, and fetal development. We here analysed the effects of oocyte overripeness caused by delayed ovulation on fertility and embryonic development in a mouse model.
Delayed ovulation was induced in C57/Bl6 mice by injection of the GnRH-Antagonist Cetrorelix for 3 days starting on the second day of diestrus either in untreated mice or after follicular stimulation with PMSG. After treatment, weight of ovaries was determined. Ovaries were embedded in paraffin and serial sections were evaluated in regard of the number of corpora lutea and mature follicles. To assess the effect on fertility and embryonic development, Cetrorelix was applied for 5 days starting on the first day of diestrus. Follicular growth was stimulated by PMSG on day 1 and 4 of Cetrorelix treatment, and ovulation was induced by HCG on day 6. Number and weight of embryos and placentae and the number of resorption sites were determined on pregnancy day 17.5.
Inhibition of ovulation in mice by Cetrorelix was demonstrated by a reduced number of corpora lutea and an increased number of mature follicles compared to controls. Mating of mice after delayed ovulation resulted in an increase of resorption sites and a decrease in number and weight of embryos.
It could be shown that ovulation in mice can be delayed by application of the GnRH-Antagonist Cetrorelix. This delayed ovulation leads to preovulatory oocyte overripeness and might have an effect on embryonic development.

Kategorie: Poster

Rubrik: 12.Reproductive Biology
Abstract Nr.:99

Titel: Redistribution of desmosomes in human endometrial epithelial cells during the menstrual cycle

Autoren: Buck V.(1),Windoffer R.(1),Leube R.(1),Hombach-Klonisch S.(2),Klonisch T.(2),Classen-Linke I.(1),

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Abstract:
Steroid hormone-regulated changes occur in uterine epithelia in preparation for implantation. The aim of the study was to investigate whether and how cell-cell adhesion is affected during the menstrual cycle.
Using antibodies directed against desmosomal components, immunofluorescence studies were performed on endometrial tissue samples from hysterectomized women at different stages of the menstrual cycle. In addition, desmosomal distribution was also examined in an established human endometrial epithelial cell line (hTERT-EEC). Microscopical analyses were carried out by confocal laser scanning microscopy.
Antibodies against the desmosomal plaque protein desmoplakin and the desmosomal cadherin desmoglein 2 were characterized in the hormone-responsive endometrial epithelial cell line (hTERT-EEC), in which a circumferential multipunctate desmosomal staining pattern was observed. With these antibodies prominent desmosomal staining was observed in the subapical region of the lateral membrane of the endometrium from tissue samples obtained during the follicular phase of the menstrual cycle (day 1-14). A decrease of staining intensity was noted in this region during the early luteal phase (day 15-19) with coincident redistribution of desmosomes over the entire lateral membrane which reached its maximum with the onset of the mid-luteal phase (day 20-23).
We suggest that the observed redistribution of desmosomes during the menstrual cycle is important for facilitating embryo implantation.

Kategorie: Poster

Rubrik: 12.Reproductive Biology
Abstract Nr.:100

Titel: Effect of progestins on angiogenesis and decidualization in ectopic human endometrial lesions in a nude mouse model

Autoren: Sannecke C.(1),Mönckedieck V.(1),Tötsch M.(2),Kumbartski M.(3),Kimmig R.(3),Winterhager E.(1),Grümmer R.(1),

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Abstract:
Endometriosis is characterized by the presence of endometrial tissue at ectopic sites. Still the cell biological mechanisms of the pathogenesis of this desease are not understood. It is known that angiogenesis is a prerequisite for the maintenance of endometriotic lesions. In addition, their persistences could be influenced by the degree of decidualization as terminal differentiation of endometrial stromal cells. We here analyzed the effect of different progestins on these parameters.
Human endometrial tissue was transplanted into the peritoneal cavity of nude mice. After treatment for 7 and 28 days with progesterone, dydrogesterone or dihydrodydrogesterone (50 µg/mouse/day), transcription of the angiogenic factors VEGFA, bFGF, and Cyr61 was determined by qPCR. Microvessel densitiy was evaluated by staining of endothelial cells by CD31, and stabilization of vessels by pericytes by alphaSMA. Extent of decidualization was analyzed by expression of Prolactin (qPCR, immunohistochemistry). For enhancing decidualization, progestin treatment was combined with cAMP or Aktivin A, respectively.
Progestins suppressed expression of VEGFA, bFGF, and Cyr61. Though no effect on microvessel density could be observed, progestin treatment for 28 days led to a significant enhancement of pericyte-stabilized vessels in the ectopic lesions. The slight progestin-induced decidualization of the endometrial stroma could be enhanced by a combined treatment with cAMP but not with Aktivin A.
We here demonstrated that progestins may promote stabilization of vessels in human ectopic endometrial lesions. In addition, extent of decidualization of ectopic endometrial stroma may be enhanced by a combined treatment of progestins and cAMP.

Kategorie: Poster

Rubrik: 12.Reproductive Biology
Abstract Nr.:101

Titel: Uropathogenic escherichia coli activate calcineurin dependent nfat signaling pathway in testicular macrophages

Autoren: Bhushan S.(1),Lu Y.(1),Tchatalbachev S.(2),Mikulski Z.(1),Hossain H.(2),Klug J.(1),Chakraborty T.(2),Meinhardt A.(1),

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Abstract:
Purpose: Uropathogenic Escherichia coli (UPEC) is a relevant pathogen in bacterial genital tract infections in men. Testicular macrophages (TM) play an important role in the balance between immune privilege and protection from invading microorganisms. We aimed at examining how UPEC can subvert the testicular immune response thus allowing persistence of bacteria with subsequent damage to the testis in comparison to non-pathogenic E. coli (NPEC).
Methods and results: Whole genome expression analysis showed that UPEC strain CFT073, but not NPEC activates calcium dependent noncanonical wnt5a and nuclear factor activated T cells (NFAT) signaling pathway in TM and peritoneal macrophages (PM as control). Measurements of cytosolic free calcium confirmed microarray results by a rapid increase of intracellular calcium upon infection with UPEC, but not NPEC, in both TM and PM. Increased expression of wnt5a protein was observed after UPEC infection in TM and PM. In TM and PM, UPEC activates NFAT by dephosphorylation with subsequent translocation to the nucleus. Increased expression of downstream NFAT signaling pathway genes IL-3, IL-4, IL-10, and IL-13 was found by RT-PCR in TM and PM. Incubation with cyclosporin A (CsA), a pharmacological calcineurin inhibitor, blocked UPEC induced NFAT activation in TM and PM.
Conclusions: Our results suggests that UPEC, but not NPEC activate wnt5a and NFAT signal pathway in TM, which results in an antiinflammatory response allowing persistence of UPEC in the testis. Results point to a role of hemolysin, a pore forming complex inducing Ca2+ oscillations, as responsible pathogen in UPEC.

Kategorie: Poster

Rubrik: 12.Reproductive Biology
Abstract Nr.:102

Titel: Neutral endopeptidase is abundantly expressed in the epididymis and localized to distinct populations of epithelial cells

Autoren: Thong A.(1),Müller D.(1),Schneider-Hüther I.(1),Middendorff R.(1),

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Abstract:
Bioactivity of the natriuretic peptides ANP, BNP and CNP is regulated by desensitisation of their (cGMP-generating) membrane-bound receptors guanylyl cyclases A and B, by the so-called natriuretic peptide clearance receptor and by the cell-surface peptidase neutral endopeptidase (NEP). In our efforts to understand the role of cGMP pathways in sperm transport (KFO 181), expression and localization of NEP were investigated.
Western blot analyses, comparing NEP expression in a large number of different organs, revealed highest expression in epididymis, and the enzyme could be localized to epithelial cells. In man, strong NEP-immunoreactivity was associated with apical membranes of epithelia of efferent ducts with the exception of ciliated cells. Rete testis was not stained. In epithelial cells of all regions of the epididymal duct, stereocilia were NEP-positive, different to stereocilia of vas deferens. In mice, NEP staining pattern differed among caput, corpus and cauda, displaying only single positive cells in caput, stained apical membranes of all luminal cells in corpus, and only single immuno-negative cells in cauda. Co-localization studies with claudin-1 could exclude NEP localization to basal cells. Soluble guanylyl cyclase and cGMP-dependent protein kinase 2 were found in the same structures as NEP. As revealed by smooth muscle actin/NEP-double-staining, NEP was absent from smooth muscle cells, thus excluding a direct role in sperm transport. Data suggest, however, that epididymal NEP regulates luminal concentrations of CNP, which is found in seminal plasma in extremely high concentrations, and thus regulates epithelial cGMP pathways, most likely involved in ion transport processes.

Kategorie: Poster

Rubrik: 12.Reproductive Biology
Abstract Nr.:103

Titel: Cx43floxedlacz-tnap-cre-mutant mouse model

Autoren: Günther S.(1),Bergmann M.(1),Nagy A.(2),Lomeli H.(3),Brehm R.(4),

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Abstract:
Purpose: The Sertoli cell specific knockout (KO) of Connexin43 (Cx43) prevents initiation of spermatogenesis, male mice are infertile. Using the Cre/loxP-system we analyse and investigate functions of Cx43 especially in germ cells and the consequences of its KO on testicular and germ cell development.
Methods: Establishing a mouse model (conditional germ cell-Cx43-knockout; GCCx43KO): Transgenic mice containing the Cx43-gene surrounded by loxP sites are mated with transgenic mice expressing the Cre gene under the germ cell specific Tissue Non-Specific Alkaline Phosphatase (TNAP) promoter. In ovaries and testes, the Cx43-gene will be specifically deleted in germ cells, mice-genotypes are determined by Cre- and TNAP-PCR, homozygous GCCx43KO-mice are mated with wildtype and homozygous GCCx43KO-mice to test their fertility.
Results: Four GCCx43KO-mice, two males and two females, have been generated so far; the first male GCCx43KO-mouse was sacrificed with 19 days postpartum. The other KO-mice have been mated with wildtype mice and proved their fertility. Litter sizes were normal.
Conclusions: Compared to the Sertoli cell KO, homozygous GCCx43KO-mice are fertile. Further studies will clarify, whether Cx43 expression in germ cells is of no relevance for gonadal development and/or spermatogenesis or whether germ cells may be able to compensate the Cx43-deficit by using another way of direct intercellular communication.

