

Reflexotherapy in the regulation of immunological reactivity of newborns with perinatal lesions of the nervous system
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RESUME

The authors studied the influence of acupuncture (reflextherapy) on the blood supply of the brain against the background of vegetative-vascular disorders in 45 patients with osteochondrosis of the cervical spine. Patients suffered from syndrome of vertebrobasilar insufficiency, cervicobrachialgia, cervicocephalgia. Survey methods: Doppler ultrasound and duplex scanning of blood vessels of head and neck, magnetic resonance tomography of the head and neck using vascular opacification. All patients underwent 10 sessions of corporal acupuncture. Consequently, the blood flow improved in the vertebral arteries and the vertebrobasilar and venous flow in the periorbital and basal age. Also, the clinical symptoms decreased.

Keywords: reflexotherapy, newborn, rehabilitation, white blood count, immunological reactivity.

SUMMARY

The study is devoted to the scientific study and substantiation of the possibility of using reflexology (RT) in the rehabilitation of newborns. The rehabilitation effect of RT is based on the normalization of immunological reactivity, regulation of the cellular composition of white blood, an increase in the adaptive, protective, compensatory functions of the body. The features of leukogram, hematological indices of immunological reactivity of newborns with perinatal lesions of the nervous system and dependence on the characteristics of the psychoemotional state of mothers under the influence of the RT course of the mother-child dyad in the early recovery period were analyzed. Significant differences in the hematological parameters of the leukogram of newborns who received the RT course were revealed.

Keywords: reflexology, newborn, rehabilitation, leukogram, immunological reactivity.

INTRODUCTION

The carriers of immunity are blood cells in the circulation, which are in a certain amount, which determines the normal cellular composition and immune properties. The cellularity of the blood in healthy children is a constant value that characterizes the homeostasis of the child. Deviations in the cellular composition of blood in the direction of both an increase and a decrease are an indicator of processes of various origins.

The immune system is integrating, along with the central nervous and endocrine systems, it is involved in maintaining the homeostasis of the newborn's body and establishing an optimal balance in the relationship with the environment. Immunological mechanisms are involved in the pathogenesis of the main diseases of the perinatal period and determine the possibility of full rehabilitation of a sick child. The immune status of a newborn up to one year of age is characterized by poor protection against infectious agents. It is mainly the humoral link of immunity that acts. T-dependent reactions and phagocytosis are underdeveloped

and come into full force later, sometimes only by the period of puberty. Many types of perinatal pathology, such as intrauterine hypoxia and asphyxia during labor, hypoxic-ischemic encephalopathy (HIE) suppress phagocytosis, limit the already reduced volume of the reserve pool of polymorphonuclear leukocytes, aggravate the severity and duration of transient immunodeficiency [1].

It is known that RT has an immunomodulatory ability, since it is the neuroendocrine and immune mechanisms that underlie its therapeutic effect [2]. Non-pharmacological optimization of the immunological reactivity of the newborn appears to be a very promising direction for the use of RT in neonatology. It is considered rational to study the immune status in several stages. Initially, orientation studies are carried out to identify significant defects of the immune system (level 1), then a detailed study (level 2), based on data from a previous study.

Indications for RT in newborns are reflected in the provisions of the order of the Ministry of Health and Social Development of the Russian Federation (Ministry of Health and Social Development of Russia) No. 266 of April 13, 2007 "On the approval of the recommended lists of medical indications and contraindications for the use of reflexology in clinical practice" in class XVI "Certain conditions, arising in the perinatal period". Perinatal encephalopathy is included in this list under No. 333. Perinatal or early neonatal period - from the moment of umbilical cord ligation until the end of 7 days, late neonatal - 8-28 days after childbirth. From the 29th day after birth until the end of the first year of life, infancy (infant) age continues.

