P0338

Association between anxiety, depression and cognitive dysfunction in patients with multiple sclerosis

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Background and Aims: Neuropsychiatric literature demonstrates the high impact of cognitive deficits in patients with Multiple Sclerosis (MS), as well as the increased prevalence of anxiety and depression in patients with chronic illnesses, especially in the subgroup of MS patients. The aim of our study is to investigate the existence of an association between depression, anxiety and cognitive deficits in patients with MS.

Methods: Demographic data, MS subtypes, and years since diagnosis were documented for 60 patients with MS, who participated in our study. Patients were evaluated for depression and anxiety by the Beck's Depression Inventory (BDI) and the Spielberger's questionnaire (State-Trait Anxiety Inventory) respectively. The Symbol Digital Modalities Test (SDMT) was used to evaluate cognitive deficits.

Results: According to our preliminary data, 60% of MS-patients scored higher than normal in the BDI. There was a significant negative correlation between years since diagnosis and SDMT (Pearson's correlation <0.01), as well as between BDI and SDMT (Pearson's correlation <0.01). No correlation was established between anxiety and both depression and SDMT.

Conclusions: Depression and cognitive deficits have a high prevalence in patients with MS. This is due to the severity and chronicity of MS. In our study, depression is strongly associated with cognitive deficits and years since diagnosis of MS, although it is still in progress for further data evaluation. More studies are required to elucidate the cause of this established association.

P0339

Metyrapone and Mifepristone reverse memory loss induced by spontaneous Morphine withdrawal in mice

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Morphine withdrawal leads to an increase in corticosterone concentration in plasma, and cognitive deficits are found, after withdrawal. Evidence indicates that glucocorticoid hormones affect memory. The aim of the current study was to evaluate the effects of metyrapone and mifepristone on memory deficit following spontaneous morphine withdrawal. Memory was experienced by using the object recognition task. Novel object recognition task was carried out in a square wooden open-field apparatus using objects. The test was comprised of three sections; habituation for 15 min, first trial for 12 min and test trial for 5 min. In this learning paradigm, the difference in exploration between a previously seen object and a novel object is taken as an index of memory performance (recognition index, RI). Male mice were made dependent by increasing doses of morphine (30-90 mg/kg) subcutaneously twice daily for three days. RI was assessed 4 hour after the last dose of morphine on the third day. Mifepristone (50,100 mg/kg) and metyrapone (12.5, 25 mg/kg) were used subcutaneously before the first trial and effects were compared with control values. Metyrapone 25 mg/kg, and mifepristone 50mg/kg improved RI to 34.8 ± 10.8 % and 25.4 ± 11.7 % respectively, which are significantly different from control values (RI= -14.8 ± 10.7 %, $P< 0.05$). These results show that increased glucocorticoid concentration can be involved in memory deficit caused by morphine withdrawal. Therefore metyrapone by inhibiting glucocorticoid formation and mifepristone by inhibiting glucocorticoid receptors can be useful for preventing memory deficit following morphine withdrawal.

P0340

Speech disturbances in children aged 18 yrs at early onset of epilepsy

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The aim of the study is the estimation of the level of development of speech and estimation teh importance of risk factors which can disturb development first stages of human development. 40 patients aged 1- 8 yrs of age participated in the study. They underwent psychological, neurological and phycsiotherapeutical evalutaion. The inclusion criteria included the prevalence some perinatal disturbances as risk factor of developmental delay and pervalence the epilepsy treated with conventional or novel antiepileptic drugs (AEDs). The data from Apgar Scale used as well. Parents confirm the agreement for the examinations as well. The Developmental Scale Denver and Brunet- Lezine, AFA Scale for Children and Neuropsychological Tasks Set used in the study.

The analysis of variance with SPSS support used for revision of hypothesis. The mean of IQ was 65 in examined group. The speech disturbances in understanding corelated to intellectual delay as well. 20 children have problems with walking and revealed the objectives of intellectual impairment additionally. 17 children had problems with social contacts and verbal expression of needs.

The results show there was strict connection between the time of occurence of epilepsy and the speech disturbances, data important on p.0.01. There was no significant impact of epilepsy treatment on cognitive funtions, especially speech, but the efficacy of treatment correlated with IQ parameters.

In conclusion – early onset of epilepsy and non –efficient control of seizureas are the main factor which disturb normal development of speech on level of expression and impression.