Kategorie: Poster

Rubrik: 12.Reproductive Biology
Abstract Nr.:104

Titel: Search of associations of polymorphic markers of genes vascular reactions with ehocardiographic indicators at pregnant women in norm and at preeclampsia

Autoren: Reshetnikov E.(1),Akulova L.(1),Dobrodomova I.(1),Krikun &.(1),Churnosov M.(1),

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Abstract:
Research objective – the analysis of associations polymorphic markers of genes vascular reactions with ehocardiographics indicators at pregnant women in norm and at preeclampsia. In sample has been included 240 pregnant women, from them 131 with preeclampsia and 109 with normal course of pregnancy. Ehocardiographics indicators of heart defined a method ehocardioscopia. Following parametres of heart are studied: final diastolic and systolic size left ventricular (FDSlv and FSSlv, mm), a thickness between ventricular partitions in a systole and diastole (ТBVP d and s, mm), a thickness of a back wall left ventricular in a systole and diastole (ТBWLV d and s, mm). Extraction DNA from leukocytes of peripheral blood it was made by a method fenol-chloroformic extractions. Genotyping studied locus spent a method polymerase chain reaction (PCR) with use oligonucleotid primers. Have been studied polymorphic markers of genes angiotensin-converting enzyme (I/D ACE), aldosterone synthase (-344C/T CYP11B2), α-adducin (G460W ADD1). Further search of associations genotypes of polymorphic markers studied genes with morphometric indicators of heart at pregnant women has been spent. Among women with normally proceeding pregnancy of significant associations polymorphisms the studied genes with ehokardioscopic indicators it is not revealed. At pregnant women with preeclampsia the increase in values ТBWLVd and ТBWLVs at carriers of heterozygotes genotype ID of locus I/D ACE in comparison with homozygotes II (p <0,05) is established.
Thus, it is established that mutant allel D polymorphic marker I/D ACE in a heterozygotic condition influences change ehocardiographics indicators of heart at pregnant women at preeclampsia.

Kategorie: Poster

Rubrik: 10.Reproductive Biology
Abstract Nr.:105

Titel: Effect of a tissue-specific cx26 deletion in the uterine epithelium on embryo implantation in the mouse

Autoren: Bienek M.(1),Busslinger M.(2),Willecke K.(3),Winterhager E.(1),Grümmer R.(1),

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Abstract:
A precise molecular interaction between the blastocyst and the receptive uterine endometrium is indispensable for successful implantation. Disruption of this interaction leads to failure of implantation. We could show that the gap junction Connexin(Cx)26 is precisely regulated during early pregnancy and is induced prior to implantation by the blastocyst in the luminal epithelium of the implantation chamber in rodents. The role of this specific induction for embryo implantation is not known yet.
Since Cx26-knockout mice are not viable due to to a placental defect, they are not available for such studies. We here generated mice with a endometrium-specific Cx26-deletion by using the Cre/lox-system. Female mice homozygous for Cx26-2lox and heterozygous for the Cre-recombinase gene under control of the Pax8-promoter which is expressed in the endometrial epithelium were generated (Pax8-Cre+/- Cx26-2lox+/+). Deletion of Cx26 in the uterine epithelium was verified by qPCR and immunohistochemistry. Female Pax8-Cre+/--Cx26-2lox+/+ mice were mated with wild-type males and litter sizes were analyzed. In addition, on 4.5, 5.5, and 6.5 dpc implantation chambers were examined histologically.
Uterine deletion of Cx26 did not lead to a significant reduction of litter sizes compared to controls. In some specimens an increase in signs of embryonic degeneration could be observed on 5.5 dpc in the implantation chambers of Pax8-Cre+/- Cx26-2lox+/+ mice.
If the deletion of Cx26 in the uterine epithelium is compensated by upregulation of other connexins, as well as the signals cascades affected by this endometrial Cx26 deletion are under investigation.

Kategorie: Poster

Rubrik: 10.Reproductive Biology
Abstract Nr.:106

Titel: Morphology of growth retardated and re-growing invalid for implantation human embryos after in vitro fertilization (ivf)

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Abstract:
Acceptable for implantation after IVF are human embryos of unchanged/slightly changed morphology without growth retardation. Despite to this part of initially retardated embryos continue growth after retardation and/or show the morphology not described in the classifications. The aim of work was research of qualitative morphology in not valid for implantation human embryos.
Materials. The invalid for implantation donated by their mothers 10 embryos in “re-growth stage” were 4-6 days old. 63 embryos were 2-3 days old. Immunohistochemistry was used for detection of LD, hexokinase, bFGF, FGFR1, IGF, IGF1R, TGFalfa;, cadherins, caspase 6.
Results showed variable expression of LD in 3rd day and stabilization until the 4th day. Few cells were hexokinase positive in the 3rd and 6th day. Despite variable bFGF expression in 3rd day, FGFR1 were richly expressed in all days. IGF was seen in 4 days old embryo, but IGF1R was found to increase with developmental time. Few cells showed TGFalfa expression in 3 days old embryo. Caspase 6 marked blastomeres in the 3rd and 4th day with increase of development. Cadherins were found only in part of embryo cell junctions.
Conclusions. Variable expression of LD, bFGF, rich for FGF1R and limited for hexokinase and TGFalfa; between days 3 and 4 possibly is the reason for growth retardation in IVF human embryos. Sudden soar of LD, IGF, IGF1R in retardated embryos probably is the reason for re-growth. Retardated embryos show separation of blastomeres due to the lack of cadherins and increase of apoptosis with developmental time.

Kategorie: Poster

Rubrik: 10.Reproductive Biology
Abstract Nr.:107

Titel: Insulin-like growth factor-3 (igf-3) in male and female gonads of the tilapia: development and regulation by growth hormone (gh) and 17alpha-ethinylestradiol (ee2)

Autoren: Berishvili G.(1),Baroiller J.(2),Eppler E.(1),Reinecke M.(1),

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Abstract:
Recently, in addition to IGF-1 and IGF-2 the existence of a third form of IGF, termed IGF-3, limited to fishes, to be present only in the gonads and encoded by a separate gene has been reported. However, no further data have been presented on IGF-3. The present study on tilapia (Oreochromis niloticus) uses quantitative real-time PCR specific for tilapia IGF-1 and IGF-3. The organ distribution of IGF-3 mRNA in adult fish and the early ontogeny of IGF-3 in male and female gonads were studied. The potential sensitivity of IGF-3 to GH was revealed by intraperitoneal injections of bream GH using IGF-1 as control gene. The effects of 17alpha-ethinylestradiol (EE2) exerted after feeding of high EE2 doses and exposure to low environmentally relevant EE2 doses on IGF-3 expression in testis and ovary during early development were determined. Low IGF-3 mRNA expression levels were detected in most organs studied, with the highest extra-gonadal amount in the pituitary. During development, the IGF-3 gene was significantly upregulated in male but downregulated in female gonad. Injections of GH elevated IGF-1 mRNA in male and female liver and ovary. IGF-3 did not respond to GH treatment neither in ovary nor in testis. Both EE2 treatments resulted in significant downregulations of IGF-3 mRNA in testis while ovarian IGF-3 mRNA did not respond. Thus, IGF-3 may be involved in reproduction of fishes most likely in the male gonad only. Whether IGF-3 also has some physiological significance in ovary or other organs should be the topic of further studies.

Kategorie: Poster

Rubrik: 11.Immune Biology
Abstract Nr.:108

Titel: The ihc using monoclonal anti-vim antibody of the primary trophoblast at the placental level in different prematurity stages

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Abstract:
Purpose: The hereby study is one of the conclusions of segment of a large study that uncovers a period of over 5 years of research beginning with the year 2003 until september 2008 regarding the imunohistochemistry at placental level from different prematurely stages placentas.
Methods: Prematurity is an important segment in the obstetrical pathology and neonatology at the same time, having an important role in perinatal deaths, early mortality and infant mortality. As study base, we used placentary fragments from 216 placentas that came from births with different prematurity stages from which a number of premature newborns without congenital malformations resulted.
Results:This study was mainly addressed to the feto-placental binomial trying to correlate the identified morphological modifications with certain imunohistochemical methods and different stages of newborn prematurity, its survival and potential of adaptation to the extrauterine life.
ConclusionsThe hereby study makes reference to the use of monoclonal antibody anti VIM identified in different disorganization stages in the placental architecture especially that of the primary trophoblast.
Key words: imunohistochemistry, prematurity, placental architecture, antiVIM

Kategorie: Poster

Rubrik: 12.Reproductive Biology
Abstract Nr.:109

Titel: Alterations of catalase activity and oxldl in follicular fluid of obese women: the reason for impaired ivf-outcome?

Autoren: Bausenwein J.(1),Serke H.(1),Hirrlinger J.(2),Hmeidan F. A.(3),Blumenauer V.(3),Spanel-Borowski K.(1),

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Abstract:
Obesity and the polycystic ovarian syndrome (PCOS) are associated with impaired folliculogenesis, anovulation, and infertility. Fifty-percent of women with PCOS are obese. Moreover, the outcome of assisted reproductive treatment are less successful than for non-obese women or women without PCOS. Recent studies indicate that oxidative stress, defined as an imbalance between prooxidants and antioxidants, might contribute to reproductive disorders in obese women. The present study was designed to investigate oxidative stress by the concentration of oxidized low-density-lipoprotein (oxLDL) and enzyme antioxidants in serum and follicular fluid (FF) of infertile women in dependence of obesity and PCOS. 84 patients undergoing an in-vitro fertilization (IVF) program were recruited from an outpatient clinic and grouped according to obese versus non-obese status and whether they had PCOS. The concentrations of oxLDL and the activities of superoxide dismutase (SOD), catalase, glutathione peroxidase (GPx), and glutathione reductase (GR) were measured in serum and FF. The IVF-outcome was determined by evaluating the live-birth-rate. Obese women with and without PCOS had significantly higher catalase activities, greater amounts of oxLDL in FF and lower live-birth-rates as compared to non-obese women. The GPx activities were also higher in obese versus non-obese women, but not in PCOS versus non-PCOS patients. We conclude that obesity by itself and not the PCOS is closely associated with alterations of catalase activity, GPx activity, and oxLDL in FF. This is the first demonstration of intrafollicular oxidative stress in obese women which may underlie their previously observed impaired IVF-outcome. (supported by the DFG Sp232/12-1)

Kategorie: Poster

Rubrik: 10.Developmental Biology
Abstract Nr.:110

Titel: The immunohistochemical expression of alfa-fp placentas from the births' of encephalic pole developmental problems fetuses

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Abstract:
Purpose: Our study is retrospective and starts with the fact that even in the moment of birth high levels of alpha-FP can be found in the fetal and maternal blood and of course in the placentas that came from births with new born babies that had development disorders of the cephalic pole, neural tube and a lot more.
Methods: We used placentary fragments from target study group of placentary morphology (1), these being new born babies with malformation of the cephalic pole, associated or not with chromosome anomalies with or without plurimalformative syndromes.
Results: Anti alpha-FP antibody has manifested in cases in which the placentas came from deliveries with fetuses with development disorders of the cephalic pole, a brown color reaction in the vilositary trunk vessels and terminal vilosities with the aspect of a reticular or homogeneity intravascular mass with complete or partial marking of the vessel circumference.
Conclusions: The immunohistochemical reaction with the anti Alpha-FP monoclonal antibody suggests and encourages, on one hand, the prenatal placental study (chorionic puncture), in the cases with high risk of malformation and the mandatory identification of maternal serum AFP in a short period of interventional time, which is up to 12 weeks of pregnancy, combined with other parameters from the superior rank of screening tests.
Key words: malformations, cephalic pole, citoarchitectonics, placenta, alphafetoproteine, imunohistochemistry .