The choice of the method, technique and recipe for RT is determined by the morphological and functional characteristics of the newborn's body, the development of borderline pathology, the pathogenesis of the lesion, the state of autonomic reactivity and the potential characteristics of certain RT methods [3]. Thus, perinatal damage to the nervous system is characterized by a hypersympathicotonic variant of autonomic reactivity, which determines the need for the use of inhibitory

RT techniques [4]. Of the existing methods, only acupuncture (IRT) has this ability, providing the transfer of autonomic homeostasis to the vagotonic version, which improves cerebral blood flow, restores unconditioned reflex activity, general condition, physical and neuropsychic development [5].

Unlike IRT, this ability is not inherent in other RT methods. For example, acupressure, tsubo therapy, massage have a stimulating ability with the development of a sympathotonic variant of autonomic reactivity, and are indicated for conditions accompanied by vagotonia. To obtain the inhibitory effect of these methods, long-term and strong stimulation is required, which is fraught with maceration of the skin of the newborn, their possible separation from the subcutaneous tissue, the appearance of subcutaneous, subperiosteal hematomas, and when exposed to the projection of the nerve, peripheral neuropathy as a result of compression of the latter. The exposure dosage defies standardization. Prolonged exposure of the limb in the open air can contribute to the development of hypothermia, that is, the methods are limited in use in the pathology of the nervous system of the newborn.

The applied RT technique has a number of advantages. It is carried out with disposable sterile thin needles Sujok 10 x 0.06 mm. The insertion depth (3-5 mm) is well controlled by the remainder of the needle above the skin. The effect of the elevation of the needle from the skin makes it possible to judge the need to complete the procedure. IRT of extremities using the Ryodoraku Nakatani method allows you to cover the extremities and keep warm, that is, to minimize thermal loss. Newborns tolerate the procedure well. The session is held after the morning feeding in the arms and lulling of the mother. After feeding, babies fall asleep. Slow and calm introduction of a thin needle during sleep is not felt by newborns. Occasionally, there is a tactile reaction to touch in the form of a slight abduction of the limb. While inserting the needle, the children continue to sleep. Considering the ability of IRT to increase the pain sensitivity threshold, the procedure allows you to reduce the severity of stress reactions that develop to procedural pain in an awake child (blood sampling for analysis, injections of drugs under the skin, into a muscle, into a vein). Thus, a newborn with a gestational age of 33 weeks undergoes up to 16 procedures daily, 10 painful and 6 stressful. Only 2.1% of manipulations are accompanied by pharmacological analgesia, 18.2% - non-pharmacological and 79.2% are performed without analgesia [6].

Based on the material of studies of the features of morpho-functional brain maturation, child-maternal relationships in postnatal ontogenesis, it seems possible to formulate the main provisions of RT in newborns. First of all, along with the therapy of the newborn, RT correction of the homeostasis of the nursing mother is also necessary. It is obligatory to take into account the evolutionarily conditioned neuro-reflex connections between dermo-, myo-, sclerotomes corresponding to the internal organs and segmental acupuncture points. Selection, taking into account the reflexogenicity of the limbs, from the known, techniques that allow you to work on the distal parts of the upper (up to the elbow) and lower limbs (up to the knees), avoiding large

cooling areas. This requirement is met by Nakatani's reflexology technique according to F. Mann et al's recipe. To optimize the GABA-ES braking mechanisms using the IRT inhibitory formulation. To reach the inhibition threshold in newborns, increase the exposure time by 2-3 times as compared to the canonical one (in accordance with a decrease in the excitation rate along the non-myelinated conductor), ie. finding the needle at the acupuncture point - up to 45-60 minutes. Irradiation of nervous processes allows a smaller number of stimulated points (two) and the use of a group Lo-point (third) to achieve harmonization of a greater number of "meridians", limiting the course treatment to 3-5 sessions. For the clinical assessment of the effectiveness of the use of the severity of unconditioned reflexes, the physical development of newborns [7]. Lack of "foreseen" sensations, not so pronounced clinical symptoms as in an adult require modern methods of verifying the efferent response. The formulation must be made taking into account the state of autonomic reactivity, using the method of cardiointervalography, under the control of modern methods of functional diagnostics (for example, rheoencephalography, electromyography), biochemical studies, and the enzymatic status of the lymphocyte. Of course, compliance with all the rules of asepsis and antiseptics. Use of disposable sterile needles of the thinnest diameter. rheoencephalography, electromyography), biochemical studies, lymphocyte enzymatic status. Of course, compliance with all the rules of asepsis and antiseptics. Use of disposable sterile needles of the thinnest diameter. rheoencephalography, electromyography), biochemical studies, lymphocyte enzymatic status. Of course, compliance with all the rules of asepsis and antiseptics. Use of disposable sterile needles of the thinnest diameter.

