

Acupuncture in newborn rehabilitation

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SUMMARY

The review is devoted to the scientific study and substantiation of the possibility of using acupuncture (IRT) in the rehabilitation of newborns. The revitalizing effect of IRT is based on the normalization of the functional state of the central nervous system (CNS), regulation of the tone and reactivity of the autonomic nervous system (ANS), an increase in the adaptive, protective, compensatory functions of the body. The features of cerebral circulation, physical development, electrocutaneous conduction (ECT), unconditional reflex activity, autonomic homeostasis of newborns with perinatal damage to the nervous system and the peculiarities of the psychoemotional state of mothers under the influence of the course effect of IRT of the mother-child dyad in the early recovery period are analyzed.

Key words: acupuncture, newborn rehabilitation, normalization of the state, the central nervous system.

Introduction

This review touches upon the current topic of rehabilitation of children with hypoxic-ischemic brain damage. Early rehabilitation of children in the first year of life with perinatal encephalopathy is especially important for the further harmonious development of the child. Severe consequences of the transferred perinatal CNS damage are hydrocephalus, cerebral palsy, epilepsy, which lead to childhood disability. Based on this, the problem of rehabilitation of children with perinatal encephalopathy is very urgent and has medical and social significance. The relevance of the development of new directions for the rehabilitation of newborns who have undergone perinatal damage to the nervous system is also determined by the continuing high frequency of pathology. More than 30% of children are born with a perinatal lesion of the nervous system [1]. Perinatal pathology predetermines the postnatal development of a child, and then an adult. Perinatal pathology is associated with both severe neuropsychiatric and somatic disorders and minimal brain dysfunctions. An important component of brain metabolism is cerebral blood flow. Cerebral blood flow disorders are one of the significant mechanisms of the pathogenesis of neonatal hypoxic-ischemic encephalopathy (HIE) [2]. The pathology of cerebral vessels underlies most cerebral disorders. The main cause of disability from childhood (up to 70%) is the pathology of the perinatal period. In most cases, the severity of the condition An important component of brain metabolism is cerebral blood flow. Cerebral blood flow disorders are one of the significant mechanisms of the pathogenesis of neonatal hypoxic-ischemic encephalopathy (HIE) [2]. The pathology of cerebral vessels underlies most cerebral disorders. The main cause of disability from childhood (up to 70%) is the pathology of the perinatal period. In most cases, the severity of the condition An important component of brain metabolism is cerebral blood flow. Cerebral blood flow disorders are one of the significant mechanisms of the pathogenesis of neonatal hypoxic-ischemic encephalopathy (HIE) [2]. The pathology of cerebral vessels underlies most cerebral disorders. The main cause of disability from childhood (up to 70%) is the pathology of the perinatal period. In most cases, the severity of the condition

due to perinatal damage to the central nervous system. Every year, disabled children are born in the Russian Federation who need rehabilitation therapy with the use of medicated cerebral stimulants for 1–3 years of life. Despite the regular conventional drug therapy, massage therapy and gymnastics, perinatal brain damage has profound consequences [3].

A specific feature of human development in the early stages of ontogenesis is the complete dependence of the child on the mother, which is formed as the most important need. The child is sensitive to the slightest changes in her mood and state. The mother's lack of personal harmony necessarily finds a response in the child's behavior. The interaction between the child and the mother is the highest life unity [4]. In the early neonatal period, newborns with chronic hypoxia have significant and persistent functional disorders in the circulatory system, the severity of which is in direct proportion to the severity of the mother's pathology [5]. The role of the hypothalamic-pituitary-adrenal system of the fetus in the regulation of the state of the microcirculation bed during intrauterine asphyxia has been established [6], which is, along with the nervous system, the main link of the adaptation mechanism. It has a pronounced effect on systemic and regional hemodynamics, including cerebral blood flow [7]. This opens up the possibilities of using acupuncture in the correction of cerebral hemodynamics.

