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## Neurophysiological markers of paranoid schizophrenia

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We elaborated the theory of etiology and pathogenesis of paranoid schizophrenia with positive symptoms (raving, pseudo-hallucinations etc.). The obtained data have revealed that the disturbance of enzyme GAD67 and protein Reelin exchange are caused by infringement of gene's RELN methylation, resulting to dysfunction of neural networks. Reelin is playing the major role in pruning (elimination) of cortical connections with limbic system. During pruning in schizophrenia the abnormal synapses elimination takes place. In schizophrenia with positive symptoms elimination is weak and excessive quantitative synapses prevail in the brain. This leads to the formation of excessive pathological complex of different mediators (glutamate, GABA, dopamine) in the mesocortical and mesolimbic tracts. In schizophrenia with positive symptoms, the disturbances appear starting from the formation of a pathological local structural-functional unit (module). Therefore, local neural networks cannot conjoin to form large scale circuits required for the transition of excitation to the central and frontal regions of the brain to external or internal stimuli. Psychotic state of schizophrenic patients is accompanied by the process of dis-inhibition of neurons and spread of this activation to neural networks. We believe that excessive dis-inhibition of neurons causes pathological reverberation activity of neural networks, resulting in paradoxical changes revealed in our experiments. These neuro-physiological markers of paranoid schizophrenia with productive symptoms, can be applied to new drug trends and epigenetic therapy, it can also provide early detection of the disease.

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## Ultrasound evaluation of the facial nerve in healthy children

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**Introduction:** Ultra-sonography of cranial nerves is a new and evolving method of diagnosing lesions of cranial nerves in real time with high-resolution probes. Optic, facial, vagus and spinal accessory nerves are currently available for the ultrasound examination. The facial nerve has a special place among these cranial nerves, as the lesion of the facial nerve occurs in 13-24 cases per 100 000 in general population and is one of the first places among the neuropathies. According to the literature, there are few works on ultrasound characteristics of facial nerve in healthy adults and adults with facial nerve neuropathy and no works on ultrasound of facial nerve in children, both healthy and with the facial neuropathy. The purpose of our study was to establish the diameter of the facial nerve in the parotid gland in healthy children by means of ultra-sonography.

**Material & Methods:** We examined 29 healthy children aged 8 to 16 years. All children underwent ultrasound in real time using ultrasound system Sonosite X-porte (USA) linear probe with a frequency of 15 MHz in the supine position, head turned to the left on the pillow for the study on the right and vice versa. The study was conducted on both sides. The probe is placed transversely just below the ear lobule along the longitudinal course of facial nerve. The nerve was defined as a linear hypo-echoic tubular structure with hyper-echoic borders inside relatively homogeneous hyper-echoic parotid gland. Measure the diameter of the nerve was carried out in the thickest part of the inclusion of hyper-echoic borders when 2 or more times the repeated measurement. The measurement results are rounded to the nearest 0.1 mm.

**Results & Conclusions:** The average diameter of the facial nerve in healthy children aged from 8 to 16 years amounted to  $0.5 \pm 0.1$  mm and the difference between the sides in diameter was  $0.1 \pm 0.1$  mm, which is fully consistent with the data of the diameter of the nerve in adult volunteers (Tawfik E A 2015). The average facial nerve diameter values may provide help with identification of nerve abnormalities using ultrasound. Topic of the further investigations may be ultra-sonography of children with facial nerve neuropathy. This will help to identify the degree of change in the diameter of the nerve. Also the correlation of ultrasound changes with electrophysiological (EMG) deviations may be the promising topic of further investigations.

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