All of the above served as the basis for choosing a method, technique, recipe for RT in the course of this study.

The aim of the work was to study the immunological reactivity and leukogram under the influence of RT in the "mother-child" system in the rehabilitation of a newborn who had undergone perinatal HIE in the early recovery period.

MATERIALS AND METHODS

The study of indicators of immunological reactivity was carried out in 200 newborns. The study group included 137 newborns and their mothers at the age of 26.1 ± 0.6 years. Children are divided into 3 subgroups according to the type of reflex action. Against the background of drug treatment in the 1st subgroup, acupuncture was carried out for both the mother and the child - 52 couples; in the 2nd subgroup, acupuncture was performed only on 36 mothers of full-term newborns; and in the 3rd subgroup, the IRT course was received only by children - 49 full-term newborns. The control group, comparable in age, physical development, gender, gestational age of newborns, was represented by 63 mother-child pairs, which had no RT effect.

At the beginning of the early recovery period, the average age of children of the first subgroup (boys - 28, girls - 24) was 11.1 ± 1.0 days, the second (boys - 19, girls - 17) - 8.5 ± 0.3 days, the third (boys - 22, girls - 27) - 12.8 ± 2.3 days. The age of the children of the comparison group (boys - 37, girls - 26) - 8.6 ± 0.4 days. By the end of the early recovery period, the age of children of the first subgroup was 31.3 ± 1.4 days, the second - 25.2 ± 0.7 days, the third - 31.4 ± 2.5 days, the comparison group - $26.2 \pm 0, 4$ days. All children of the main and control groups were born to mothers with aggravated pregnancy and childbirth. Were on

natural or mixed feeding. They had manifestations of severe hypoxic-ischemic damage to the nervous system. Diagnosis is based on data from anamnesis, clinical examination, and assessment of neurological status.

The study of peripheral blood was carried out using the standard method. A screening study of the quantitative indicators of the leukogram with tests of the first level was carried out. Calculation of the absolute number of leukocytes ($10^9/l$). Study of phagocytic function by counting the relative and absolute number of phagocytes (neutrophils and monocytes). Study of the T-system of immunity by counting the total number of lymphocytes. Indicators of leukocyte indices of cellular reactivity - nuclear index (NI), leukocyte index of intoxication (LII) Kalf-Kalif, index of immunological reactivity (IRR) allowed to assess the state of regenerative shift, nonspecific immunity and reactivity [8].

RT exposure was carried out according to the IRT method of inhibitory recipe for two distal points of the extremities according to F. Mann with the addition of a group LO-point of the lesion channel of the current day of one side - the second level of exposure according to D.M. Tabeeva. The duration of the session is 45-60 minutes during the sleep of the newborn after the morning feeding. During the RT course, both the mother and the child, consisting of 5 sessions and using 15 different points, were not allowed to use the same places. While maintaining the expression of the channel of the previous day, the impact was carried out on the opposite side. We used disposable needles "Sujok Acupuncture Needles Sterilized by Gammaray" from "Subal", Moscow.

Statistical processing was performed using the Statistika 5.0 software package. Parametric and non-parametric methods of statistical analysis were used (Student, Yeats). The significance of differences was taken into account at the level of $p < 0.05$.

