

Conclusions: Schizophrenic patients display ongoing neuroplastic activity in acute psychosis. Continuously increased S100B levels are associated with negative symptomatology.

P28.04

Anatomy and function of the Corpus Callosum

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This talk outlines evidence on anatomical organisation of the Corpus Callosum (CC) from ablation or radiographic studies in animals. Moreover, data of functional lateralisation as well as interhemispheric transfer in patients with agenesis or lesions of the CC are discussed: Laterality studies in these patients reveal an asymmetry in functional specialisation, i.e. left hemisphere superiority in language and right hemisphere superiority in spatial tasks. Evidence of interhemispheric transfer is reported from tests of bimanual coordination, tactile information, kinesthetic information, tactile pattern recognition in these patients. Furthermore, transcallosal inhibition (TI) of tonic voluntary hand muscle contraction or ballistic movements elicited by transcranial magnetic stimulation, is absent in patients with lesions in the trunk of the CC and suggests a role of the CC in bimanual motor coordination.

P28.05

Monaminergic systems in depressed patients with and without suicidal behavior

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Objectives: There is evidence that noradrenergic and serotonergic systems are involved in the pathophysiology of suicidal behavior. There is a lack of morphological studies on monoaminergic systems in individuals with mood disorders who performed suicide (S) and those who died otherwise(NS).

Methods: In patients with mood disorders (S, NS) as compared to non-psychiatric control subjects (C), the total number of neurons and the number of serotonergic/noradrenergic neurons in the dorsal raphe and the locus coeruleus was determined in serial Nissl-stained sections and in parallel series of sections immuno-stained for tryptophan hydroxylase/tyrosine hydroxylase.

Results: In ventral parts of the dorsal raphe a deficit of Nissl stained neurons could be shown for S and NS as compared to C. In the mesencephalic part of the dorsal raphe numbers for tryptophan hydroxylase immunoreactive neurons were higher in S than in NS and C. In the locus coeruleus numbers of tyrosin hydroxylase immunoreactive neurons were higher in S than in NS, but comparable to C.

Conclusions: Results indicate a deficit of noradrenalin and serotonin synthesis in patients with mood disorders who died not by suicide. In suicides with mood disorders these deficits appear to be compensated or overcompensated. A model for suicidal behavior derived from these data will be presented.

P28.06

Gender differences in neuronal survival upon hypoxia

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17-b-Estradiol (E2) has neuroprotective properties including activation of protective pathways, antiapoptotic genes and antioxidant activities, although the distinct cellular pathways are still unknown. The biological effects of E2 are mediated via specific receptors and also receptor-independently. The aim of this study was to compare the effect of E2 on neuronal viability in female and male rat postnatal hippocampal neurons upon hypoxia (15h). Estrogen-receptors were expressed in hippocampal neurons both in vitro and in vivo. Exposure to hypoxia strongly increased cell death in male neurons, which could be dose dependently reduced by E2, whereas in female neuronal cultures the hypoxia exposure had no significant effect on cell viability. These data show for the first time a clear gender difference in neuronal vulnerability to hypoxia in vitro, independent of exogenously administered hormones. The beneficial effect of E2 on neuronal survival upon hypoxia supports the use of estrogens/selective estrogen receptor modulators as a potential neuroprotective therapy for cerebrovascular and neurodegenerative diseases.

P28.07

Endocannabinoids in schizophrenia and other psychiatric disorders

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The recent discovery of the endogenous cannabinoid system reveals new perspectives regarding the role of this system in the pathogenesis of schizophrenia. The study investigated the specific role of the endocannabinoid system in different psychiatric disorders.

Method: About 190 healthy volunteers and patients suffering either from schizophrenia, affective disorders or dementia were clinically investigated. Endogenous cannabinoids were studied in cerebrospinal fluid and plasma of these subjects and correlated to clinical symptoms.

Findings: Cerebrospinal concentrations of specific endogenous cannabinoids were significantly higher in schizophrenic patients never treated with neuroleptics than in healthy controls. These findings were specific for patients suffering from schizophrenia.

Conclusions: Endogenous cannabinoid levels in cerebrospinal fluid are specifically elevated in schizophrenic patients. This may reflect an imbalance in endogenous cannabinoid signaling, which may be a specific reaction to other neurotransmitter alterations in schizophrenia. Thus, the endogenous cannabinoid system may play an important role in the pathogenesis of schizophrenia.