O-1 Caveolin 3 Gene and mitochondrial tRNA Methionin Gene in Duchenne Muscular Dystrophy
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It was recently reported that Duchenne muscular dystrophy (DMD) patients and mdx mice have elevated levels of caveolin-3 expression in their skeletal muscles. However, it remains unknown whether this increased caveolin-3 levels contribute to the pathogenesis of DMD. Also mitochondrial DNA mutation in the tRNA methionin (tRNA Met) gene has been shown to be associated with muscle weakness, severe exercise intolerance, lactic acidosis and growth retardation. Since DMD is X-linked maternally inherited disease, mitochondrial mutation in tRNA(Met) gene can be suspected to be the cause for the inefficient splicing of dystrophin gene during its expression and can be implicated as the cause of dystrophin inactive protein.

Results gave further proof to decreased expression of inducible nitric oxide synthase (iNOS) mRNA, which leads to increased expression in caveolin 3 mRNA in lymphocytes of DMD patients compared to controls. However using SSCP, there was no evidence for tRNA(Met) gene mutation among DMD patients and only one patient presented a mutation in the caveolin gene compared to controls.

O-2 Consequences of birth trauma in children: myotonic neurovascular and mental disorders. Diagnosis and comprehensive neurorehabilitation
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Rehabilitation of the children with mental and physical disorders for improvement of their adaptation to modern society is an actual medical and social problem.

Cooperative work of doctors, psychologists, teachers and parents of the pupils of special correctional school No 81 in Moscow was approved by the Ethical Committee of medical and pharmaceutical universities. Forty-five pupils of primary school (range 8-12 years) with impaired intellectual development, cognitive disorders, syndrome of hyperactivity and attention deficiency were examined. All the children had the birth trauma in their history. Clinical neurological examination and palpation were conducted to identify the role of myotonic syndromes in the cranio-vertebral region and biomechanically significant disturbances in the cervical spine that affect the cerebral blood flow. A neuropsychological study was used to examine the cognitive sphere and the state of brain activity. EEG-neurophysiological examination of children was carried out to assess the state of brain activity, the definition of cortical areas responsive to the effects of stress factors, as well as hemispheric interactions, as correlates of memory processes, learning, etc. The NEC-method was used to study the cerebral metabolism and adaptation possibilities. Color duplex scanning (ultrasonic scanner Sono Scope 1000) was conducted to identify hemodynamically significant tortuosity of the proximal extracranial parts of internal carotid and vertebral arteries. Tortuosities of the vessels slow down the circulation and lead to vertebro-basilar insufficiency in the corresponding cerebral region.

The main complains observed in children were headache, fatigue and meteopathies. Neuropsychological studies revealed disorders in the cognitive, personal, emotional and behavior status, as well as hyperactivity and diminished attention. Neurological examination revealed disturbances of muscular coordination, muscular hypertension or hypotonia. The patho-biomechanical changes observed were rigidity in the shoulder girdle, shorten muscles of the neck and anterior part of the chest (syndrome of upper aperture), kyphosis, dysfunctions of the pelvis, functional limb asymmetry and postural displacement.

EEG analysis revealed signs of functional immaturity of the cerebral cortex in the children. Manifestations of the weakening of inter-hemispheric interactions were observed in 50% of cases.

According to the color duplex scanning, changes of the brachio-cephalic arteries were divided into three groups:
1) hemodynamically significant (S-or C-shaped crimp of internal carotid arteries);
2) S-or C-shaped hemodynamically significant (misalignment of the vertebral arteries in one or two sides);
3) a combination of pathological tortuosity of the internal carotid and vertebral arteries.

Signs of hypoxia and intracranial venous hypertension occurred in 65% of cases.

The scientifically-based comprehensive neuro-rehabilitation scheme was worked out during this pilot project in order to correct the myotonic syndrome in the neck, cranio-vertebral region, and to improve the cerebral metabolism and liquor dynamics. We used biodynamic poly-receptor techniques, neuro-motor and respiratory gymnastics, aromatherapy and neuroprotectors, because we performed our treatment in school.

Conclusions. Integrated clinical neurological, neuropsychological and instrumental studies of bioelectric activity, metabolic processes of the brain and the state of the brachiocephalic arteries, allowed us to refine pathogenetic mechanisms of the consequences of birth trauma in children, myotonic neurovascular and mental disorders included.