RESULTS

The results of the study, based on the analysis of the dynamics of the state of immunological reactivity and leukograms of newborns, are presented in table. 1 and 2. Quantitative indicators of leukograms at all stages of the study are within the reference values of 5-95 percentiles. There was no significant difference between the somatic status, neurological state and concomitant pathology, and indicators of immunological reactivity and leukograms of children of the main group, in relation to those of the comparison group (Yates test χ , $p > 0.05$), at the beginning of the early recovery period. (Table 1).

Table 1
Indicators of immunological reactivity and leukograms at the beginning of the early recovery period of newborns ($M \pm m$)

Показатели	Группа сравнения	1-я подгруппа	2-я подгруппа	3-я подгруппа
ЯИ, у.е.	0,028 ± 0,001	0,036 ± 0,002	0,026 ± 0,001	0,031 ± 0,002
ЛИИ, у.е.	0,212 ± 0,02	0,230 ± 0,023	0,230 ± 0,034	0,220 ± 0,026
ИИР, у.е.	4,782 ± 0,422	4,158 ± 0,117	4,670 ± 0,435	4,628 ± 0,447
Лейкоциты, 10 ⁹ /л	11,21 ± 0,492	10,95 ± 0,576	9,90 ± 0,559	9,71 ± 0,409
Палочкоядерные нейтрофилы, % (10 ⁹ /л)	1,0 ± 0,18 112,12 ± 0,89	1,2 ± 0,21 131,5 ± 1,21	0,92 ± 0,17 91,1 ± 0,95	1,05 ± 0,16 102,0 ± 0,65
Сегментоядерные нейтрофилы, % (10 ⁹ /л)	36,3 ± 1,62 4069,9 ± 8,02	32,9 ± 1,56 3604,5 ± 8,99	34,7 ± 1,78 3436,7 ± 9,95	33,9 ± 1,49 3293,7 ± 6,09
Лимфоциты, % (10 ⁹ /л)	46,8 ± 1,66 5247,2 ± 8,17	51,0 ± 1,82 5587,6 ± 10,48	48,7 ± 1,82 4823,2 ± 10,17	48,9 ± 1,69 4751,1 ± 6,91
Моноциты, % (10 ⁹ /л)	12,7 ± 0,81 1423,9 ± 3,99	11,9 ± 0,87 1303,8 ± 5,01	12,7 ± 0,81 1257,8 ± 4,53	13,5 ± 0,83 1311,7 ± 3,39
Эозинофилы, % (10 ⁹ /л)	3,3 ± 0,37 369,9 ± 1,82	2,8 ± 0,42 306,8 ± 2,42	3,04 ± 0,49 301,1 ± 2,74	3,00 ± 0,42 291,5 ± 1,72

Initially, the values of leukocyte indices in the study group did not differ from those in the newborns of the comparison group at the beginning of the early recovery period. So, LII is slightly lower (by 1.3% - in the 1st and 2nd subgroups, $p > 0.05$, and by 3.3% - in subgroup 3, $p > 0.05$) than in the comparison group. The leukogram profile is represented by reliably not differing values of the values, both in the control and in the main groups, and is characterized by the failure of the cellular link of innate immunity, hyporegenerative shift and disruption of the tension of nonspecific immunity.

At the end of the early recovery period, against the background of complex rehabilitation, including RT, in the children of the main group, significant differences in leukocyte indices and leukograms were found from those in the newborns of the comparison group at the end of the early recovery period. The reliability of the difference in indicators at the stages of the study of the control group, as well as between the comparison group and the observation group after the course is presented in table. 2.

Children of the comparison group retain the failure of the cellular link of innate immunity - hyporegenerative shift and breakdown of the tension of nonspecific immunity, a significant suppression of the immune status indicators is revealed in relation to those in newborns at the beginning of the early recovery period. In the main group, the values statistically significantly differ from the severity of similar indicators in newborns in the comparison group at the end of the early recovery period.

