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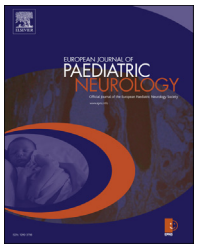

Abstracts Yekaterinburg

Diagnosis of neural crest-derived tumors in children with opsoclonus-myoclonus syndrome

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Introduction: Opsoclonus-myoclonus syndrome (OMS) is defined as the clinical syndrome with cerebellar ataxia, tremor, behavioral problems, non-epileptic myoclonus and specific eye movements – called opsoclonus. OMS is divided in 2 clinical types: paraneoplastic and idiopathic. Many researchers consider that OMS is a typical manifestation of neural crest-derived tumors in childhood. Idiopathic OMS include all the cases without tumor's detection.

Materials and methods: Since 1997 we have observed 63 patients with OMS (29 males, 34 females). They were under the care in the Russian Children's Clinical Hospital. Age of OMS onset was in average as 20,5 months (from 6 to 69 months). These patients were admitted to the Psychoneurology Department with different directive diagnoses including but not limited to encephalitis, neuroinfection's or craniocerebral injury's consequences, degenerative diseases of the nervous system, ataxia of unknown etiology, cerebral palsy. Only 3 patients have been diagnosed true running OMS before they referred to the Russian Children's Clinical Hospital. To exclude neural crest-derived tumors, we used ultrasound of abdomen, retroperitoneum and pelvis; X- Ray of thorax; CT of thorax, abdomen and pelvis; MRI of abdomen and pelvis; scintigraphy with MIBG; 24- hour urine screen for catecholamines; assay of serum tumor's markers such as neuron specific enolase, alpha-fetoprotein, lactate dehydrogenase. The most detailed study was performed for 41 patients (19 males, 22 females) due to some methods became available recently.

Results: OMS was determined as paraneoplastic etiology in 20 (7 males, 13 females) of those 41 cases. Tumors were located in the thorax (7 cases), pelvis (3 cases) and retroperitoneum (10 cases). In 3 cases tumor masses have been detected in the first month of OMS's onset. In other cases, the delay time between the onset of OMS and the tumor's detection have reached of 10.5 months in average (from 2 to 39 months). 16 patients have passed surgical intervention with extraction and further histologic detection of tumor to the present date. The following diagnoses were set after the biopsy: neuroblastoma (5 cases), ganglioneuroma (3 cases), ganglioneuroblastoma (8 cases). 4 patients with neuroblastoma took course of chemotherapy under the relevant protocols.

Conclusion: The results of our study showed that physician should pay attention to neural crest-derived tumors in relation to OMS diagnosed children. Due to this fact, in spite of neurological and immunologic tests these patients should pass the following examinations: ultrasound of retroperitoneum, abdomen and pelvis; X- ray of thorax; CT of thorax, abdomen and pelvis; MRI of abdomen and pelvis; scintigraphy with MIBG; 24- hour urine screen for catecholamines; assay of serum tumor's markers such as neuron specific enolase, alpha-fetoprotein, lactate dehydrogenase. Children with idiopathic OMS should still be observed by neurologists and oncologists jointly. These children need dynamic control examination at least once per 6 months to identify neurogenic tumors. Late diagnosis of OMS and insufficient paraneoplastic examination of children may cause dramatic consequences for patients.

The structure of sleep in children with attention deficit hyperactivity disorder

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Introduction: Studies of the structure of night sleep and ultradian rhythms in children with attention deficit hyperactivity disorder (ADHD) have significantly advanced our understanding of the syndrome pathogenesis.

Purpose: To explore the clinical features, structure and ultradian rhythms of sleep during the night. Polysomnography examination of ADHD children aged from 6 to 9 years old was carried out considering gender differences and clinical subtypes.

Materials and methods: A comprehensive unified survey of 40 children aged from 6 to 9 years old was performed. Verification of ADHD diagnosis was carried out in accordance with the ICD -10 and DSM-IV. The comparison group consisted of 20 healthy children. Polysomnography (PSG) was performed according to standard pattern during 8 hours with a hardware-software Neyronspektr - 4/VP complex. PSG scoring data analysis was carried out in accordance with A.Rechtschaffen A.Kales international standards (1968, 2002).

Results: Clinical sleep disorders analysis showed predominating insomnia disorders in patients with ADHD. Parasomnias were identified in similar proportions both in the study and control groups. Sleep macrostructure analysis revealed a significant decrease of the total sleep time (TST) up to 6.4 ± 0.06 hours in