P0341

Memantine induces expression of PLA2 genes in rat brain: Possible implications for reverse learning and memory of Alzheimer's disease patients

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Memantine, an aminodamantane, is an non-competitive NMDA receptor antagonist with strong voltage-dependence and fast kinetics. Unlike other drugs used to treat Alzheimer's disease, memantine blocks NMDAR channels in a concentration, time and voltage-dependent fashion. Previous results of our group evidenced a correlation of

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PLA2 inhibition activity and the severity of clinical aspects of Alzheimer's disease. Besides, in rat, the activity of PLA2 is required for memory retrieval and the inhibition of this activity in hippocampus was reported to impair memory acquisition. In mammalians, this important gene family is composed of >30 genes dispersed in throughout the genome in almost every chromosome. These genes code for a large number of proteins that can be divided into five main enzymatic subgroups. After screening for PLA2 genes expressed in the brain, using in silico databases, we investigated if these genes were modulated by memantine. For this wistar rats received memantine by gavage for a period of 30 days. After treatment the animals were sacrificed and mRNA samples of hippocampus and frontal cortex were used for quantification of Pla2 genes using qRT-PCR. The expression of specific Pla2 genes was significantly increased in both tissues evaluated. Our data does not prove that memantine has a direct effect over PLA2, however, we could demonstrate that PLA2 expression is activated after treatment with this drug. This information may be relevant to clarify its mechanism of action on both aspects: neuroprotection and reverse deficits in learning/memory.

P0342

Neuropsychological changes in patients after normothermic versus hypothermic CABG - randomized trial

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Aim: to assess changes in cognitive functioning of Coronary Artery Bypass Grafting patients including effect of hypothermia and normothermia.

Methods: Randomly selected normothermic (N, n=30) and hypothermic (H, n=21) patients were assessed 3-10 days before and 7-10 days after CABG using Bourdon Test, RAVLT, Tower of Hanoi Test, TMT: A&B, Benton Visual Retention Test, Digit Span, Digit Symbol, Verbal Fluency Test: Supermarket, Raven and Vocabulary Scales. Cognitive impairment rating (CIR) was defined as at least 1 SD scores deterioration, or change into worse category in at least 20% of tests.

Results: Cognitive impairment was observed in 10 out of 12 tests. Changes were significantly greater in H-group in immediate recall visual memory, visual-motor coordination and working memory and in N-group in immediate verbal recall. Regarding mean changes impairment of immediate visual memory were observed in 60% of patients, whereas impairment of delayed recall auditory-verbal memory, immediate verbal memory, psychomotor speed, visual perception, language, attention -in 20-30%. The changes were similar for both methods (p=0.465). In N-group deterioration was observed in 26.7%, improvement in 5% of measures; in H-group deterioration– 28.6%, improvement- 7%. On average deterioration of at least 1 category was observed in 3 of 11 tests. CIR was met in 64.7% of the whole sample. There was no significant differences between the methods according to this criterion (N- 60%; H- 71.4%).

Conclusions: CABG with extracorporeal circulation influences on cognitive functioning. Results suggest impairment in the field of coordinating complex cognitive processes rather than executive functions regardless of method used during CABG.

P0343

Investigation of the efficacy of Reminy (Galantamine) for treating speech pathology in children

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Objective: to investigate clinical efficacy and safety of Reminyl for treating children with speech pathology.

Method: 160 children at the age of 3-7 years with severe speech disorders and mental retardation, who had been found incurable because of the ineffectiveness of the previous treatment, were administered Reminyl. The Remynil treatment was conducted in courses in the age appropriate dosage (1-2mg).

The children were divided into two groups: the 1st group comprised 95 children with speech pathology without mental retardation. The 2nd group comprised 65 children with speech impediment and mental retardation. Prior and after the treatment all the children were evaluated for speech and cognitive development by computer electroencephalography, MRI, CT of the brain. The investigation of immune and cytokinetic status was also conducted.

Results: After three-four courses of treatment with an interval of 3 to 6 months 92% of the children were able to say separate words; their understanding of speech improved. Phrasal speech developed in 78% of the children. They all manifested the improvement of cognitive functions: visual perception, concentration, visual and auditory memory, and the operational component of cognition.

In 68 % of the children the results of computer electroencephalography revealed a considerable decrease of pathological disorders. When evaluating these disorders their clinical symptoms were taken into consideration. 29 % of the children manifested some positive dynamics in their condition. 3% of the children didn't manifest any significant changes.

Conclusions: The results of the study revealed high efficacy of Reminyl treatment of children with severe speech disorders.

P0344

Behavioral pharmacology of laboratory rats: 10 years of experience with place avoidance tasks

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Spatial orientation of laboratory animals is often considered as a model of human higher cognitive functions. Roughly ten years ago, a novel behavioral task, active allothetic place avoidance (AAPA), was designed in our laboratory and our efforts to intimately investigate this task date back to this time.

In this task, animals avoid an unmarked shock sector defined in a coordinate frame of experimental room while moving over a rotating arena. It was established that besides navigation with respect to a hidden place, the task requires cognitive coordination, usually explained as an ability to separate spatial stimuli from the environment into coherent representation of an arena and a room, and to select the room frame as the only relevant one for efficient navigation.

We studied the effects of specific receptor antagonists on the behavior of animals in this task and it was found that changes in spatial efficiency are often accompanied by alterations in overall locomotor activity. In this regard, the task has an advantage of simultaneous assessment of both place navigation and locomotor behavior. The analysis of locomotion was found to be important for exclusion of a more general impairment of animals after an experimental manipulation. The results suggest that at least in some cases, the changed locomotion and decreased spatial efficiency occur concurrently, but without a mutual causal relationship. The presentation will summarize the existing evidence about modulation of behavior in this spatial task.

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