NI in children of subgroup 1 significantly increased (by 52.7%), increased (by 42.3%) and in children of the 2nd subgroup and decreased (by 22.5%) in children of the 3rd subgroup by

attitude to a similar indicator at children v the beginning early recovery period, but significantly exceeded (by 129.1%) in children of the 1st subgroup and (by 54.2%) in children of the 2nd subgroup, the value of the indicator of children in the comparison group in relative terms. At the same time, in the 3rd subgroup there was an increase (by 7.1%) in the absolute number of stab neutrophils. When the ratio between neutrophils changes in favor of young forms, a nuclear shift to the left takes place.

table 2

Indicators of immunological reactivity and leukograms at the end of the early recovery period of newborns (M ± m)

Показатели	Группа сравнения	1-я подгруппа	2-я подгруппа	3-я подгруппа
ЯИ, у.е.	0,024 ± 0,001	0,055 ± 0,003**	0,037 ± 0,002**	0,024 ± 0,002
ЛИИ, у.е.	0,107 ± 0,010*	0,143 ± 0,014**	0,149 ± 0,021**	0,147 ± 0,020**
ИИР, у.е.	6,733 ± 0,871*	5,090 ± 0,74**	6,272 ± 0,717	4,176 ± 0,435**
Лейкоциты, 10 ⁹ /л	9,20 ± 0,434*	8,83 ± 0,637	7,92 ± 0,427	8,91 ± 0,568
Палочкоядерные нейтрофилы, % (10 ⁹ /л)	0,66 ± 0,13 60,8 ± 0,56	1,5 ± 0,36** 132,6 ± 2,29**	1,17 ± 0,21** 92,7 ± 0,89**	0,73 ± 0,13 65,1 ± 0,74
Сегментоядерные нейтрофилы, % (10 ⁹ /л)	27,2 ± 1,16* 2503,5 ± 5,03	27,4 ± 1,91 2421,6 ± 12,1	31,56 ± 1,89** 2500,2 ± 8,07	29,7 ± 1,44 2647,5 ± 8,18**
Лимфоциты, % (10 ⁹ /л)	55,2 ± 1,34* 5080,6 ± 5,82	51,8 ± 2,38** 4578,1 ± 15,2**	52,2 ± 1,64** 4135,3 ± 7,00**	50,5 ± 1,45** 4501,6 ± 8,24**
Моноциты, % (10 ⁹ /л)	12,4 ± 0,77 1141,2 ± 3,34	15,5 ± 1,43** 1369,8 ± 9,11**	11,04 ± 1,02 874,5 ± 4,36	14,7 ± 0,87** 1310,3 ± 4,94**
Эозинофилы, % (10 ⁹ /л)	4,6 ± 0,42* 423,3 ± 1,82	3,6 ± 0,53 318,2 ± 3,38	3,7 ± 0,43 293,1 ± 1,84	4,2 ± 0,62 374,4 ± 3,52

* – достоверность разницы показателей контрольной группы на этапах исследования;

** – достоверность разницы показателей между подгруппами наблюдения и группой сравнения после проведенного курса РТ.

LII in children of the 1st subgroup significantly decreased (by 37.8%), decreased (by 35.2%) in children of the 2nd subgroup and (by 33.2%) in children of the 3rd subgroup in relation to the same indicator in children at the beginning of the early recovery period, but significantly exceeded (by 33.6%) in children of the 1st subgroup, in the children of the 2nd subgroup (by 39.2%) and in the children of the 3rd subgroup (by 37.4%), the value of the indicator of the children of the comparison group, which had a sharp decrease (by 50.6%). This indicates a breakdown in the tension of the nonspecific immunity of the children of the comparison group and the presence of physiological endotoxicosis with a good tension of the nonspecific immunity in the study group.