Of particular importance in the pathogenesis of violations of the vital functions of the newborn during the period of postnatal adaptation are changes in the ANS [8]. By the time the child is born, the ANS is already functioning, ensuring the maintenance of vascular tone, adaptive trophic reactions and regulation of the activity of internal organs. Vegetative-visceral dysfunction, as the main etiopathogenetic factor, should be corrected already at the first stages of a child's development, as it contributes to the occurrence of somatic disorders and a decrease in immunity. A child's comfort is achieved through communication with the mother and breastfeeding. Otherwise, the child does not receive maternal love, which leads to insufficient weight gain, delayed development of motor skills and growth, dysfunctions of the digestive and respiratory systems, to the formation of pathological character traits [9]. It is known that the ECP at representative acupuncture points reflects the functional state of the ANS, in particular, when the motor-evacuation function of the gastrointestinal tract is impaired. A decrease in electrogenesis is reliably accompanied by hyposympathicotonia, and an increase in electrical conductivity is accompanied by hypersympathicotonia. The multidirectional vegetative reaction in various parts of the system is considered to be the cause of impaired motor and evacuation function [10]. The use of ECP in screening diagnostics in newborns is quite promising. and an increase in electrical conductivity - hypersympathicotonia. The multidirectional vegetative reaction in various parts of the system is considered to be the cause of impaired motor and evacuation function [10]. The use of ECP in screening diagnostics in newborns is quite promising. and an increase in electrical conductivity - hypersympathicotonia. The multidirectional vegetative reaction in various parts of the system is considered to be the cause of impaired motor and evacuation function [10]. The use of ECP in screening diagnostics in newborns is quite promising.

The problem of treatment and prevention of the initial forms of depressive disorders in postpartum women is one of the most urgent in modern medicine, since there is a persistent tendency towards an increase in the number of postpartum depression (PD) sufferers everywhere. PD develops in 10-20% of women during the first

six months after childbirth [11]. The indicator exceeds 25% in women with a previous episode of PD [12]. Treatment of PD is a difficult task, since almost all psychotropic drugs (antidepressants, tranquilizers, normotimics, antipsychotics) are excreted in breast milk and present different degrees of complications for the child and mother [13]. Therefore, when prescribing them, it is recommended to stop breastfeeding, which is also a negative factor for the development of the newborn [14]. Hence, it is important to develop alternative approaches in the treatment of PD. IRT, having a psychotropic effect, the property of small antidepressants [15], seems to be very promising for the correction of AP. Non-drug optimization of cerebral blood flow, autonomic homeostasis of a newborn by influencing the maternal component of the "mother-child" system seems to be a very significant area of application of IRT in neonatology. All of the above served as the basis for this review.

The purpose of the work was to review publications controlled prospective randomized clinical trials devoted to the use of traditional IRT methods in the rehabilitation of a newborn who underwent perinatal HIE in the early recovery period and the postpartum psychoemotional state of his mother.

Overview

Publications research fortunes cerebral hemodynamics testify that IRT according to the method, which takes into account the morphological and functional characteristics of the newborn and child-mother relationships of attachment in the "mother-child" system, is quite effective. The assessment of the state of the ECP of the partner's representative points was carried out by the Ryodoraku method according to Y. Nakatani using the domestic ARM-RT Partner, a special computer complex developed by V.B. Lyubovtsev. Both with hypo- and hyperfunction, taking into account the peculiarities of the central nervous system and ANS of a newborn child, the method of inhibitory prescription of two distal points of the extremities according to F. Mann was used with the addition of the group LO-point of the leading meridian of the lesion of the current day of one side - the second level of exposure according to D .M. Tabeeva. The duration of the session is from 45 to 60 minutes before the spontaneous elevation of the needles from the skin during the sleep of the newborn after the morning feeding. During the course of acupuncture, consisting of 5 sessions and involving 15 different points, both the mother and the child are not allowed to use the same places. While maintaining the dominance of the channel of the previous day, the impact is carried out on the opposite side [16]. The result is due to the direct mechanism of IRT action on the vegetative, as well as the hypothalamic-pituitary-adrenal system, which is involved in the regulation of the microcirculation channel of the newborn and the maternal component of the mother-child dyad, which is confirmed by a significant improvement in cerebral blood flow in newborn children who received the IRT course. The state of health of the mother of the newborn in the early recovery period is one of the factors influencing the state of the cerebral hemodynamics of the child [17]. Mother

the conditions for optimizing the blood flow of the newborn both in the internal carotid and vertebral arteries are potentiated; Conducting IRT for a newborn only has a less pronounced effect on the blood flow in the vertebral arteries than conducting a joint aid with the mother. The influence of IRT on the health of a newborn is manifested by the best indicators of cerebral hemodynamics in the late neonatal period, exerting a vasodilating effect on cerebral vessels. The most pronounced changes in the parameters of cerebral hemodynamics are manifested with the participation of the mother in the rehabilitation of newborns. IRT in the complex therapy of newborns of the "mother-child" system with HIE in the early stages of rehabilitation optimizes cerebral circulation in children. Cervical hypoperfusion, which persists in the first month of life in newborns who underwent hypoxic-ischemic brain damage, despite the effectiveness of drug treatment, which ensures an increase in cerebral blood flow, is restored only with the participation of the mother in a course IRT. Aggregate acupuncture treatment is a highly effective method of establishing cerebral circulation in a newborn [18]. is restored only with the participation of the mother in the course IRT. Aggregate acupuncture treatment is a highly effective method of establishing cerebral circulation in a newborn [18]. is restored only with the participation of the mother in the course IRT. Aggregate acupuncture treatment is a highly effective method of establishing cerebral circulation in a newborn [18].