Kategorie: Poster

Rubrik: 10.Developmental Biology
Abstract Nr.:111

Titel: A study of the expression pattern of genes expressed in the chicken embryo mesonephros

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Abstract:
Purpose: To investigate the developmental expression pattern of genes involved in human glomerulo-nephropathies associated with massive proteinuria and podocyte differentiation using the chicken mesonephros as a model system.
Method: We performed in situ hybridization using chicken specific mRNA probes for genes expressed in the early nephron and slit diaphragm genes. The probes used were cNeph1, cNeph2, cSim1, cLmx1b and cAtoh8. Chicken embryos from Hamburger Hamilton developmental stage HH19 (E3) to HH 34 (E9) were used for the in situ hybridization (ISH). ISH was performed on whole mount embryos which were sectioned by vibratome.
Results: Our result show that Neph1, Neph2, Sim1. Lmx1b and Atoh8 genes are dynamically expressed during nephron morphogenesis and Neph1 and Atoh8 are also specifically expressed in the podocytes during late stages of differentiation.
Conclusion: We conclude from our results that the genes implicated in congenital and acquired glomerulo-nephropathies like Neph1 and Neph2 are dynamically expressed during mesonephros development pointing towards a role in the formation of the filtration barrier and the differentiation of the mesonephric podocytes. Thus the avian mesonephros could serve as a model to study human kidney diseases.

Kategorie: Poster

Rubrik: 10.Developmental Biology
Abstract Nr.:112

Titel: Efic & hrem: comparing two episcopic 3d-volume data generation techniques

Autoren: Dorfmeister K.(1),Schmid S.(1),Geyer S.(1),Weninger W.(1),

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Abstract:
Purpose: We aimed at exploring and comparing the potentials of two episcopic three-dimensional (3D) volume data generation techniques - EFIC (Episcopic fluorescence image capturing) and HREM (High resolution episcopic microscopy) – for generating 3D computer models of embryos of various organisms and developmental stages.
Methods: Mouse, chick, quail, and zebrafish embryos were histologically embedded into resin and paraplast blocks following the standard protocols for EFIC- and HREM specimen processing. The blocks were sectioned on a microtome. During sectioning, series of 300 to 2000 subsequent digital images were captured from each freshly cut block surface following the EFIC and HREM data generation protocols. The series of aligned images were converted to volume data with voxel sizes ranging from 0.54x0.54x2 µm3 to 4x4x4 µm3. Volocity 4.0 and Amira 5.0 were used for data processing, 3D visualization, and data analysis.
Results: Both, EFIC and HREM are capable of producing high-resolution 3D volume data within 2-8 hours (from starting sectioning). These data fit for instant 3D analysis of complex topological relationships with the aid of volume rendering and for surface rendering following semiautomatic thresholding. We show that each method has specific advantages and disadvantages concerning the visualization of certain embryonic tissues, species, and embryonic stages.
Conclusions: Our results demonstrage that both, EFIC and HREM are suitable for creating highly useful and authentic 3D representations of embryos of various species and developmental stages. They also show, that the methods are highly complementary. EFIC is suited for processing specimens, which are poorly accessible by HREM and vice versa.

Kategorie: Poster

Rubrik: 10.Developmental Biology
Abstract Nr.:113

Titel: Factors controlling cell migration and division during axis formation in the mammalian embryo

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Abstract:
Purpose: This study sets out to investigate the planar cell polarity (PCP)- and Wnt-signaling pathways and the extracellular matrix in connection with cell migration and division in the epiblast of the pre-gastrulation stage (6.2 days-old) rabbit embryo.
Methods: Cell movements and orientation of metaphase plates were observed in DAPI-stained embryos by means of two-photon laser microscopy and time lapse recording. The angle between the metaphase plate and the anterior-posterior axis was measured using ImageJ and Photoshop. Vangl2 protein from the PCP-pathway was visualized using immunolabeling. Blastocysts were transfected via electroporation with the pEGFP-C1 plasmid. Hyaluronic acid was visualized using a recombinant neurocan-GFP fusion protein.
Results: There was specific cell movement, the orientation of which depended on the position of cells within the embryonic disc. Metaphase plates were observed to start rotation by 10° -30° about 10 minutes prior to cytokinesis. Vangl2 immunolabeling showed signs of subcellular left-right asymmetry in individual epiblast cells. Several GFP-expressing clones were observed after electroporation of blastocysts. Finally, the neurocan-GFP reagent stained whole individual epiblast cells next to unstained hypoblast cells.
Conclusions: Our results suggest that the factors chosen for this analysis may play an important role in the control of cell migration and division in the pre-gastrulation mammalian embryo. This study supports the concept of a constant relationship between cell division and cell movement during axis formation.

Kategorie: Poster

Rubrik: 10.Developmental Biology
Abstract Nr.:114

Titel: A case of conjoined cephalothoracopagus twinning in a chick embryo hh30. morphology and morphometry of cardiovascular structures.

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

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Abstract:
Purpose: The presentation aims at describing the anatomy of a cephalothoracopagus chick embryo of developmental stage 30 according to Hamburger Hamilton (HH). In particular, it shall provide detailed measurements of the great intrathoracal arteries, as well as information on the topology of the heart and great blood vessels.
Method: One chick embryo (Gallus gallus domesticus, developmental stage HH30) showing a spontaneously developed cephalothoracopagus malformation and 6 normally developed embryos of the same developmental stage were analyzed. After careful gross analysis and photodocumentation under a dissecting microscope, digital volume data (voxel size 9x9x3 microns) and finally three-dimensional (3D) computer models were generated with the aid of the high-resolution episcopic imaging technique (HREM). 3D visualization software was used for objectively measuring the lumen diameters of the great intrathoracal arteries.
Results: We present a detailed analysis of the anatomy of a HH30 chick embryo showing a cephalothoracopagus twin malformation. We further compare the objectively measured diameters of the lumen of the great intrathoracal arteries of the mutant with that of normally developed embryos of the same developmental stage and discuss the differences in organ and tissue volume and topology.
Conclusion: Our data provide insight into the formation of the blood vessels of a chick embryo with a cephalothoracopagus twin malformation. Since the single heart of the mutant has to perfuse paired lower body regions, our data permit analysis of the consequences of abnormal hemodynamics on the development of the heart and its great arteries.

Kategorie: Poster

Rubrik: 10.Developmental Biology
Abstract Nr.:115

Titel: Exploring the role of bhlh transcription factor atoh8 during embryonic myogenesis and satellite cell differentiation

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Abstract:
Purpose: ATOH8 was found to be severely deregulated in a patient who suffered from a severe myopathy. ATOH8 is expressed in the somites during chicken embryo development. To study its role in myogenesis, we have silenced ATOH8 in the developing somites and analysed its expression profile in satellite cells and myogenic progenitors on muscle fibres.
Methods: The ATOH8 gene expression pattern has been investigated by in situ hybridization in chicken embryos. Vector-based RNAi was used to knock-down ATOH8 in chicken embryos. Using ATOH8, Pax7 and Myogenin specific antibodies, the expression of ATOH8 in satellite cells was studied on freshly isolated muscle myofibers obtained from the EDL of mice and on cultured muscle fibres in growth and differentiation medium.
Results: Knock-down of cATOH8 in the somites by RNAi resulted in an effective silencing of ATOH8 and a down-regulated expression of MyoD, Myf5, accompanied with a decrease in myosin heavy chain expression and an up-regulated expression of Pax3. IHC on muscle fibres revealed the existence of Pax7+/ATOH8-, Pax7+/ATOH8+/- and Pax7+/ATOH8++ sub populations of satellite cells. Similarly, in the progenitor cells arising from the satellite cells we could also observe three subpopulations expressing Myogenin+/-/ATOH8+, Myogenin+/ATOH8+, Myogenin+/ATOH8-.
Conclusions: We conclude that ATOH8 is involved in myogenesis and is expressed during satellite cell differentiation. Its expression levels increase at the onset of satellite cells differentiation and decreases towards terminal differentiation. This is in line with the decrease of expression observed during maturation of muscles during chicken embryogenesis.

Kategorie: Poster

Rubrik: 10.Developmental Biology
Abstract Nr.:116

Titel: Stem cell factor and kit localize in the bovine meso- and metanephros comparably

Autoren: Tsikolia N.(1),Sakurai M.(2),Spanel-Borowski K.(1),Ricken A.(1),

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Abstract:
The mesonephros is regarded as a simplified version of the terminal renal organ, the metanephros. Both kidney types arise by an epithelio-mesenchymal interaction between the Wolffian duct and the nephrogenic ridge. It appears that the epithelio-mesenchymal interaction makes use of similar signal cascades for both types of kidneys. In murine metanephroi, the stem cell factor (SCF)/-KIT-signal transduction pathway has recently been shown to regulate ureteric bud branching and epithelial cell differentiation. Presently, we immunohistochemically defined the time-sequence of KIT and SCF presence in both kidney types by using bovine embryos/ fetuses of crown-rump-length (CRL) 1.7 to 24 cm. In the metanephroi of embryos, KIT positivity occurred prior to SCF; KIT was predominantly localized at the ureteric bud tips. In fetuses of 13 cm and more in CRL, epithelial cells with strong KIT staining were scattered in the cortical parts of distal tubules from developmentally advanced nephrons, whereas SCF was expressed in the epithelial wall of corpuscles and proximal tubules. The SCF/KIT profile of the advanced metanephric nephrons was reminiscenet of mature mesonephric nephrons. Here SCF was also seen in all proximal parts of the nephrons, while KIT was noted in a subtype of cells from the distal tubular epithelium. Our morphological findings are in agreement with a potential role of KIT at the ureteric bud tips and demonstrate a similar expression of KIT and SCF along the parts of developmentally advanced mesonephric and metanephric nephrons.

