BRITISH VIEW

MULTIDISCIPLINARY JOURNAL

www.britishview.co.uk

Anthropologie, Applied Linguistics, Applied Physics, Architecture, Artificial Intelligence, Astronomy, Biological Sciences, Botany, Chemistry, Communication studies, Computer Sciences, Computing technology, Cultural studies, Design, Earth Sciences, Ecology, Education, Electronics, Energy, Engineering Sciences, Environmental Sciences, Ethics, Ethnicity and Racism Studies, Fisheries, Forestry, Gender Studies, Geography, Health Sciences, History, Interdisciplinary Social Sciences, Labour studies, Languages and Linguistics, Law, Library Studies, Life sciences, Literature, Logic, Marine Sciences, Materials Engineering, Mathematics, Media Studies, Medical Sciences, Museum Studies, Music, Nanotechnology, Nuclear Physics, Optics, Philosophy, Physics, Political Science, Psychology, Publishing and editing, Religious Studies, Social Work, Sociology, Space Sciences, Statistics, Transportation, Visual and Performing Arts, Zoology and all other subject areas.

Manuscripts typed on our article template can be submitted through our website here. Alternatively, authors can send papers as an email attachment to editor@britishview.co.uk

Editor Multidisciplinary Journals
Website: http://britishview.co.uk
Email: editor@britishview.co.uk

British View ISSN 2041-3963 Volume 8 Issue 2 2023
Universal impact factor 8.528
SJIF 2022: 4.629

Clinical and pathogenetic analysis of monitoring of children with diseases of the peripheral nervous system.

Ismailov Zokhidjon Nurmanivich
Mirdjuraev Elbek Mirshavkatovich
Gulyamova Matuba Kamalovna

The Ministrry of public health of the Uzbekistan.
Center for the development of professional Qualification of medical workers

Abstract. In the structure of acute neuroinfections , diseases of the peripheral nervous system (PNS) and spinal cord occupy a significant place, accounting for 16%-32% in children. The polymorphism of clinical manifestations, due to different etiology and topic of the lesion, the incidence of disability , reaching 15% and possible mortality, determine the relevance of this problem.

Purpose of the study. To develop a clinical and pathogenetic mechanism for monitoring children with diseases of the peripheral nervous system.

Materials and research methods. The material for the clinical ENMG study was the analysis of 100 cases of infectious diseases of the PNS and SM in children aged 3 months and older. up to 15 years old. Registration of surface electromyograms were performed with bipolar electrodes. The biceps and triceps muscles of the shoulder, the superficial flexor of the fingers, the common extensor of the fingers of the hand, the rectus femoris, the anterior tibial muscle and the medial head of the gastrocnemius muscle were examined on both sides according to generally accepted criteria. Needle EMG was performed according to the standard method.

Research results. As a result of clinical and ENMG studies of various nosological forms included in the structure of IRD and SM, their clinical and neurophysiological features were identified. It was shown that IRI and SM are mainly caused by enterovirus infection (30.8%), borreliosis (10.3%), less often yersiniosis (6;0% X influenza (6.0%) and herpetic (6.0%) infection which determines the specificity of clinical manifestations.Neurological examination of PD in children with DPPH made it possible to identify the clinical features of early and late forms.Early DPN occurred on days 2-15 of diphtheria, manifested in all children with local cranial and bulbar symptoms with lesions of the vagus and glossopharyngeal nerves, as well as mild symptoms of generalized , movement disorders in 81% of patients, expressed in transient dissociation of tendon reflexes - preservation, some and the absence of others, the preservation of elementary motor functions (muscle strength and tone).In 29% of patients, bulbar symptoms were combined with sensory disorders : hyperesthesia and paresthesia of the polyneuropathic type.

Conclusions: Thus, monitoring of children with diseases of the peripheral nervous system showed that various etiological factors affect the course of the disease and determine its outcome and duration.

Keywords : infection; diseases of the peripheral nervous system; electroneuromyography ; children; neurophysiology

Relevance. In the structure of acute neuroinfections , diseases of the peripheral nervous system (PNS) and spinal cord occupy a significant place, accounting for 16%-32% in children. The polymorphism of clinical manifestations due to different etiology and topic of the lesion, the incidence of disability , reaching 15% and possible mortality determine the relevance of this problem [3,7].

With the global eradication of polio at the start of the new millennium and the introduction of aggressive AFP surveillance , rapid and accurate diagnosing of PNS and SM is a public health priority.