The average RRI of children in the control group significantly increases

(by 42.5%) in relation to the beginning of the early recovery period. In the main group, RRI significantly differs from that in newborns of the comparison group at the end of the early recovery period, when the dynamics were of the opposite direction (decrease by 23.8% - in the 1st subgroup, $p < 0.05$; by 7.5% - in 2 subgroup, $p > 0.05$, and by 38.8% - in subgroup 3, $p < 0.05$) than in the comparison group. An increase in RRI, indicating an increase in the relative content of lymphocytes in the development of adaptive immunity, combined with a positive dynamics of clinical status, is more pronounced in the control group and is a favorable sign.

The mean values of leukocytes in children of the study and the comparison group did not have significant differences.

The content of stab neutrophils did not change by the end of the early recovery period in the 1st, 2nd and 3rd subgroups compared with the data of children of the above-named subgroups at the beginning of the early recovery period, but significantly exceeded (respectively, by 118.1%, 52.5 % and 7.1%) a reduced amount (by 45.7%) in children of the control group.

Segmented neutrophils decreased in children of the main group by 16.7%, 9.2% and 12.3%, respectively, for the 1st, 2nd and 3rd subgroups and by 25.1% in children of the control group compared with the same indicator in newborns at the beginning of the early recovery period, but not reliably differed from the children of the comparison group at the end of the early recovery period.

The average level of lymphocytes was higher in the comparison group, and in children of the main subgroups it had a more significant dynamics of decrease (by 18.1%, 14.2%, 5.2%, respectively) in absolute numbers than children in the comparison group (by 3, 2%), which indicates the activity of the lymphocyte component ($p < 0.05$).

The relative level of monocytes in children of the control group did not significantly decrease (by 19.8%) in relation to the beginning of the early recovery period, while in children of the main group it increased and differed (by 19.9% - in the 1st subgroup, $p < 0.05$, by 11.2% - in the 2nd subgroup, $p > 0.05$, and by 18.5% - in the 3rd subgroup, $p < 0.05$) from children in the comparison group of the end of the early recovery period ...

The relative values of eosinophils in children of the 1st, 2nd and 3rd subgroups were less than in children of the comparison group, but did not have significant differences; the absolute number of children in the comparison group incomparably (by 14.6%) increased in relation to that of the beginning of the early recovery period.

The most pronounced significant changes were found in newborns of at the 1st subgroup with joint RT with the mother.

DISCUSSION

The skin is one of the most important organs of the immune system of the human body and is involved in the formation of innate and acquired (adaptive) immunity. The skin presents a full set of immune defense mechanisms, called "skin-associated lymphoid tissue" (SALT) by analogy with conjunctival, broncho- and gastrointestinal-associated lymphoid tissue. The skin has

the ability for a full-scale immune response, including types I and IV hypersensitivity reactions [9]. An inalienable ability of the skin is not only an effector, but also an affector reaction, manifested by reliable dynamics of the studied parameters of peripheral blood. In previously published studies, we presented experimental information on the relationship of the main neurotransmitter-containing structures of the skin in the area of acupuncture points and thymus - as the central organ of immunity after RT. The existence of close functional relationships between subepithelial mast cells of the skin in the area of acupuncture points and granular luminescent cells (GLC) of the premedullary thymus zone for histamine, catecholamines, and serotonin was revealed. Neurotransmitters were identified in one GLA pool, while the other part is different states of macrophages. Acupuncture leads to the establishment of strong correlations between all investigated cells. It was found that neuroamine-containing skin structures in the area of acupuncture points and thymus are interconnected and actively influence each other [10]. The results of experimental data confirm clinical studies of the cellular composition of the white blood of newborns.