Kategorie: Poster

Rubrik: 10.Developmental Biology
Abstract Nr.:117

Titel: Epithelial regionalization of the human female developing genital tract

Autoren: Adam N.(1),Fritsch H.(1),

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Abstract:
Purpose: It is still under discussion whether the vagina arises from the urogenital sinus, Müllerian or Wolffian ducts or from a combination of two or three of these components. To gain a deeper insight into the origin of the epithelial layers in the human female developing genital tract expression patterns of several proteins have been examined.
Methods: A total of 26 female fetuses between week 9 and newborn were investigated by histological and immunohistochemical staining. Expression of cytokeratins 8, 18, 13, 19, E-Cadherin, p63, Laminin, Vimentin, Smooth Muscle Actin, Ki67 and Caspase3 was examined.
Results: Cytokeratins 8, 18, 13 and 19 were detected in the areas expected. P63 expression was found in the basal layers of sinus and canal epithelia in week 10-12 fetuses and in the basal layers of vagina, portio and fornices in the newborn.
Vimentin expression was first detected in the canal epithelium in a week 10 fetus; sinus and Müllerian ducts were negative. In later stages an ingrowth of vimentin positive cells seemed to occur from the mesenchyme into the epithelium of the canal.
Surprisingly the basal lamina around the Müllerian duct seems to be porous at a certain time during the development of the human female genital tract.
Conclusion: These data help to gain deeper insights into the cellular origin and differentiation of epithelia of the human female developing genital tract. The expression of Vimentin and the porous basal lamina point to a possible mesenchymal-epithelial transition within large parts of the uterovaginal canal.

Kategorie: Poster

Rubrik: 12.Reproductive Biology
Abstract Nr.:118

Titel: Premitotic cell migration and oriented cell division prior to primitive streak formation in the rabbit blastocyst

Autoren: Reupke T.(1),Halacheva V.(1),Viebahn C.(1),

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Abstract:
Purpose: Analysis of cellular movement and cytokinetic orientation in the epiblast during primitive streak formation of the rabbit embryo.
Methods: Unstained 6.2 days-old rabbit blastocysts with an intact zona pellucida were mounted in an inverted microscope. Mitoses were marked in 2 to 3 hours time-lapse films recorded in the area of the posterior gastrula extension (PGE) of the embryonic disc using optical settings similar to differential interference contrast (Nomarski). For each cell division, orientation of cytokinesis was defined by the angle between the anterior-posterior-axis of the embryo and a line lying parallel to both groups of anaphase-A chromatides in up to four quadrants in seven individual embryonic discs. Migration of dividing cells was tracked retrospectively in relation to those neighbouring cells which were trackable under the optical conditions used.
Results: We found distinct distribution patterns for orientations of the mitotic angle varying according to (1) the quadrant observed, (2) embryonic stage, (3) the migratory activity prior to mitosis as well as (4) the length of the observation period in vitro. In addition, a final rotation of the metaphasic plate was frequently observed immediately prior to anaphase A.
Conclusions: Orientation patterns and rotation of metaphase plates strengthen the concept of specific mechanisms assuring distinct cellular migration and orientation of cell division which accompany vigorous mitotic activity at the beginning of mammalian gastrulation.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:119

Titel: Situs inversus: anatomical aspects by magnetic resonance imaging

Autoren: Stoeckelhuber M.(1),Eckey T.(2),Buchholz M.(3),Kapsimalakou S.(2),Stoeckelhuber B.(2),

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Abstract:
Purpose: Failure to establish normal left-right body axis formation during embryogenesis results in heterotaxis. Can MRI provide all the morphological information on the different varieties in a single examination?
Methods: A young woman presented to the emergency room with upper abdominal pain. A chest radiograph, sonography of the abdomen, barium study of the small and large bowel, and MRI of the abdomen were performed.
Results: On the chest radiograph, dextrocardia with a right descending aorta and left-sided inferior vena cava was noted. Ultrasonography was inconclusive. Barium studies demonstrated non-rotation of the intestine. MRI of the abdomen confirmed the presence of heterotaxis with an abnormal arrangement of abdominal organs and vasculature. No acute disease was found.
Conclusions: MRI provides a unique insight into the wide morphological variation and an understanding of lateralization defects in a single examination without the risks of ionizing radiation.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:120

Titel: Evaluation of nerve conduction velocities of the median, ulnar and radial nerves of basketball players

Autoren:Colak T.(1),Bamac(1),Colak(2),Bayazit(2),Demirci(2),Meric(3),Dundar(4),Selekler(4),Bahadir(2),ozbek(5),

Adressen: (1) Anatomy|Kocaeli University|Kocaeli|Turkey; email:tuncayc@kocaeli.edu.tr; (2) School of Physical Education and Sports|Kocaeli University|Kocaeli|Turkey; (3) School of Physical Education and Sports|Kocaeli|Kocaeli|Turkey; (4) neurology|Kocaeli University|Kocaeli|Turkey; (5)anatomy|Kocaeli university|Kocaeli|Kocaeli

Abstract:
Purpose: To evaluate the influence of playing basketball on the ulnar, median and radial nerves crossing the elbow region.
Methods: Twenty male basketball players (age 22.55±3.05 years) and 20 non-active subjects (age 22.30±1.78 years) participated in this study. The neurophysiologic study consisted of motor and sensory nerve conduction of ulnar, median and radial nerves. Nerve conduction studies were performed using standard techniques of supramaximal percutaneus stimulation with a constant current stimulator and surface electrode recording on both extremities of each subject.
Results: The motor and sensory conduction velocity of median nerve at the elbow was significantly delayed in the dominant arms of basketball players (mean 55.32±3.45 m/s and 60.88±5.62 m/s, respectively,) compared with controls (59.48±5.51 m/s and 65.14±4.15 m/s, respectively). The sensory conduction velocity of the ulnar nerve was significantly delayed in the basketball players (mean 61.28±4.39 m/s) compared with that in the control subjects (mean 65.38±5.52 m/s), (P= 0.018). The radial nerve distal latencies in the basketball players were significantly prolonged (mean 1.76±0.28 ms) compared with those of the control subjects (mean 1.52±0.36 ms), (P= 0.040).
Conclusions: Shooting require a strenuous unilateral action of the dominant extremity in basketball. Various factors such as high repetition of motions, high muscular forces and extreme elbow positions affect their peripheral nervous system.We conclude that abnormal nerve conduction velocities at the elbow segment may suggest a subclinical entrapment neuropathy as a result of strenuous elbow movements in basketball players.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:121

Titel: The anatomical forms of the open atrioventricular canal

Autoren: Tcherednik S.(1),Tcherednik S.(1),

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Abstract:
30 preparations of hearts of children in the age from the season neonatal period till 3 years 8 month were investigated, with the various forms AVSD. At research of hearts, first of all, the form of fault was defined, the special attention was given to study of intrinsic frames of a member, their interrelation. The anatomical forms of AVSD are determined by character of the heart chambers connections: а) the incomplete form — absence of the inferior departments of an interatrial septum and the small defect of pars membranacea septi; b) the complete form — the connection of all four chambers of heart at the expense of a combination of defects of an interatrial and muscular part of interventricular septum; c) the slanting form of the canal — the connection of a dextral auricle and left ventricle with scission of one of cusps of the dextral or left valve, less often — of cusps of both valves of venous ostium. The interatrial septum being the main component of AVSD, is subject to essential changes as a primary defect, anomalies of development of fossa ovale, and also presence of single and multiple foramens localized in various departments of the septum.
The given anatomical picture of fault gives the basis to relate it to the most complex anomalies of heart development.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:122

Titel: Anatomical variants of rami branching out a. brachialis

Autoren: Kiryakulov G.(1),

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Abstract:
ANATOMICAL VARIANTS OF RAMI BRANCHING OUT A. BRACHIALIS.
Kiryakulov G.S., Tcherednik S.A., Kiryakulova T.G., Basiy R.V., Seredkin V., Yakovleva L.N.
Donetsk National Medical University, prosp. Illicha, 16, Donetsk, Ukraine.

The brachial artery in the brachium one third in 6% of cases is located anteriorly the medial nerve and not posteriorly. The following atypical branches can run from a. brachialis: a. subscapularis, a. circumflecsa humeri an-terior et posterior, a. collateralis ulnaris et a. collateralis radialis accessoria, as well as a. porofunda brachii acces-soria.
Of the additional muscular rami one should mention a. deltoidea accessoria. As a branch of a. brachialis a. antebrachii superficialis media sometimes is encoun-tered. Now and then a. collateralis ulnaris superior can be very developed or absent completely; a. collateralis ra-dialis inferior can be absent as well.
Fossa cubiti is considered to be the place of division of a. brachialis in standart anatomy. However our long-term observations testify to the fact that a. brachialis division can be at various levels of brachium as well as in the region of fossa axillaris that is one can speak about a complete absence of a. brachialis and the presence of a. ulnaris et radialis instead of it.. In the lower third of brachium at a distance of 2-3 cм the vessels often changed their direction setting in sulcus radialis et sulcus ul-naris, respectively.
The knowledge of the said rare anatomical variants shall make the modern diagnostics and surgical correction easier.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:123

Titel: The interatrial septum in left parts heart hypoplasia syndrome

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Abstract:
An open oval foramen was revealed in 52% of observations. Three basic anatomical forms of the anomaly of the oval window closure were found: a slant cleft in the oval fossa, a partial absence of the oval foramen valve, the oval foramen perforated valve.
An anomaly having a slant cleft shape located in the oval fossa was observed more often. Right atrium examination showed that all the elements composing the oval fossa were normally formed. However, in the anterior part of the oval fossa posteriorly from the limbus central part there was a recess which passed in a slant cleft leading from back to front out of the right atrium cavity to the left one. A normally formed valve of the oval foramen was revealed when the interatrial septum in the left side was examined. It had a free falciform edge facing anteriorly.
A partial absence of an oval foramen was found in 10% of cases. The anomaly lies in the fact that the valve does not cover completely the oval foramen. Thereat the valve is more often not developed in its front part.
A perforated valve was seen in 2 cases. The number of foramina was 5 to 10. They were grouped in the upper parts of the valve.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:125