Movement disorders in lesions of the peripheral nervous system and spinal cord are the most significant in violation of functions, reaching in severe cases the degree of pronounced paresis and paralysis [4,9].

Involvement in the pathological process of a peripheral motor neuron in an infectious disease is not limited to the axonal level of the lesion; the body of the motor neuron is often also affected . The clinic of such lesions is characterized by acute flaccid or mixed paresis , which requires differential diagnosis between lesions of the spinal cord and peripheral nervous system [5,10].

In children, especially at an early age, ontogenetic features of myelination of nerve fibers, the processes of maturation of the PNS determine the specifics of the clinical picture and the course of polyneuritis and plexitis. The nature, degree of damage, course and outcome of polyneuritis and plexitis depend not only on the etiological factor, but also on the age-related physiological characteristics of the nervous system. Moreover, clinical criteria for assessing the nature of the lesion and prognosis of the course of polyneuritis and plexitis are mainly subjective [2, 6].

However, if the methods for diagnosing bacterial or viral agents in polyneuritis and plexitis in children have been developed to a large extent, then the age-related functional assessment of the state of the PNS and the spinal cord needs to be improved.

To objectify the lesions , the generally recognized ENMG diagnostic methods developed for adults are used, which make it possible to identify the localization, extent and nature of nerve damage - axonal or demyelinating - which largely determine the prognosis of the disease [8]. If the ENMG parameters for the diagnosis of PNP during the development of the disease are sufficiently defined, then the electrophysiological criteria for the preclinical and initial stages of neuropathy , prognostic aspects are practically not developed, which determine the relevance of the study.

Purpose of the study. To develop a clinical and pathogenetic mechanism for monitoring children with diseases of the peripheral nervous system.

Materials and research methods. The material for the clinical ENMG study was the analysis of 100 cases of infectious diseases of the PNS and SM in children aged 3 months and older. up to 15 years old.

Table 1. Nosological age structure

Nosological forms and syndromes	0-3 years		4-7 years old		8-15 years old	
	m	and	m	and	m	and

Diphtheria polyneuropathy	3	7	four	10	7	four
Infectious-allergic lesions of the peripheral nerve pathways	four	five	3	12	four	7
neuromyalgic syndrome	five	five	6	8	nine	3
Neuropathy of the facial nerve	four	7	3	nine	12	four
Vaccine-associated poliomyelitis	3	8	8	2	7	3
Acute infectious myelopathy	2	four	four	6	6	3
Acute noninfectious myelopathy	1	3	2	2	3	6

Table 2. Etiology of diseases of the peripheral nervous system in children.

Etiology	**N**
Enteroviral	**12**
influenza	**sixteen**
herpetic	**22**
Cytomegalovirus	**17**
Mumps	**24**
Poliovirus	**five**
Borrelia	**four**
Yersinia	**7**
diphtheria	**eleven**

ENMG examination was carried out on a 2-channel stimulation electromyograph MG-25 (Hungarian-Lviv production) and electromyograph " Keeppoint portable by Medtronic .

Registration of surface electromyograms were performed with bipolar electrodes. The biceps and triceps muscles of the shoulder, the superficial flexor of the fingers, the common extensor of the fingers of the hand, the rectus femoris, the anterior tibial muscle and the medial head of the gastrocnemius muscle were examined on both sides according to generally accepted criteria.

Needle EMG was performed according to the standard method.

The biceps of the shoulder, the ulnar flexor of the hand, the first interosseous muscle, the external head of the quadriceps femoris, the anterior tibialis, and the short extensor of the toes were examined. At rest, injection activity, spontaneous activity (fibrillation potentials, positive sharp waves, fasciculation potentials , complex repetitive discharges) were assessed; with arbitrary muscle tension - PDE parameters.

The median, ulnar, tibial, peroneal, gastrocnemius, accessory, and facial nerves were studied using stimulation EMG.

Registered. maximum amplitude of the M-response during supramaximal stimulation at the distal point of the nerve, the ratio of the amplitude of the M-response during stimulation at the proximal point to the amplitude of the M-response

during distal stimulation, the speed of impulse conduction (PPI) along the sensory fibers in the distal and proximal parts of the nerve.

To assess the conduction along the motor fibers, RL, the duration of the M-response, SPI, F-wave latency were recorded, the AVR was calculated, the relative indicator of neural conduction was the proximal- distal coefficient (Kpr / dist), the level of segmental excitability of the spinal cord N/M in %.