Neutrophils make up the majority of nucleated cells peripheral blood circulate for an average of 6.5 hours, then migrate to tissues, where they carry out their main functions. Neutrophils do not return from tissues back to blood. The main function of neutrophils is phagocytosis. Phagocytic activity is higher in mature neutrophils. Phagocytosis is an active biological process in which many factors are involved and a significant amount of oxygen is consumed. Hypoxia of any origin reduces the phagocytic activity of neutrophils [11]. Monocytes and macrophages are the main cells of the phagocytic mononuclear system. The most important function of cells is cytotoxicity. The cytotoxic effect can be nonspecific (without the participation of the antigen) and specific (participation in the immune response). Specific cytotoxicity consists in the recognition of a foreign antigen and the transfer of information to T- and B-lymphocytes. This function of the macrophage is associated with the HLA (human leukocyte antigens - antigens of human leukocytes) located on its surface. Nonspecific cytotoxicity targets damaged, aged and tumor cells. An increase in the number of monocytes in the blood occurs when there is a foreign substrate in the body, but it can also be its own tissues, which undergo necrosis, lysis, and disintegration of blood cells in the hematoma. An increase in the number of monocytes is an indicator of the development of immune processes [12]. Eosinophils belong to the class of granulocytes. They circulate in the blood for several hours, and then pass into tissues, where their content is hundreds of times higher than in the blood. From tissues, eosinophils can return back to the bloodstream. It is the recirculation of eosinophils from tissues that causes eosinophilia in the blood. The main functions are antigen retention, entering the body in small doses, at the tissue level, preventing their penetration into the vascular bed, participation in immediate hypersensitivity reactions, anthelmintic immunity of a cytotoxic nature. Eosinophils also have phagocytic activity, but to a lesser extent than neutrophils.

Lymphocytes are divided into main subpopulations: T-, B- and NK-lymphocytes. The main function of lymphocytes is to participate in the immunological response. Differentiation of functions is carried out due to a set of receptors and antigens on the surface of lymphocytes, different in each of the subpopulations. The most studied on the surface of B-lymphocytes are immunoglobulins. Determination of immunoglobulins on the surface of B-lymphocytes helps their differentiated assessment [13].

A fairly wide number of publications reflect the immunological reactivity of newborns with perinatal lesions of the central nervous system. DIE is accompanied by an increase in the concentration of proinflammatory cytokines in the peripheral blood of the newborn, the role of serum cytokine activity in the pathogenesis of severe cerebral ischemia has been determined [14], its relationship with the amount of DNA in the nuclei of lymphocytes, depending on the severity of perinatal hypoxia [15]. We ascertained the presence of quantitative changes in the content of immunocompetent cells in peripheral blood of newborns under the influence of IRT.

A feature of the immune reactivity of newborns with perinatal encephalopathy is the failure of the cellular link of innate immunity, with a hyporegenerative shift and a breakdown in the tension of nonspecific immunity. RT of newborns has an immunomodulatory effect that stimulates the cellular component of innate immunity. The lack of mature specialized reactions is compensated by quantitative parameters - an increase in the cellular composition of primary immunity - stab neutrophils and monocytes, a regenerative shift with a good tension of nonspecific immunity, depending on the psychoemotional state of the mother.

The results of the studies carried out are confirmed by the literature that RT changes the cellular composition of the blood, harmonizes the immune system and promotes the synchronization of the humoral and cellular links of immunity, as well as the NK-activity of cells (natural killer) detected in adult patients [16]. The prerequisites for studies of the immunomodulatory effect of RT in newborns using immunological tests of the second level and the development of non-invasive RT methods (color and light, acoustic puncture) are outlined.

Providing the newborn with a joint allowance with the mother has a more pronounced effect than RT only for the child, which is associated with the optimization of the mother's autonomic nervous system in the development of her psychoemotional state, the immune composition of milk and lactation [17].

CONCLUSIONS

Thus, the use of RT in the complex treatment of partners of the "mother-child" system provides the dynamics of the cellular composition of the white blood of newborns with perinatal encephalopathy, which indicates the optimization of the child's immunological reactivity in the early stages of rehabilitation.

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Filonenko, A.V. Reflexotherapy in the regulation of immunological reactivity of newborns with perinatal damage to the nervous system / A.V. Filonenko, A.I. Sergeeva, E.A. Guryanova // Traditional medicine. - 2011. - No. 1 (24). - S.21-28.

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