Titel: The gross anatomy course: an analysis of its importance

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Abstract:
The gross anatomy dissection course is a cost-intensive piece of undergraduate medical education that students and professionals alike describe as very important within the overall medical curriculum. We sought to understand more explicitly students' valuation of gross anatomy as an "important" course and so performed a quantitative longitudinal questionnaire. Medical students (n = 124) enrolled in the winter term 2006/2007 gross anatomy course at Ulm University Faculty of Medicine were surveyed anonymously prior to, in the middle of, and at the end of the dissection course. Subgroups of students expressing rising or falling opinions of course value were identified and correlated with student opinions about the course's ability to convey professional competencies. Five-point Likert scales were used for each survey item, which included such standardized instruments as the NeoFFI, BSI, and FBM. The study confirmed that medical students believe dissection to be valuable. Students indicated that participation in the course facilitated acquisition of anatomy knowledge as well as skills related to teamwork, coping with stress, and, to a lesser extent, time management. Students also noted that they developed less empathy than expected beforehand. Significant subgroup differences were observed relative to the competencies of teamwork, stress coping strategies, and empathy, as well as in students' stress levels associated with having to take a dissection course. Our study builds on previous work that has shown dissection courses help students develop professional competencies. The increase in professionalism might be a reason for the generally high value students place on the gross anatomy dissection course.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:126

Titel: Pulmonary lobar variation, associated with neural tube defects

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Abstract:
Premises: Variations in pulmonary lobation appear in ontogenesis through interferences in normal development of pulmonary fissures.
We have not found in literature any association between the variations in pulmonary lobation and pulmonary hypoplasia or defects of neural tube.
Material: Two male aborted fetuses; first one with a gestational age of 27 weeks, weighed 800 grams and the diagnosis was: Total craniorachischisis. The second fetus with a gestational age of 20 weeks, weighed 520 grams and the diagnosis was: Dorsal rachischisis.
Method: We took pictures of fetuses, than we remove the lungs and we took pictures of them and after we have dissected the lungs and study their structure on histological sections, hematoxylin and eosin stain.
Results: The oblique fissure was incomplete or interrupted and the horizontal fissure was absent or hardly seen for all the lungs.
The weight of the lungs reported to the weight of the fetuses confirmed pulmonary hypoplasia.
The microscopic study of the lungs revealed a certain degree of retardation of pulmonary structure compared with gestational age.
Discussions: Epithelium-mesenchyma interaction has a certain pivotal purpose in pulmonary ontogenesis.
Abnormal development of the skull and/or vertebral arch defects are accepted as forerunners for neural tube defects.
Conclusion: An association between the variations of pulmonary lobation and pulmonary hypoplasia with neural tube defects could express an initial mesenchymal defect (4th, 5th and 6th intrauterine weeks).

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:127

Titel: Bone morphology after heat application

Autoren: Birkenfeld F.(1),Becker M.(2),Kurz B.(1),Harder S.(2),Kern M.(2),Lucius R.(1),

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Abstract:
Purpose: Intraosseous heat development is always a problem during bone surgery performed by rotary burs or ultrasonic devices. However, only few data exist regarding the morphological effects of applied heat on bone surfaces.
Methods: We used twenty-four human mandibular bone specimens of the mental region. Twelve were fixed with 76% ethanol and the others were stored frozen. A heat application on the bone surfaces with 40°C, 50°C, 60°C and 100°C for one minute was performed under controlled conditions using an iron heater, and (i) demineralized paraffin sections, (ii) cryostat sections (both HE staining) and (iii) scanning electron microscopy (SEM) were prepared.
Results: There was no difference in the morphology or histology between fixed or unfixed bone specimens. The bone surface was smooth in both groups with 40°C and 50°C of heat application. Application of 60°C and 100°C induced a rough-textured surface with small cavities visible with SEM and demineralized HE staining. The bone appeared unaffected in lower planes. The frozen HE histology could not been evaluated. Although useful in other studies, here the sections were broken and displaced on the glass slide. Therefore, this technique is not suggested by the authors.
Conclusion: Our findings suggest SEM for bone surface morphology and demineralized paraffin sections (HE staining) for frontal plane evaluations. Fixed and unfixed bone specimens seem to be equal in their morphology and can both be used in these kinds of studies.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:128

Titel: A report of unusual origin of right renal artery

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Abstract:
During evaluation of abdominal aorta in the serial forensic autopsy cases, we observed a variation in the origin of the right renal artery in a 49 year old woman. In this case the right renal artery originated from the superior mesenteric artery. On the left side, the left renal artery arose from the aorta at 6.1 mm inferior to the level of the origin of the superior mesenteric artery. The internal diameters of each renal artery were measured as close to its origin as possible. The diameters of the left and right renal artery were 3.4mm and 5.2mm respectively. The diameter of the superior mesenteric artery was 8.2mm. This kind of variation may affect the blood circulation of the kidney,and may cause damage to the tissues of the kidney, and/or high blood pressure. Detailed knowledge of the presence of potential variations in renal arterial anatomy is important for successful surgical management during renal transplantation, repair of renal artery aneurysm, angiographic interventions and endovascular repair of isolated superior mesenteric artery dissection.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:129

Titel: Ct colon or virtual colonoscopy

Autoren: Opincariu I.(1),Damian A.(2),Bologa B.(3),Pascu R.(3),Opincariu M.(4),Schmidt A.(5),

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Abstract:
Virtual colonoscopy-represent one of the most complex large intestin examination methode of high rezolution, how can replace the clasic colonoscoy. For the moment this sort of investigation is the only one of it’s kind in Cluj and one of the few in the country. It is accepted in the whole world equally by the pacients, physicians and physicists, for the quality of image, noninvazivity (which differ in technique from the classic colonoscopy), as well as for the accuracy of the diagnosis, for polyp detection, diverticula detection or colon cancer detection.
Virtual colonoscopy it is a examination with short time of acquirement (max. 3 minute) easily supported by pacientes, it is not necessarily tha anaesthesia. The accuracy of the diagnosis in detecting polyps, diverticula, colon stenosis or colon cancer depends also by the preceding preparation of the patient, by eliminating the intestinal content, hidric diet, administering of Gastrografin. The investigation is of minimum iradiation, the thicknes of the acquired sections using helicoidal technique is milimetrical, thus the virtual programe is capable of offering corect information both two-dimensional and thre-dimensional. Therefore it is obtained a complete view of the colon from the rect until the cecum.
Colon CT is an important method of screening which can be utilized in reduction of the death rate caused by the colo rectal cancer.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:130

Titel: Some results of anthropogenetic researches of the population of the central russia

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Abstract:
Studying of genetic differentiation of the population of the Central Russia (10 areas of 6 areas) by data about distribution of surnames and mtДНК is spent. Level fr in regional populations of the Central Russia, estimated on frequencies of surnames of voters on the average on region has made f =0,00033, varying from 0,00001 in Borovsk area of the Kaluga region to 0,00092 in Cheremisinovsky area of Kursk area. Considerable territorial variability of populjatsionno-genetic characteristics of the population of the Central Russia is revealed by us and at researches of the surnames received from lists of telephone subscribers. Values fr*, defined on frequencies of surnames of subscribers changed from 0,00014 in Spassky area of the Ryazan region to 0,00125 in Cheremisinovsky area of Kursk area, at average value on region 0,00059. The factor of correlation of Spirmena between fr* telephone subscribers – fr* voters has made 0,62 (p <0,05). It is established that mitochondrial the genofund of Russian is presented by types mtDNA, concerning groups M, I, K, J, H, T, U, W, V, X. The Most widespread are groups H (38,2 %), U (22,04 %), T (8,76 %), J (7,73 %). As a whole on their share to have 76,73 %. On the basis of the analysis of the data about distribution of frequencies gaplogroups mtDNA absence of genetic distinctions between the investigated populations of Russian is shown.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:131

Titel: Pancreatic heterotopia in the papilla of vater

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Abstract:
Pancreatic heterotropia in the papilla of Vater is a sufficiently rare entity, however, it can be the cause of stenotic lesions with the development of a mechanical jaundice. The heterotopic pancreatic tissue is capable of feigning an acute and chronic gastritis, cholecystitis, pancreatitis, a peptic ulcer of a stomach and a duodenum, a malignant neoplasms of a gastrointestinal tract. Morphologically, the changes of the papilla of Vater connected with the hetertopic pancreatic tissue in it and its role in their development are investigated insufficiently. We present the results of the morphological research of 327 preparations of papilla of Vater which we could get from autopsy with regard to a sex, age, clinical and pathological diagnoses. We used the histological, histochemical and immunohistochemical methods. The heterotopic pancreatic tissue in the papilla of Vater was revealed in 48 (14,67%) cases (in 26 male patients and in 22 female ones. The frequency of heterotopic pancreas ranged from 37,5% in the medial wall of the papilla of Vater and in the interductular septum, 16,67% in the lateral wall and to 8,33% in a muscular coat of a duodenum near papilla of Vater. Histologically complete variant was observed in 10,4%. It showed a structure for the pancreas, consisting of acini, islets and small ducts. The ductal variant was revealed in 16,7% , consisting only small ducts. The acinar variant was observed in 14,6% and it consisted of two types: the acino-ductular and ductulo-acinar variants were found in 58,3%.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:132

Titel: An anatomical and imagistic study of the sphenoidal sinus

Autoren: Jianu A.M.(1),Motoc A.(1),Ciobanu I.(1),Ilie A.(2),Cergan R.(2),Rusu M.C.(3),

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Abstract:
The sphenoidal sinus, located at the center of the skull base, is surrounded by important structures, such as the optic nerves, internal carotid arteries, trigeminal and vidian nerves, cavernous sinuses and the pituitary gland. The transsphenoidal endoscopic routes depend upon the sinus pneumatization and must adequately evaluate the topographic relations of the sinus. We aimed to evaluate morphologically and topographically the sphenoidal sinus, by using anatomical dissections and microdissections and CT evaluations, and to correlate the results by the two methods. We used CT scans of a retrospective lot of 300 patients and also we dissected in situ 20 skull bases; moreover 6 skull base specimens were drawn and peri- and endosinusal microdissections were performed. Various pneumatization patterns were identified and could be fitted with the developmental pattern of the sphenoid bone (e.g.sinusal recesses of the presphenoid, alisphenoid, basisphenoid and orbitosphenoid), as also were the sinusal protrusions. The endosinusal positive and negative morphologies individually alter the traditionally considered topographical relations of the sinus and it determines so and individual CT-documented approach of the sinus for various surgical procedures.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:133

Titel: The lateral incisive canals of the adult hard palate - aberrant anatomy of a minor form of clefting ?