ENMG parameters were evaluated according to the criteria proposed by Ciouston PD et al . , and Kimura J. _ (1989).

The specificity and scope of the ENMG methods performed depended on the nosological form and clinical syndrome.

Research results.

As a result of clinical and ENMG studies of various nosological forms included in the structure of IRD and SM, their clinical and neurophysiological features were identified. It was shown that IRI and SM are mainly caused by enterovirus infection (30.8%), borreliosis (10.3%), less often yersiniosis (6;0% X influenza (6.0%) and herpetic (6.0%) infection which determines the specificity of clinical manifestations.Neurological examination of PD in children with DPPH made it possible to identify the clinical features of early and late forms.Early DPN occurred on days 2-15 of diphtheria, manifested in all children with local cranial and bulbar symptoms with lesions of the vagus and glossopharyngeal nerves, as well as mild symptoms of generalized , movement disorders in 81% of patients, expressed in transient dissociation of tendon reflexes - preservation, some and the absence of others, the preservation of elementary motor functions (muscle strength and tone).In 29% of patients, bulbar symptoms were combined with sensory disorders : hyperesthesia and paresthesia of the polyneuropathic type.

Paresthesias were usually short-term, persisted for 5-7 days and completely disappeared. In 13 % of patients, a poorly discernible tremor or ataxia of the extremities and an ataxic gait developed with preservation or a slight decrease in proprioceptive sensitivity.

Late DPN occurred on the 16-80th day of illness against the background of complete or partial regression of manifestations of early DPN. In 1/2 patients reappeared; dysphagia and oculomotor disorders. In 75% of cases, the phenomena of paresis of the pharynx and soft palate, nasality, and soreness of the nerve trunks were noted in patients . At the same time, weakness of the upper (49%), but more often of the lower, limbs (72%) appeared, knee jerks decreased or disappeared. Depending on the prevalence of symptoms of damage to autonomic, sensory or motor fibers, vegetative, pseudotabetic , amyotrophic and mixed forms of DPN were observed. In the majority of children (51%), a mixed form of DPN prevailed, including the presence of paresis, autonomic disorders, and disorders of predominantly deep sensitivity.

A feature of late DPN was a multi-wave course, and with toxic diphtheria in children there was a multi-wave course of DPN, while with localized ones it was single- wave . The outcomes of DPN were generally favorable: complete recovery by the time of discharge occurred in 75% of cases, after 6 months from the onset of the

disease - in 22%, after 1 year - in 4%, after 2 years - in 1% of cases. Late recovery of functions in 25% of patients dictates the need for dispensary observation for 2 years.

In infectious -allergic PNP (IANS), the most clinically significant were motor disorders, which in 40% of cases were

due to enteroviral, in 30% - borreliosis and only in 10% - fipposis , and in 4 % - herpetic etiology of the disease. The distribution of paresis was predominantly distal; in 76.7% of patients, the proximal limbs were also involved in the process at the same time. Paresis was flaccid, with muscular hypotension and malnutrition, tendon reflexion, and in 2/3 of cases they were symmetrical. Among 16 children with tetraparesis , movement disorders to the degree of plegia were noted in 45.5% of cases. Abdominal reflexes were absent in half of the patients. Transient disorders of the sphincters (stupa and urine retention) were noted in 46.7% of cases. In 13.3% of children, unstable transient pyramidal signs were noted in the acute period of the disease, which usually disappeared after 2-3 days. In addition to damage to the extremities, cranial nerves were also involved in the pathological process in 43.3% of cases , which was manifested by weakness of the facial muscles. The clinic of bulbar paresis was detected in 36.7% of children, and 1/3 of them developed paralysis of the soft palate. In 13.3% of patients, there was damage to the muscles of the trunk: muscles of the diaphragm, intercostals and muscles of the auxiliary respiratory muscles, and the abdomen, which led to insufficiency in the function of external respiration and required the transfer of patients to mechanical ventilation. In patients with severe course, the symptoms of motor disorders persisted for an average of 51 days. The course of the disease in 2/3 of the patients was favorable, but in 1/3 of the children it was inducing, in which, against the background of regression of paresis, sensory disturbances reappeared, weakness in the legs increased. By the time of discharge, only 43% of children were healthy, in 50% of cases the recovery process lasted up to 2 years, in 7% the recovery lasted more than 3 years. Clinical data emphasize the relevance of taking into account movement disorders in the diagnosis of both the initial manifestations of the disease and the processes of sanogenesis , in monitoring the course.