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ADHD children, increase of latency and duration of C1 stage (the period of sleep and naps), extended C4 (delta sleep stage), an increased latent period of rapid sleep phase (REM) up to 190. 7 ±23.2 minutes compared with the control group, where the comparable figure was 116.4 ± 21.1 minutes ($p \leq 0.05$). In ADHD children REM duration was significantly reduced to 65.9 ± 5.3 minutes compared with healthy children (97.1 ± 9.2 min., $p \leq 0.05$). Wakefulness time during sleep, number of awakenings, including those of more than 3 minutes duration, were significantly reduced. The obtained indices of macrostructure of sleep changes resulted in reduced sleep efficiency index (SEI) to 81.5 ± 6.3% ($p \leq 0.05$). The cyclic sleep organization was characterized by a significant reduction in the total number of sleep cycles during night in children with ADHD to 2.7 ± 0.6 cycles, while in the control group the number of cycles per night was 4.2 ± 0.8. The first cycle of sleep in ADHD children was abnormally extended, its duration being of approximately 2.5 hours (the average rate of 1.5 hours) and took half of the total night sleep time. Share of non-REM phase (NREM) was significantly increased. As a result, in the first half of the night REM was not identified in 61 % of children. Parameters of the second cycle dynamics reflect common patterns of sleep in ADHD children as a whole. The third cycle of sleep was characterized by a significant reduction in its duration. There were no significant differences in the NREM, however, the REM duration in the final third cycle of night sleep reduced and was 26.0 ± 4.3 minutes compared with the control group, where the REM duration was 36.6 ± 6.7 minutes ($p \leq 0.05$). The most evident changes in sleep macrostructure were identified in children with the combined subtype of ADHD revealed in the form of increased REM latency with reduction of its duration. ADHD subtype with predominating hyperactivity and impulsiveness was characterized by severe violation of ultradian rhythms of sleep and reduction of the sleep cycle number to two. Sex difference in the cyclic sleep organization was expressed in its more severe deformation in boys. In that case, all three sleep cycles were impaired. The first cycle reflected general tendency in changes of PSG records, the second one was characterized by an increase in cycle time and duration of NREM and the third one by sharp reduction in the duration and sleep phases.

Conclusion: Sleep structure impairment plays an autonomous and independent role in the pathogenesis of ADHD and reflects underlying impairments formation of cerebral integrative functions including the integrative mechanisms of sleep and chronobiological processes.

Clinical and biochemical characteristics of migraine in children

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Purpose: To study clinical characteristics of children migraine, their impact on life quality and relation with calcium homeostasis and plasma nitrites.

Materials and methods: 102 children (64 boys, 38 girls) at the age of 6 to 18 years old suffering from migraine (average age 12.1±2.97). The migraine diagnosis was being established according to ICHD-2 criteria (2003). The estimation of pain intensity was conducted based on VAS, life quality – on MIDAS survey, anxiety level – based on Spilberg-Khanin test, depression.

Balashova scale. Also we conducted a survey of vegetative disorders (Vein, 2003). In 81 children activity of Ca^{2+}- according to methodology of Kazennova, Reinila et al. (1982) was analyzed; besides, we studied the level of general intracellular calcium in thrombocytes according to the methodology of M.Mayer et al. (1966; 1971) and nitrites in blood plasma (by Karpyuk et al. (2000) methodology. Control group comprised children of the same age and gender.

Results: The following characteristics of childhood migraine were shown: frequent migraine is migraine w/o aura (60.8%); combination of migraine and tension-type headache (41%), attacks with frequency rate at 2-4/month (56%), and duration did not exceed 12 hrs (66%). With age the pain intensity is rising (6.1 VAS at the age of 6-8 years till 7.4 at the age of 15-17); the attacks are accompanied by apparent associated symptomatology (nausea, vomiting – 88%, photo/phonofobia – 68%); pro- (21%) and postdromal (28%) periods occur less frequently than in adults, clinics of the periods is various. Among relief factors sleep takes the leading place (77%), at the teenage age frequency of taking painkillers is rising (71% against 48% at 11). From all the migraine characteristics frequency and intensity had more apparent effect on life quality. The duration of the migraine didn't have reliable correlations with anxiety level, depression, vegetative disorders, MIDAS scale indicators. In children suffering from migraine the level of intercellular calcium increased twice compared to healthy children of the same age (0.046±0.009/0.022±0.01 mM/ml, $p<0.001$). The changes were accompanied by an increasing of the activity Ca^{2+}ATPhase (0.38±0.09/0.33±0.07 mM/hour/mgprotein, $p=0.027$). Also in the children a reliable increase of the level of plasm nitrites (3.2±0.8/2.2±0.9 nM/ml, $p<0.001$) was shown. Higher level of the activity of Ca^{2+}ATPhase and intercellular calcium were revealed under migraine with aura and their positive correlation with seizure duration. The level of nitrites independently on the migraine type is related to the seizure frequency and reliably increased if 2 or more seizures occurred within one month.

Conclusion: At the present stage clinical implications of adults migraine were examined in terms of its impact on patients' life quality. In children's practice issues of life quality were analyzed with taking into account perinatal, social, psychological factors into consideration, but not considering characteristics of the seizure, factors of provocation, characteristics of pro- and postdromal periods. Besides the search for biochemical markers of migraine progression is being conducted. From these standpoints the relationship between level of plasm nitrites and seizures frequency may be utilized as objective criterion for decease severity and additional assessment tool of efficacy of treatment.

Features of haemostasis in children with acute arterial ischemic stroke

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Objective: To define the role of blood coagulation and procoagulant genes features in development of acute arterial ischaemic stroke in children. Materials and methods 33 children (20 male and 13 female) aged from 6 months to 17 years with acute arterial ischaemic stroke (AAIS) were observed at Neurosurgical Department of Child Hospital. All children underwent routine somatoneurological examination, neuroimaging (MRI and/or CAT), Doppler ultrasonography of cerebral blood flow. Screening of