Autoren: Rusu M.C.(1),

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Abstract:
Except the oral clefts and their associated dental development disturbances, no other discrete morphologies are reported in the literature as related to altered fusions of the fetal maxilla and premaxilla. We report here two cases related by the persistence in adult of an aberrant canal at the fusion site of the fetal premaxilla and maxilla. The first case presents an anastomosis of the superior anterior alveolar and greater palatine nerves, encountered at dissection in a human adult male cadaver – that anastomosis, bilaterally present, projected on the aforementioned fusion site and traversed the hard palate to continue within the maxillary sinus wall. The second case displayed at CT the unilateral presence of aberrant lateral incisive canals (LIC) at the level of the fetal premaxilla and maxilla fusion site; that canals, external (1,5 mm.diameter) and internal (1,07 mm.diameter), were corresponding as location to that one traversed by the aberrant anastomosis in the first case. Both LIC opened inferiorly but not superiorly, rather seeming to communicate with the bony canals within the nasal fossa floor at that level. We consider that such aberrant canals and nerves may represent very rare forms of clefting, previously undescribed; the possible anastomoses of the superior anterior alveolar and greater palatine nerves can be altered during a Le Fort I fracture and may be the morphology that can explain aberrant clinical nervous distributions at the level of the upper dentoalveolar arcade and hard palate. Grant UEFISCSU (Executive Unit for Financing Higher Education and University Scientific Research), 317/2007

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:134

Titel: Therapeutic aspects in recurrent miscarriage

Autoren: Motoc A.(1),Biris M.(2),Pascut D.(2),Stana L.(1),Jianu A.(1),Folescu R.(1),Raducan S.(1),

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Abstract:
Purpose: Recurrent miscarriage is defined as three consecutive miscarriage before ten weeks amenorrhea affecting 1%-2% of women of reproductive age. The aim was to clarify possible effects of treatment with low molecular weight heparin and lowerdose aspirin in recurrent miscarriage. These sporadic miscarriages are the commonest complication of pregnancy. The haemostatic system has major importance in pregnancy success and process of implantation. Prothrombotic and thrombotic changes may interfere with these processes leading to miscarriage.
Methods: We used 26 consecutive patients, separated into two groups: group A (11 cases) with positive preconception thrombophilia testing and group B of 15 pregnant women without thrombophilia testing. All women received low dose aspirin and low molecular weight heparin in prophylactic doses. Two women from group A and one from group B received Dalteparin and the rest Enoxaparin. The placentae from the miscarriage or birth, were examined and the placental lesions analised.
Results: In group A, 8 patients with births at term and one premature and in group B, 9 births were at term and two premature. The use of low molecular weight heparin Enoxaparin combined with aspirin was associated with an higher rate of healthy live birth in all the women. The most common placental lesions found were deposits of fibrinoid material and placental infarct.
Conclusions: Treatment with low molecular weight heparin in asociations with aspirin improved rate of alive newborn and seems to reduce the frequency and extent of placental thrombotic lesions.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:135

Titel: Morphological variability of the origins of branches of celiac trunk- anatomical data

Autoren: Niculescu M.(1),Motoc A.(1),Stana L.(1),Jianu A.(1),Sisu A.(1),Niculescu V.(1),

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Abstract:
Purpose: The aim of this study is finding different origin types of celiac trunk branches.
Methods: The study was performed on 85 corpses using dissection, and injection of blood vessels with plastic materials (15 corpes).
Results: By dissection we had found variants of coeliac trunk branches. One is hepatic artery and a trunk form by the other two. Left gastric artery has the same origin as phrenic arteries (gastrophrenic trunk). Another two have the same origin with superior mesenteric artery. All the three branches arise from it, (hepatic artery plays the role of left hepatic artery), while right hepatic artery starts from hepatomesenteric trunk. When hepatic artery outgoes form aorta other two start by a common trunk. Other types: hepatic and left gastric arteries arise from a common trunk, splenic artery being detached from superior mesenteric artery. Splenic artery comes straight from aorta, the other two arise from a common trunk. Left gastric and splenic arteries come from a common trunk, and other arises from the aorta with superior mesenteric artery. A variant with lieno-gastro-phrenic trunk from which start the phrenic arteries and then left gastric and splenic artery has the hepatic artery detaches from a hepato-mesenteric trunk.
Conclusions: In most cases coeliac trunk arises straight from the aorta and occasionally through the coeliaco-mesenteric trunk. Knowledging such arterial variations has great significance on blood vessels scanning techniques for clinical diagnosis and surgical management of diseases of abdominal area.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:136

Titel: The colon arterial territories

Autoren: Niculescu M.(1),Motoc A.(1),Stana L.(1),Sisu A.(1),Jianu A.(1),Niculescu V.(1),

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Abstract:
Purpose: Study of vascular territories required prior research colic arterial branches because it has been found that, although colic branches has anastomosis along marginal arcade of Riolan, the anatomical aspect not always allows functional anastomoses, accepting the idea of a specific territory dependent on a particular artery.
Methods: Study was made on 75 human bodies (from our dissection labs). It has been made macroscopic dissection on abdomen; the vascular structure had been displayed. We started from the morphological variability of the colic branches, leading as to the arterial territories depending on those branches. A full diagram of the colic branches distribution was made for each case.
Results: Our results allow us to delineate the arterial territories of the colon. At the beginning we outlined territories of the superior and inferior mesenteric arteries, establishing territories for colic artery. The territory of the superior mesenteric artery may include may include teritories dependent on right inferior colic artery, right superior colic artery and middle colic artery. Territory of the inferior mesenteric artery is sustained by left superior colic artery, left inferior colic artery, left middle colic artery. Colon has four constant arterial territories, added to the vast majority of cases a fifth area, often sixth and even seventh one.
Conclusions: Establishing the vascular territories of the colic arteries is important for anatomy and for surgery field, being known the difficulty in postoperatory colon revitalization. Each branch has a specific territory,with anastomoses (not always functional).

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:137

Titel: Aneurysmus of the internal carotide artery asymptomatic to a pacient with contralateral ischaemic stroke in mca territory

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Abstract:
The paper presents a case of stroke with multiple particularities: the apparition of a vascular cerebral lesion, caused by banal atherosclerosis, at a patient having major vascular risks that remained asymptomatic until an old age, quick hemorrhagic transformation, clinical aspect which overbid the extension of the lesions imagistic highlighted.
Introduction: Intracerebral aneurysms presents a great risk of subarachnoidian hemorrhage, major suffering, with evolution marked by complications and great rate of death.
Methods: case presentation
Disscutions: The particularities of the case are multiple: quick hemorrhagic transformation, discordant clinical aspect toward the localization of the lesion and presence of an asymptomatic giant aneurysm of the ACI.
Key Words: aneurysm of ACI, deep infarct ACM.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:138

Titel: Hypoparathyroidism diagnosed by neurological signs and expanded intracerebral calcification

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Abstract:
Neurological signs association with intracerebral calcification is a complex situation that requires monitoring of calcium metabolism, phosphates, parathyroid hormone levels, many general and brain diseases. The mechanism by which hypoparathyroidism causes of intracranial calcification is incompletely understood. Diagnosis of hypoparathyroidism with neurological signs and evidence of extensive intracerebral calcification is extremely rare. We present the cases of two patients with hypoparathyroidism who diagnosis started from neurological signs and the existence of extensive intracerebral calcification.
Decreased calcium levels, increased phosphate in hypoparathyroidism determined by mechanisms poorly known occurrence of intracerebral extensive qualifications that may be asymptomatic or symptomatic. Often, symptoms after treatment is reversible, with normalization of serum calcium level. Some clinical observations show that it would be possible disappearance of calcification by administration biphosphats.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:139

Titel: Micro-vascular density profile in normal gastric mucosa versus gastric cancer mucosa

Autoren: Pop O.(1),Maghiar T.(2),Dinulescu D.(2),Vilceanu A.(2),Sandor M.(3),

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Abstract:
Propose:The study try to find out the micro-vascular profile for the normal gastric mucosa and for the gastric cancers by immunohistochemistry staining.METHOD We analyze formalin-fixed paraffin-embedded 100 samples ; 50 cases came from normal gastric mucosa and the rest were from gastric cancers cases. All the cases were stain with CD34 anti-CD34 and after that we analyzed the results by Korkolopoulou method (2001).The scanning of stained microvessels to identify 'hot-spots' at low magnification was used. Omission of the primary antibody was used as a negative control and the micro-vessels of the normal adjacent gastric tissue served as internal positive controls. RESULTS A correlation between vascular density (MVD) in the normal gastric mucosa and gastric cancer mucosa had been identify. The MVD is 16.3 vessels/hot spot in normal mucosa. The results in gastric cancers mucosa rage from 30.5 to 36.7 vessels/hot spots according with age of the patient and with the histological tumor degree. CONCLUSION The greater density of CD34 could reflect a greater predisposition to cancer in normal mucosa if is associated especially with intestinal metaplasia. The relationship between vascular density, grade, suggests that angiogenesis increases with tumor growth rate but is important to analyze the mature and immature vessels.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:140

Titel: The cystic duct – morphologic variants

Autoren: Stana L.(1),Motoc A.(1),Sisu A.(1),Jianu A.(1),Cebzan C.(1),Ilie A.(2),Hogea B.(1),

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Abstract:
The cystic duct connects the gallbladder to the extrahepatic bile duct and usually enters from the right approximately halfway between the porta hepatis and the ampulla of Vater. Taking into account the evolution of modern investigation of the morfofunctional hepatobiliary complex and knowing that morphological variants of cystic duct are important in the surgery success, we proposed the dissection to highlight some variants of the duct. The study was the presentation and quantification of some aspects of morphological variants of the cystic duct. Anatomical material studied consisted of a group of 60 human cadavers. Quantifying morphology of cystic duct variants allowed us to classify variability in relation to cystic duct junction in the common hepatic duct. Common hepatic duct was divided into three regions: upper, middle and lower. Depending on the location of the junction we have seen: upper cystic duct, middle cystic duct, anterior middle cystic duct, posterior middle cystic duct, lower cystic duct, adherent cystic duct, shorter cystic duct, cystic duct junctioned with right hepatic duct. Right hepatic duct can be mistaken for cystic duct and ligature at the junction with the left hepatic duct, bile remains outstanding.
Study of morphological variants of the biliary tract have therefore attached great importance to morphological and surgical practice, the surgeon being forced to follow the most important variants and also be aware that other variants may exist, whose ignorance not possible.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:141

Titel: The anatomy of distal insertion of the gracilis and the semitendinous muscle