Due to clinical monitoring of patients with generalized forms of yersiniosis infection , polyradiculoneuropathic pain syndrome was detected in 26.9%. The disease in all children occurred subacutely 1-2 months after the yersinia infection. The leading complaints were gradually appearing diffuse pains of moderate intensity in the lower extremities, which were localized in the feet, legs and thighs. In 80% of patients, the greatest intensity of pain was observed in the popliteal region. In 6.7% of cases, pain was localized paravertebral at the level of the cervical and thoracic spine. Pain increased with walking and exercise and decreased at rest in most patients (94%). The gradual increase in pain lasted from 1 to 3 weeks, followed by regression over 1-10 months.

In 12% of patients, there was a decrease in Achilles reflexes. Plantar reflex was absent in 40% of children. Muscle strength was reduced to 4 points in 6; 7% of cases. Tension symptoms (Lasegue , Wasserman) were detected in all patients, but palpation of the nerve trunks was painless. Proprioception and tactile sensitivity were

preserved. The time of sensation of vibration on the medial malleolus of the feet in 38% of patients was below the norm (< 12 s). Pain sensitivity on the shins and feet by the type of golf and socks is increased in 88% of patients with a decrease in pain threshold to 250-500 mg (normal 800-1200 mg).

The first neurological analysis in 50 patients with NMS showed that the clinical picture is an acute transient dysfunction of the peripheral nervous system and muscles of the lower extremities with a favorable outcome after a viral or bacterial infection. The disease occurs in children mainly (57.7%) of school age (6.7 ± 2.3 years) 1-12 days after a mumps , intestinal or respiratory infection and lasts 1-3 weeks. In 53% of patients, pain along the nerve trunks, positive symptoms of tension, in 12% of cases - hyperesthesia of the type of socks.

Conclusions : Thus, monitoring of children with diseases of the peripheral nervous system showed that various etiological factors affect the course of the disease and determine its outcome and duration.

Bibliography:

1. Abdelhak , A. CSF profile in primary progressive multiple sclerosis: Re-exploring the basics/ A. Abdelhak , T. Hottenrott , C. Mayer et al.// PLoS One.- 2017.- R.12 (8).

2. Almohmeed , YH Systematic review and meta-analysis of the sero -

epidemiological association between Epstein Barr virus and multiple sclerosis/ YH Almohmeed , A. Avenell , L. Aucott , MA Vickers// PLoS ONE.- 2013.- No. 8(4).- R. 1-15.

3. Beseler, C. The complex relationship between oligoclonal bands, lymphocytes in the cerebrospinal fluid, and immunoglobulin G antibodies in multiple sclerosis: Indication of serum contribution/ C. Beseler, T. Vollmer, M. Graner , X. Yu // PLoS One. -2017.- 12(10).- P.e0186842.

4. Bonnan , M. Does disease -irrelevant intrathecal synthesis in multiple sclerosis make sense in the light of tertiary lymphoid organs? / M. Bonnan / Front . Neurol.- 2014.- No. 5.- R. 27.

5. Burnard , S. EBV and MS: Major cause, minor contribution or red-herring?/ S. Burnard , J. Lechner -Scott, R. Scott// Mult . Scler . Rela.t Disord .- 2017.- No. 16.- P.24-30.

6. Capodivento , G. Sphingomyelin as a myelin biomarker in CSF of acquired demyelinating neuropathies/ G. Capodivento , D. Visigalli , M. Garnero et al.// Scientific reports.- 2017.- No. 7(1).- P.7831.

7. Chen, TC Vascular hypoperfusion in acute optic neuritis is a potentially new neurovascular model for demyelinating diseases/ TC Chen, CY Yeh , CW Lin et al .

8. Comabella , M. EBV- specific immune responses in patients with multiple

sclerosis responding to IFNβ therapy/ M. Comabella , K. Kakalacheva , J. Río et al.// Mult . Scler.- 2012.- No. 18(5) .- R. 605-609.

9. Décard , B. Low vitamin D and elevated immunoreactivity against Epstein-Barr virus before first clinical manifestation of multiple sclerosis/ B. Décard , N. Von

Ahsen , T. Grunwald et al.// J. Neurol. neurosurg . Psychiatry .- 2012.- No. 83(12).- R. 1170-1173.

10. Djelilovic- Vranic , J. Role of early viral infections in development of multiple sclerosis/ J. Djelilovic-Vranic , A. Alajbegovic // Med. Arch.- 2012.- V.66, No. 3, Suppl. 1.- R.37-40.