After the IRT treatment, a significant severity of unconditioned reflexes of spinal automatism is noted. The effect of IRT is explained by the originality of the technique, which takes into account the peculiarities of the ANS of newborns, which carries out its activity through the reflex arcs of the ganglionic apparatus of the metasympathetic nervous system. This is probably due to the constant afferent stimulation of reflexogenic zones during each breastfeeding, skin-to-skin contact and the peculiarities of the blood supply to the brain stem. Conducting IRT only for mothers also contributed to the improvement of the unconditioned reflex activity of the newborn, which indicates the presence of the influence of the maternal state on the child. Indeed, the mother-child system is a single whole. Impact on one partner leads to inevitable changes in the other member of the dyad, potentiation of each other. IRT is a fairly effective method of complex rehabilitation of newborns with perinatal damage to the nervous system in the early recovery period, which optimizes the neurological status of the newborn. The restoration of reflexes of spinal automatism indicates the sufficiency of the afferent impulses of the technique, which ensured the inclusion of new receptor fields and the formation of new connections between the ganglionic and cerebral structures. The efferent response of the newborn is also determined by the condition of the mother. In the systemic regulation of the activity of the newborn's body, the mother appears to be a significant link in afferent synthesis, analysis and formation of an efferent reaction, an integral part of the reflex arc. In a situation where IRT is not acceptable in the rehabilitation complex of measures for newborns, it is possible to use mother's IRT to positively influence the child and increase the effectiveness of complex rehabilitation. The data obtained indicate the restoration of unconditioned reflex activity in newborns with

perinatal damage to the nervous system of partners "mother-child" under the influence of the course exposure to IRT, which plays a significant role in the formation of relationships with the mother and affects the physical development of the child [19].

The physical development of children who received the course of IRT statistically significantly differs from the newborns of the comparison group and is assessed as mesosomatic, harmonious and normal nutrition, in contrast to the children of the comparison group, which is characterized as microsomatic, harmonious with normal nutrition. The effect of treatment is due to the direct mechanism of trophic action on the ANS and psychological relief of the mother, which is confirmed by a significant increase in the body weight of newborn children. The state of health of the mother of the newborn in the early recovery period is one of the factors influencing the physical development of the child. The mother with the level of neurotization and accentuation of character, cut off under the influence of IRT, creates psycho-positive conditions for the physical development of the newborn. Carrying out RTI for a newborn only has a less pronounced effect than carrying out a joint allowance with the mother. The influence of IRT on the health of a newborn is manifested by the best indicators of physical development in the late neonatal period. The most pronounced changes in indicators of physical development are manifested in body weight. The unreliability of the difference in the size of the head circumference indicates the absence of an increase in intracranial pressure during the course of IRT for the newborn of the "mother-child" system. IRT of newborns of the "mother-child" system with HIE in the early stages of rehabilitation optimizes the physical development of children during this period. Despite the effectiveness of drug treatment, newborns who have undergone perinatal brain damage lag behind in physical development already in the first month of life [20], than sharing benefits with the mother. 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Despite the effectiveness of drug treatment, newborns who have undergone perinatal brain damage lag behind in physical development already in the first month of life [20].

Vegetative homeostasis of newborns is characterized by significant activity of the central control circuit with the development of autonomic reactivity according to the hypersympathicotonic type and its preservation until the end of the late perinatal period. This indicates a very pronounced load of the protective and adaptive mechanisms of newborns. IRT causes changes in the indices of the autonomic status with the restructuring of autonomic reactivity according to the vagotonic type. The load on the adaptive mechanisms decreases, and the ability of the ANS to ensure the safety of the newborn's body from the consequences of the damaging effect of hypoxia during this period increases. Providing the newborn with a joint support with the mother has a more pronounced effect than RTI for the child alone, which is probably may be associated with the optimization of the mother's ANS in the formation of lactation and the composition of milk under the influence of the harmonization of her psycho-emotional state. The influence of IRT in the "mother-child" system on the health of the newborn is manifested by the best indicators of vegetative homeostasis in the late neonatal period. The most pronounced changes in the cardiointervalogram indicators are manifested in the values of the stress index. IRT in the complex treatment of newborns of the "mother-child" system with HIE in the early stages of rehabilitation The most pronounced changes in the cardiointervalogram indicators are manifested in the values of the stress index. IRT in the complex treatment of newborns of the "mother-child" system with HIE in the early stages of rehabilitation The most pronounced changes in the cardiointervalogram indicators are manifested in the values of the stress index. IRT in the complex treatment of newborns of the "mother-child" system with HIE in the early stages of rehabilitation

