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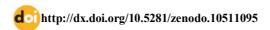
### JOURNAL OF HEPATO-GASTROENTEROLOGY RESEARCH ЖУРНАЛ ГЕПАТО-ГАСТРОЭНТЕРОЛОГИЧЕСКИХ ИССЛЕДОВАНИЙ

УДК 616-009.7-053.31

Isanova Shoira Tulkinovna, Niyozov Shuzrat Toshtemirovich Mukhtarova Maftuna Alisherovna, Shukurov Xodixon Baxtiyor o`g`li Samarkand State Medical University

#### PATHOGENETIC MECHANISM OF PAIN SYNDROME IN NEWBORNS

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#### ANNATATION

Newborns from the first days of their life are faced with a primary feeling of pain due to neonatal screening, primary treatment and when taking blood for laboratory analysis. As a result of untreated analgesia, the risk of neurological consequences is high and prevention is important. Currently, there is no single algorithm for the treatment and diagnosis of pain syndrome.

**Keywords:** newborns, pain, neonatal period, newborns.

Исанова Шоира Тулкиновна, Ниязов Шухрат Тоштемирович Мухтарова Мафтуна Алишеровна, Шукуров Ходихон Бахтиёр угли Самаркандский Государственный Медицинский университет

#### ПАТОГЕНЕТИЧЕСКИЙ МЕХАНИЗМ БОЛЕВОГО СИНДРОМА У НОВОРОЖДЕННЫХ

### **АННОТАЦИЯ**

Новорожденные с первых дней своей жизни сталкиваются первичным чувством боли из-за неонатального скрининга, первичной обработкой и при взятии крови для лабараторного анализа. В результате непроведенной аналгезии риск развития неврологических последствий высока и важна профилактика. В настоящее время нет единого алгоритма по лечению и диагнотике болевого синдрома. Ключевые слова: новнорожденные, боль, неонатальный период, новорожденные.

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### YANGI TUG'ILGAN CHAQALOQLARDA OG'RIQ SINDROMINING PATOGENETIK MEXANIZMI

### **ANNOTACIYA**

Yangi tug'ilgan chaqaloqlar hayotining birinchi kunlaridan boshlab neonatal skrining, birlamchi davolash va laboratoriya tekshiruvi uchun qon olish orqali birlamchi og'riq tuyg'usiga duch kelishadi. O'tkazilmagan analjeziya natijasida nevrologik oqibatlarni rivojlanish xavfi yuqori va profilaktika muhim ahamiyatga ega. Hozirgi vaqtda og'riq sindromini davolash va diagnostika qilish uchun yagona algoritm mavjud emas.

Kalit so'zlar: yangi tug'ilgan chaqaloqlar, og'riq, neonatal davr, yangi tug'ilgan chaqaloqlar.

Pain reactions in newborns were not given importance for a long time. All newborns face painful procedures shortly after birth, and often even in utero. Newborns are sensitive to pain, but they cannot signal it based on anatomical and physiological features and a set of pathological processes.

The pain perception system begins to develop in the early stages of pregnancy (starting from the 6th-9th non-gestation) and by the 21st-

23rd week of intrauterine development is fully formed. All anatomical formations necessary for carrying out pain impulses are ready by the time of delivery: nerve fibers are sufficiently myelinated already in the second trimester of pregnancy and fully myelinated by the 30-37 th week of intrauterine development. Afferent pain tracts are present even in newborns of minimal gestation: by the 8th-14th week, most neuropeptides- pain transmitters are determined, by the 20th -

nociceptors are developed, and in the cerebral cortex the normal number of neurons is 10 billion or functional changes, even premature infants are able to experience pain and react to it with hypertension, tachycardia, increased intracranial pressure, pronounced neuroendocrine reaction. Moreover, newborns have a higher pain threshold than older ones. Simopsi co-author. It has been proven that every newborn undergoes an average of 14 painful procedures daily and 39.7% of them do not receive any analgesia. The problem of pain prevention in the neonatal period is at the intersection of medicine, philosophy, ethics, dientology and morality.

That is why the dissemination and improvement of a strategy aimed at preventing pain in newborns must be supported not only from the standpoint of scientifically sound data, but also for reasons of humanity.

The International Association for the Study (International Association for the Study of Pain-IASP) defines pain as "an unpleasant sensory and emotional experience accompanied by actual or possible tissue damage, or a condition whose verbal description corresponds to such damage. Newborns who have spent a long time in the intensive care unit, compared with healthy newborns, have different pain thresholds and other features of pain sensitivity. Long-term neurological consequences include changes in neuropsychiatric development and social behavior, later development of attention and learning ability. Multiple pain in a child can cause the development of intraventricular hemorrhages, ischemia and periventricular leukomalacia, leads to the development of DIC syndrome, metabolic acidosis, forms a state of constant stress, or hyperalgesia. Such conclusions are prompted by the opinion about insufficient myelination of nerve fibers and the maturity of nociceptors, as well as the neurotransmitter system, high concentrations of b endorphins and increased BBB permeability.