Autoren: Raducan S.(1),Hogea B.(1),Moise M.(1),Jianu A.(1),Stana L.(1),Sisu A.(1),Prejbeanu R.(2),Vermesan D.(2),Motoc A.(1),

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Abstract:
Introduction: The anatomy of the infero -medial region of the knee joint shows a remarkable practical interest from the orthopaedic point of view, due to the fact that the graft ingathering at this level is a very frequently used technique. The anatomical variations at this level may lead to diverse intraoperatory complications.
Material and method: Within the framework of the Anatomy and Embryology Department in Timisoara, we have performed a study, using 8 specimens of cadaver, exposing the medial section of the knee joint, isolating and identifying the structures discovered in the region of interest. We have also performed measures, and the data obtained has been compared to that gathered in vivo, together with the Orthopaedic and Traumatology Clinic nr. 1, during the surgical interventions.
Results: Our interest was mainly the identification of the anatomical variations at the level of gracilis and semitendinous muscle. We have discovered tendinous strips, both at the level of the gracilis muscle and also at the level of the semitendinous muscle. We have also identified the accessory insertions. The most consistent accessory insertion has been found at approximately 4.8 cm proximal to the distal insertion.
Conclusions:The anatomy knowledge at the level of the distal insertions of the semitendinous and the gracilis muscles offers a remarkable interest with practical practicability. The adherent fibrous strips and the accessory insertions identified, as well as their direction may constitute important bench-mark for avoiding the intraopertaory complications.
Key word: the gracilis and the semitendinous insertions, tendinous strips, prevention of the intraoperatory complications.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:142

Titel: Anatomic aspects of the medial part of the knee joint

Autoren: Hogea B.(1),Raducan S.(1),Moise M.(1),Jianu A.(1),Stana L.(1),Selaru M.(1),Niculescu M.(1),Motoc A.(1),

Adressen: (1) Department of Anatomy and Human Embriology|University of Medicine and Pharmacy Victor Babes|Timisoara|Romania; email:hogeabg@yahoo.com

Abstract:
Introduction: Capsular and ligament structures located in the medial part of the knee joint are frequently involved in trauma occurring at this level. Detailed anatomical knowledge of these structures is essential in trauma practice.
Material and methods: We performed a study on 8 formolized human corps. The dissection was aimed to identify and measure anatomic structures at this level and their relations. Obtained results were correlated to literature data.
Results: The intern superficial collateral ligament was the main structure identified at this level and two distinct insertions on the tibia could be recognized. At the level of the profound medial collateral ligament two parts were identified: a meniscofemural and a meniscotibial part.
Conclusions
The anatomy of the medial part of the knee joint respects a certain pattern. Knowledge of medial knee region anatomy is essential in order to obtain a correct approach within the surgical treatment of knee joint injuries.
Key words: anatomy of the medial part of the knee joint, knee traumatology

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:143

Titel: Femoral patellar joint trauma incidence - anatomic clinical aspects

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Abstract:
The patellar extensor apparatus of the knee is a complex anatomical concept having an important role in static and locomotion. Patella is in the center of this apparatus. The disposer of the vastus muscles patella makes possible a variety of traumatic lesions.
Present study was made on 1128 cases of patella fracture, having marks the following: patient's age, sex, producing ways, producing circumstances. 68, 70% of patients were males and 31, 30% females, majority having between 21-30 years.
The most was produced in the car crush (50, 70%), few by home injury or professionals. In the main the mechanism of producing was injuring directly the patella on rough plane. An important percent is producing during sport games (25, 62%) like rally, motocross, cycling, gymnastics, and football. By home injury or professionals were 214 (18,97%) cases. In falls from height injury the mechanism of producing was mixed. About the anatomic pathology type, the main were complex as the following: incomplete fracture or fissure fracture 292 (25,88%), complete fractures 836 (74,12%). From the ending ones were the most frequently transversals 457 (53,77%), verticals 39 (4,77%), frontals 8 (1,83%), isolated 183 (21,80%) and cominutive 149 (17,70%). By aging point of view we found till 20 years 206 (18,26%), between 21 and 30, 388 (34,39%), between 31 and 40 we have found 279 (24,73%), between 41 and 50 were 173 fractures (15,33%) and over 50 years, 82 (7,26%).

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:144

Titel:Novel landmarks for radical pelvic surgery

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Abstract:
Purpose: Novel, surgical techniques in gynaecology such as total mesometrial resection (TMMR) (Höckel et al., Lancet Oncology 2005 & 2009) have fundamentally increased the life expectancy of tumour patients. These approaches consider former embryological compartments which are ill-described in current textbooks of anatomy. In order to improve the functional outcome of such operations, e.g. by maintaining urinary, anorectal and sexual functions, TMMR-related topographical description of (vegetative) nerves of the lesser pelvis were of particular interest.
Methods: We dissected six pelves of alcohol-fixed cadavers of females aged between 64 and 94 years according to the TMMR technique. After opening fascial spaces with a scissor we followed the autonomic nerves to their entrance into the pelvic organs.
Results: In front of the promontory, the superior hypogastric plexus which splits into the two hypogastric nerves can always be identified. Running dorsolaterally at the mesorectum they meet the pelvic splanchnic nerves at the level of S2-S4 adhering to the deep part of the sacrouterine ligament and form the inferior hypogastric plexus. The plexus are located medial to the visceral branches of the internal iliac vessel system. For the blood supply of the pelvic organs the arteries pierce the plexus taking the corresponding nerve fibres with them.
Conclusion: Our topographical description provides novel landmarks for pelvic surgeons which may be helpful to further improve functional outcome after radical pelvic surgery.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:145

Titel: Pathological modification of the femoral head in avascular necrosis of the femoral head – diagnostic methods

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Abstract:
Purpose: Discovering the most efficient methods of diagnose for the avascular necrosis of the femoral head
Methods: The study was conducted on 920 patients from the Orthopedics Clinic of the Clinic County Hospital of Arad, over 3 years. We did hip X-ray to all these patients. Those who presented major risks factor for developing AVN (ex. Treatment with Steroids) were investigated through magnetical resonance imaging.
Results: From those investigated we discovered 17 new cases of AVN – 4 children and 13 adults
Conclusion: Magnetical resonance imaging is the most precise and specific method of diagnostic for AVN. It can detect AVN even at 5 day after the installation of ischemia.
Key: femur, avascular, necrosis, magnetical resonance imaging

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:146

Titel: The common bile duct – size, course, relations

Autoren: Blidaru D.(1),Blidaru M.(2),Damian A.(3),Pop C.(1),Neagos H.(1),Blidaru M.A.(4),

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Abstract:
Purpose: Even if exist a lot of data in literature, regarding the anatomy of the common bile duct, there are only a few studies which present the anatomical peculiarities and their distribution on sexes. In the present study we have analyzed the size, the course and the relations of the common bile duct on human corpses, adults and fetuses, and we made a global study and a study differentiated on sexes of those parameters.
Methods: We have dissected 150 adult corpses of both sexes (93 males and 57 females) and 22 human fetuses (12 males and 10 females). For all the corpses we have dissected the common bile duct and we measured its dimensions, we studied its course and relations. After that we made sketches and we took pictures. For statistic we used the t-Student test.
Results: The common bile duct has an average length of 72.02 mm and an average diameter of 5.25 mm. The average length and the average diameter of the common bile duct are larger in males. The common bile duct presents a series of anatomical variations regarding its course and relations.
Conclusions: The peculiarities of common bile duct are important because they should be known not only by the anatomists but also by the surgeons as well during the surgery of the gallbladder, pancreas and duodenum.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:147

Titel: Major anomaly willis polygon with clinical implications

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Abstract:
Propose: If a patient presenting with major anomalies of the Willis polygon, which are practically non-existent polygon
Method: clinical and paraclinical investigations – CT and angioIRM
Discusión: imaging investigations highlight the absence of A1 in right and a single anterior cerebral artery, which in the initial segment forms a loop. The absence of P1 in the right part, the posterior cerebral artery is branch of internal carotid artery. Absence of the left posterior communicating artery.
Conclusions: Due to the inability of vascular compensation in polygon, the patient has a borderstroke between the branches of the internal carotid arteries, which also has an average degree of stenosis.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:148

Titel: Morphologic pattern and immunohistochemistry of intrinsic neural plexus of the human pulmonary veins

Autoren: Vaitkevicius R.(1),Saburkina I.(1),Rysevaite K.(1),Pauziene N.(1),Zaliunas R.(2),Pauza D.(1),

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Abstract:
Purpose: To determine the morphology of intrinsic neural plexus on whole (non–sectioned) human pulmonary veins (PVs), identifying the immunohistochemistry of nerve fibers and neurons located within this neural plexus.
Methods: Left atrial-pulmonary venous complexes were examined applying a technique for acetylcholinesterase on total (non-sectioned) pulmonary veins with their subsequent examination by the aid of a stereoscopic microscope. Additionaly, immunohistochemical staining was preformed on the PV sections using antibodies against tyrosine hydroxylase (TH), choline acetyltransferase (ChAT), calcitonine gene related peptide (CGRP) and substance P (SP).
Results: The human PVs are supplied by extensions from the middle, left dorsal and dorsal right atrial subplexuses. Immunohistochemistry revealed that the human PVs are provided with rich adrenergic, cholinergic and sensory innervations. In the PVs segments with myocardial sleeves, a high density of TH–positive nerve elements proceeds in close relationship with myocardial cells and many of the nerve fibers possess numerous varicosities along their lengths. The largest portion of nerve fibers showing TH immunoreactivity was located in close vicinity with ChAT–positive neurons and nerve fibers as well as the vast majority of TH and ChAT positive axons were colocalized.
Conclusions: The sole neural source, from which the ganglionated nerves pass toward the human PVs, is the epicardiac neural ganglionated plexus. Immunoreactivity for TH, ChAT, SP and CGRP in nerve fibers on the human PVs demonstrate the presence of sympathetic, parasympathetic and sensory neural regulation of these veins in humans.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:149

Titel: Enterocolic volvulus through common mesentery – case report

Autoren: Neagos C.(1),Graur F.(2),Pop C.(3),Blidaru D.(4),Litean O.(5),Nagy C.(1),Bodea F.(1),

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Abstract:
This paper presents the case of a 63 year old male patient, hospitalized in the “3rd Surgical Clinic”, Cluj-Napoca, with symptoms suggesting an intestinal obstruction. Emergency surgery was performed during which the diagnosis of bowel obstruction was confirmed. The intraoperative findings were a common mesentery with the volvulation of the last enteral loops and of the ascending colon, the latter being located on the left side of the median line. The surgical treatment consisted of intestinal devolvulation and ascending colon colopexy to the right colic flank.
This case illustrates the clinical picture and the surgical treatment options of a complex anatomical malformation of the small bowel, ascending colon and mesentery, caused by rotation abnormalities of the midgut during the intrauterine life.
These anomalies of the midgut rotation, including the common mesentery mentioned above, have been described in the literature as a cause of intestinal occlusion.
Key words: comon mesentery, midgut, surgery

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:150

Titel: The os vesalianum – fact or fiction?