optimizes the vegetative homeostasis of children during this period. The vegetative imbalance according to the hypersympathicotonic type, which persists in the first month of life in newborns who have undergone hypoxic-ischemic brain damage, despite drug treatment, is harmonized exclusively with IRT for the newborn, especially in conjunction with the mother [21].

Correlation analysis between the EKP of newborns and their mothers reveals a positive dependence of the indicators. The presence of an average-reliable dependence of the studied indicators of newborns and the state of the mother's ECP was noted. This confirms a maternal role in neonatal changes. The baseline number of correlations between strong and moderate relationships (24%) in the group that did not receive IRT did not statistically change ($p > 0.05$) at discharge (16%) according to the Yates test. In the main group, at the end of the early recovery period, the number of strong and average correlations significantly increased ($p < 0.001$) in relation to the comparison group to 56% [22]. The procedure for measuring the EKP in a newborn that does not have psychotherapeutic significance for him as a person is evidence of the absence of a placebo effect, allows for imbalance screening and diagnostics and reliable control of the harmonization of systems and organs belonging to any skin area during IRT. Comparison of the ECP results of children who received IRT with the results in the control group indicates that the use of IRT in the "mother-child" system has the ability to change it, optimizing the state of cerebral blood flow, autonomic reactivity and unconditioned reflex activity of the newborn. The existence of ECPs of representative points of newborns was confirmed. The term "channel-meridian system" is applicable to children of this age period. The Ryodoraku Y. Nakatani method allows you to reliably control the dynamics of the state of electrogenesis in children. The use of IRT in the complex treatment of newborns of the "mother-child" system at the early stages of rehabilitation changes and harmonizes the ECP of the newborn. The participation of the mother in the electrogenesis of the child has been established [23].

For the majority of women in childbirth, subclinical forms of an altered psychoemotional profile are characteristic, which, without therapeutic intervention, persist throughout the late neonatal period of their children. The antidepressant properties of IRT for postpartum depression have been confirmed. Comparison of the obtained characteristics of the maternal psychoemotional status with the results in the control group testifies that IRT by the method, which takes into account the peculiarities of the "mother-child" system, is very effective. The severity of the deviations suggests that not only manifest forms, but also PD can cause mental dissociation of the physical and neuropsychic development of children. The emergence of new emotional sensations is probably associated with the production of an endogenous opioid, endorphin, or the restoration of the functional capacity of endorphinergic systems [24]. In turn, the state of health of the newborn in the early recovery period, of course, refers to the factors influencing the mental state of the mother. Conducting RTI for the mother alone has a less pronounced effect than providing joint benefits with the child. The IRT technique turned out to be effective

in the resolution of neurotic disorders and satisfactory in women with a high level of character accentuation. It must be improved or combined with psychotherapy methods. Psychoemotional abnormalities that need correction are characteristic of mentally healthy puerperas. IRT, included in the comprehensive rehabilitation of the "mother-child" system, improves the condition of women in the early stages. The psychoemotional stress of the puerperas, which persists in the first month of life in newborns who have undergone perinatal damage to the nervous system, is more effectively controlled with the participation of the child in the course IRT of the mother [25].

Initially, at the beginning of the late neonatal period, there are no significant dependencies in the state of child-maternal relationships. The correlation coefficients between the severity of deviations in mental health, the depth of maternal PD and somatic indicators of children are moderate. Then, under the influence of IRT against the background of a decrease in the severity of AP, they increased in the main group. The closeness of mother and child was restored, which arose during pregnancy, but was interrupted by childbirth. If deviations in emotional development begin from the second month of life with a distortion of the formula for the "revitalization complex" [26], then the "syndrome of maternal deprivation" of morphofunctional, autonomic-visceral indicators is manifested already in the neonatal period. Restoring the psychological compatibility of mother and child seems to be the most important component of the rehabilitation of newborn children. The obtained data indicate the relationship of the psychoemotional sphere of the mother with the indicators of cerebral hemodynamics and autonomic homeostasis of newborns, which confirms the maternal participation in the regulation of blood circulation and autonomic reactivity of children. The normalization of the psychoemotional state of the mother is reflected in the improvement of the functional parameters of cerebral hemodynamics, autonomic reactivity in children with HIE [27].

Follow-up studies of neuropsychic development (CPD) and morbidity in the first year of life were carried out. CPD of children undergoing IRT correction during the neonatal period by 12 months significantly differed from children in the comparison group. In the majority of children (68.2%), CPD was assessed as normal ($p < 0.05$), in contrast to the comparison group (24%). Among some of the children, there was also an advance (9.1%) of CPD. In the comparison group, the majority of children (68.0%) had a developmental delay of one epicrisis period. By the age of one year of life, children who have undergone IRT, but are lagging behind in development, are significantly less (29.2%) than in the control group. The development of children whose mothers underwent RTI also differed in the direction of improvement from infants in the comparison group [28]. The incidence of children in the first year of life is largely dependent on the type of treatment. The overall morbidity in the group receiving the RTI was lower than in the control group (by 69%). For certain classes of diseases among children who received a course of RTI, the incidence was several times less than among children in the comparison group. For blood diseases (anemia) - 4.2 ($p < 0.05$) times; skin diseases - 1.9 times; respiratory organs - 2.6 ($p < 0.05$). A significant part of the children never got sick in the first year of life. The health index was 41.7% ($p < 0.05$). Children from mothers who received RTIs had lower rates respiratory organs - 2.6 ($p < 0.05$). A significant part of the children never got sick in the first year of life. The health index was 41.7% ($p < 0.05$). Children from mothers who received RTIs had lower rates respiratory organs - 2.6 ($p < 0.05$). A significant part of the children never got sick in the first year of life. The health index was 41.7% ($p < 0.05$). Children from mothers who received RTIs had lower rates

morbidity compared with children in the control group [29]. Reducing the incidence of children confirms the immunotropic effect of IRT with a long aftereffect. IRT has immunomodifying properties, determines the development of certain diseases in infancy.

In children with perinatal CNS damage, cellular energy metabolism in the lymphocyte population is observed with the formation of secondary mitochondrial insufficiency, an immunopathological state for a number of immunity factors [30]. IRT helps to restore the activity of mitochondrial enzymes and normalize immunological parameters, which is manifested by a decrease in morbidity in the first year of life.

conclusions

1. New direction of IRT - neonatal acupuncture together with mother - opens up great opportunities for the rehabilitation of babies. The state of physical development, unconditionally reflex activity, cerebral hemodynamics, autonomic homeostasis, ECP of newborns with perinatal encephalopathy is amenable to IRT correction. The data obtained reliably indicate the existence of the canal-meridian system of newborns, the imbalance of which corresponds to clinical manifestations.

2. The psychoemotional profile of women in childbirth is changed, and the influence of RTI on it dynamics in mothers of newborns with HIE in the late neonatal period is highly effective.

3. The role of the psychoemotional state of the mother in changes is confirmed cerebral hemodynamics, autonomic homeostasis and ECP of the newborn in the process of adaptation to hypoxic-traumatic injury. The depth of the detected changes in the ECP of newborns is consistent with the severity of the deviation of the psychoemotional state of the mother, corresponding to the severity of the hypoxic-ischemic lesion. New links of pathogenesis (change in ECP) are opening up in HIE. The decisive role of the mother's energy imbalance in the process of adaptation of the newborn to traumatic injury is clearly manifested. The revealed dependence between the energy supply of the newborn and the degree of disturbances in the psychoemotional state of the mother serves as an objective additional test of the severity of the child's condition, makes it possible to judge the compensatory abilities of the newborn, substantiates a new approach to diagnosis,

4. IRT in the joint rehabilitation of mother and newborn at the second stage nursing has a positive effect on the CPR of infants, reduces their morbidity during the first year of life. The participation of IRT in the implementation of compensatory-adaptive reactions during the year is carried out through the immune system, which provides benefits in the health status of children who received an IRT course with their mother. The obtained data theoretically substantiate the choice and the possibilities of improving the methods of rehabilitation in full-term newborns with DIE. The totality of the provisions under consideration can

considered as one of the ways to solve the problem related to the medical and social factors in the formation of women's mental health and to improve the system of medical and social care for newborns.

5. Obviously, reflexology can be interpreted as an auxiliary method in complex rehabilitation. There is no consensus on the rehabilitation of children with hypoxic-ischemic brain damage using traditional medicine methods. This can be explained by the variety of forms of this pathology and differences in the methods of various schools of reflexology. The correct choice of methods of physical influence, points and zones for therapy is important. At the same time, the use of various methods of reflexology, indications, relative indications and contraindications require further clarification.

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