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Abstract:
The so called 'os vesalianum' is an accessory bone of the foot located in proximity to the tuberositas ossis metatarsalis V and has first been described by Vesalius in his "De humani corporis fabrica" of 1543. Though several sources report a prevalence of 0.1-1.0%, there is much confusion not only about the location of this ossicle, but also about its nature, origin and even existence. Since definitions of this ossicle are rather vague, it can be mistaken for a fracture or an apophysis of the fifth metatarsal, a case of Iselin's disease, or an os perineum.
We found 22 radiographs of ossa vesaliana in the literature. Among these, we could not identify any case which clearly showed the bone as described by Vesalius. Most cases were fractures or a persisting apophysis whereas some of these radiographs were difficult to interpret. We also analysed the statistics of all four studies giving prevalence values of accessory bones of the foot including the os vesalianum. In three of them the 95% confidence interval of the estimate of prevalence included 0%. Moreover, it remained rather unclear on which definition of the os vesalianum the authors based their findings.
In conclusion, we could not find any clear evidence for the existence of the os vesalianum. To provide such evidence, a study including a minimum of 6000 adult individuals will be necessary.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:151

Titel: The histology of the optic nerve in cyclopia

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Abstract:
Cyclopia represents the most severe form of facial manifestation of holoprosencephaly, which is a malformation of prosencephalon characterized by the complete or only partial absence of the division of the two cerebral hemispheres that can appear more or less fussed. Rarely the facial appearance of holoprosencephaly, such as cyclopia can occur simultaneous to neural tube defects such as anencephaly, as in the following case.
Cyclopia characteristic feature is the presence of a single orbit above the oral cavity. Frequently orbit contains two fused globular eyes (sinoftalmia) that continues with a single optic nerve. The later leaves the orbita at the level of one small foramina formed by two lesser wings of the sphenoid, medial rotated, due to the absence of the presphenoid bone.
The dissection of synoftalmic ocular eyeball of a 28 gestational weeks feminine fetus with cyclopia has revealed the presence of a lumen in the unique optic nerve. The transversal histological sections of the optic nerve using hematoxylin-eosin and Masson's trichrome stains, allows the identification in its lateral parts two isle of retinal tissue in the proximity of nervous fibers.
The lumen of the optical nerve is a remnant of the choroid fissure. We consider that the lumen from the inner part of the nerve has allowed the extension of the retinian tissue in the nerve structure.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:152

Titel: Variability oft he morphological types oft he renal pelvis

Autoren: Glodeanu D. Iliescu D., Crăciun A., Bordei P.

Adressen: Department of Anatomy, Faculty of Medicine, University “Ovidius” Constanța, Romania

Abstract:
Our study was conducted within a total of 120 cases using as study method the dissection and the plastic injection on fresh or formalin preserved kidney and the examination of urographies performed within the radiology department. We assessed the formation of the renal pelvis, its morphological types and its relations with the renal hilum

Most often, the renal pelvis shows an *oval* or *ampular* shape (fig. 1), an aspect that we encountered in 39% of the cases. This shape includes the “*bagpipe*” aspect, as described by Bazy (fig. 2), an aspect that we met in 8% of cases of the total oval pelvises. The “*rectangular*” pelvis, described by Hyrtl in 26% of the cases, was encountered by us in 30% of the cases; in 19% of the cases the long axis was oriented transversely (fig. 3), and in 11% of the cases the long axis was oriented vertically (fig. 4) or obliquely infero-medially (fig. 5). In 10% of the cases the pelvis showed a “*square*” shape (fig. 6) when empty (within dissection), becoming an almost cubic shape when it was filled with contrast substance or plastic medium (fig. 7). The rectangular and square shapes of the pelvis may be described together as the *rectangular* pelvis. The *hemi-pelvis*, as described by Hyrtl, was encountered in 9% of the cases (fig. 8), and in 3% of the cases the pelvis was *branched* (fig. 9). A peculiar shape of the renal pelvis is the *triangular* one, that becomes *pyramidal-triangular* when the pelvis is filled with medium (fig. 10,11), with the tip oriented towards the ureter, as we encountered in 9% of the cases; in these situations the pelvis was formed by only two calyces. In over 20% of the cases, the pelvis was located either entirely intrarenally (fig. 11,12,13) or entirely extrarenally (fig. 14,15).

The renal pelvis shows a large variability in what concerns its dimensions, shape and formation, and also its relations with the renal hilum, al of them representing significant surgical aspects.

Kategorie: Poster

Rubrik: 4.Gross Anatomy/Clinical Anatomy
Abstract Nr.:153

Titel: The origin oft he celiac trunk in relation with the vertebral colimn

Autoren:Constantin-Barsan N., Chiriloaie C., Surdu L., Bordei P.

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Abstract:
The aortic origin of celiac trunk in relation with the vertebral column was assessed in 100 cases (66 angiographies, 18 CT scans and 16 ultrasound examinations). The separation of the celiac trunk from the aorta is performed within the range between the upper third of D_{12} vertebra and lower third of L_1 vertebra, with the following results: 4 cases in the upper third of the D_{12}, 5 cases in the middle third of the D_{12}, 8 cases in the lower third of D_{12}, 38 cases in the D_{12}-L_1 intervertebral disc, 23 cases in the upper third of L_1 (in one of them appeared a celio-mesenteric trunk), 11 cases within middle third of the L_1 and 5 cases in the lower third of L_1. In the remaining 6 cases the celiac trunk was missing, its three branches originating directly from the aorta. In relation with the diaphragm aortic hiatus, the origin of celiac trunk was always situated under it, within a distance between 0.5 to 2.5 cm. We encountered no cases of celiac trunk with mediastinal origin. According to the distance between the diaphragmatic aortic hiatus and the origin of the celiac trunk, we have classified the celiac trunks as follows: *upper-situated*, with the origin being 0.5 to 0.9 cm from the diaphragm, *medium-located*, with the origin being located between 1 to 2 cm from the diaphragm and *lower*, with the origin being at a distance greater than 2 cm from the diaphragm. The celiac trunk always originates from the anterior surface of the abdominal aorta and, in relation to the mid-sagittal plane, we encountered the following situations: paramedially right - 58 cases, paramedially left - 9 cases and median in 33 cases. We also assessed that in 77% of the cases, the celiac trunk showed a lower origin (at different levels of L_1 vertebra and D_{12}-L_1 intervertebral disc), the remaining 23% of the cases originating above (at different levels of the D_{12} vertebra).

Kategorie: Poster

Rubrik: 3.Methods/Teaching
Abstract Nr.:154

Titel: The value of screening in early detection of cervical cancer

Autoren: Constantin Fatu (1), Ion C. Fatu (2)

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Abstract:
Screening methods are frequently used for early tumoral detection. Malignancy of female genital tract is one of the most common causes of morbidity and mortality in Romania, and among these, cervical cancer is on the first place. In the study were included 500 female persons. This group was aged between 20 and 60 years, from urban and rural communities. In all the cases we performed the cervical prelevation by racllage of mucosa from the squamo-cylindrical junction, from exocervix and from the posterior vaginal wall. Specimens were included in fixation medium and then examined at the optic microscope. We found different degrees of cervical neoplasia in different groups of age (ranging from intraepithelial lesions - 19 cases in 20-39 years old group, 7 cases in 40-59 years old group, to stage IV squamous carcinoma- 3 cases in 20-39 years group, 1 case in 40-59 years females). Screening method was useful in detecting the various range of benign or malignant cervical lesions and in including the patients into an individualized therapeutic protocol. Cost-to-benefits ratio seems to be acceptable in high rate of cervical morbidity as our country has.

Kategorie: Poster

Rubrik: 3.Methods/Teaching
Abstract Nr.:155

Titel: Value and limits of Doppler investigation on endometrial hyperplasia

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Abstract:
Endometrial hyperplasia is widely ranged between simple and complex atypical lesion. It is important to establish quantitative reproducible criteria to differentiate the benign proliferation from the adenocarcinoma before any operative act. Investigation was performed in 44 patients with genital hemorrhage. At the same time, a mode B vaginal ultrasonography was performed in order to measure the endometrial thickness. In all these patients we have analyzed the Doppler sonograms and the values of PI (pulsatility index) and RI (resistance index) in uterine arteries and in the endo-miometrial vessels compared with a control group of 23 persons devoid of any uterine disease. We have noticed modifications in sonogram aspect in patients with more than 14 mm endometrial thickness and a significant decrease in Doppler indices, especially in RI, due to a low-impedance uterine blood flow specific to atypical hyperplasia. The pathological result of the uterine curettage performed in hyperplasia pointed out a strong correlation (87%) with the preinvasive sonographic investigation. Doppler sonograms show a positive correlation with endometrial thickness and are helpful in establish a better individualized therapeutic protocol, but cannot substitute the pathologic examination.

Kategorie: Poster

Rubrik: 10.Developmental Biology
Abstract Nr.:156

Titel: Role of Bcl11a during neocortex development

Autoren: Christoph Wiegreffe[1], Nancy A. Jenkins[2], Neal G. Copeland[2], and Stefan Britsch[1]

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Abstract:
The zincfinger transcription factor Bcl11a, also known as CTIP1, is expressed during embryonic and postnatal development in various regions of the central nervous system (CNS). In the neocortex, Bcl11a protein is broadly expressed by cells within the cortical plate from E12.5 onwards and can be found in all neocortical layers during later stages of development as judged by co-expression analysis with layer-specific protein markers. In addition, Bcl11a is also expressed by GABA-positive interneurons in the neocortex. Bcl11b, a paralogous gene of Bcl11a, is expressed in deep layers of the developing neocortex and has been shown to play a role in the specification of deep layer pyramidal neurons that generate the corticospinal tract.
The role of Bcl11a during neocortical development has not been investigated yet. Previous studies by our group have shown that Bcl11a is necessary for neural connectivity during spinal cord development and dendritogenesis in various regions of the CNS. Using Cre-mediated ablation of Bcl11a specifically in cortical progenitor cells and in postmitotic neurons we could demonstrate that Bcl11a is essential for neocortical development as well.

Kategorie: Poster