The hypothalamic – pituitary -adrenal system has been functioning since the 2nd trimester of pregnancy. Up to 30 weeks of gestational age, the level of fetal cortisol is low (5-10 mg.ml), growing to 20 mg.ml by 36 weeks and continuing to increase to 45 mg.ml before childbirth, and the peak (up to 200 mg.ml) falls in the first hours after birth. Premature maturation of the placenta and its weight, initiation and the process of childbirth itself, as well as the process of childbirth itself, as well as intrauterine infections also affect the level of steroids in the umbilical cord blood. Serotonin and gamma - aminobutyric acid are already active intrauterine and play a role even with early pain modulation. Prolonged prenatal development disrupts neurological development and can affect the pain response after childbirth. Immaturity and concomitant inhibitory activity of GABA neurons. Children born at the age of gestation <32 weeks are subjected to numerous painful procedures every day, especially during the first 2 weeks of life. Unfortunately, during many of these painful procedures, pain relief is not performed. In the presence of numerous possibilities and methods of analgesia, the absence or insufficient relief of pain cannot be justified from a clinical point of view and is regarded as unethical. Clinical studies show that neonatal pain cannot be consciously remembered, but multiple painful events have immediate and long-term negative consequences. Excessive activity in the developing central nervous system caused by pain alters and damages normal synaptic development and is encoded as structural or functional changes. Assessing the intensity of pain syndrome in newborns is a complex and difficult task due to the limited ability of such a child to express pain and stress, which is associated with their physiological and biological immaturity.

The purpose of the work. Pathogenetically substantiate early neonatal pain in newborns and prevent the consequences of pain syndrome, develop an algorithm for the management of newborns. For the first time, neonatal pain of various origins, the consequences of uncontrolled pain, as well as the risk of neurological consequences are being studied. To substantiate the pain syndrome in response to stress, hormonal and metabolic changes are studied for timely adequate analgesia.

Material and methods of research. The collection of the material was carried out in the department of newborns of the SamMI clan, in the department of pathology of newborns of the children's multidisciplinary complex. The object of our study were newborns from 0 to 7 days with severe pain syndrome in the number of 60 newborns (boys 27-45% and

girls 33-55%. In the first stage, we studied the history of the course of childbirth and clinical and neurological examination; determined pain markers, conducted anthropometry, neurosonography.

Results and discussions. According to the catamnestic material, the neurological consequences and manifestations of uncapped pain in the early neonatal period were studied, pain markers belonging to the group of steroid hormones and the dynamics of cortisol concentration in the blood of newborns were studied using the COMFORT, CRIES scales.

The children of the main group were divided into 3 groups:

1 group of children 27-45% of the cause of neonatal pain is aggressive obstetric tactics in childbirth (mechanical squeezing of the fetus, obstetric forceps, vacuum extraction, stimulated labor, rough extraction during cesarean section, etc.); - birth injuries of the central nervous system, cervical spine, bone fractures, hematomas, etc. birth injuries; - intracranial hemorrhages.

Group 2 consisted of 23 children - 38, 33% children with congenital hydrocephalus; - congenital malformations (gastroschisis, ventral and spinal hernias); - purulent-inflammatory diseases of newborns.

Group 3 consisted of 10 children - 16, 66% of whom had resuscitation aids (intubation, artificial ventilation, vascular catheterization, etc.); - surgical operations and interventions; - painful procedures (frequent examinations of medical staff, injections, punctures and catheterization of vessels, drainage of the pleural cavity, pericardium and joint bag, intubation and suction of the contents of the trachea, blood sampling from the finger, heel and vein, change of patch, bandages).

Pain reactions of newborns are divided into behavioral, physiological, neuroendocrine and metabolic.

Behavioral reactions in 18 newborns (30%) lack of communication skills, contact with the examiner - indifference and /or flinching, tremor of the limbs and chin when touching; - refusal to eat, regurgitation, vomiting; - screams, moans, more or less prolonged unemotional, irritated, monotonous cry, painful cry; - painful crying, painful grimaces - hypertonicity of the limbs and hands clenched into fists, spontaneous Moro reflex, opisthoid and hypotension of the limbs and lethargy; - lack of spontaneous motor activity or local immobilization. Metabolic reactions - in 24 newborns (40%), changes in the frequency and mechanics of breathing (usually tachycardia and tachypnea, but apnea attacks are also possible); - changes in the frequency and rhythm of heart contractions; - changes in the increase in blood pressure; - decrease in PO2 and increase in PCO2 in the blood; - decrease in blood and tissue saturation; - unstable body temperature; - tension of the large fontanel; - flatulence; - sweating palms; - pallor or spotting of the skin; - dilation of the pupils.

Neuroendocrine - in 18-30%, a change in the level of cortisol in plasma, urine and saliva and a decrease in the secretion of insulin and thyroid hormone; an increase in plasma renin activity; hyperglycemia; metabolic acidosis due to increased levels of lactate, pyruvate, ketone bodies; catabolic orientation of metabolism, negative nitrogen metabolism and lack of weight gain.

Having studied the endocrine - immune indicators of pain syndrome in newborns, depending on the severity of the clinical condition, we determined the features of behavioral reactions and changes in some indicators of homeostasis in newborns in response to pain due to traumatic childbirth.

Currently, there are several scales for determining pain, according to the behavioral reactions of a newborn. The COMFORT scale determines the following parameters: newborn activity, agitation, amount of breathing, physical activity, amount of heartbeat, blood pressure, muscle tone, facial expression. CRIES— Crying (crying), Requires Oxygen (the need for oxygen supply), Increased Vital Signs (increased vital signs), Expression (facial expression), Sleep (sleep); We conducted an assessment according to these scales after 30 minutes from the moment of birth, and for 24.48, 72 hours.

Conclusion: Thus, the pain perception system is formed in newborns. During painful procedures, early and long-term neurological consequences may occur. Currently, there is no single algorithm for the treatment and diagnosis of pain syndrome. Having assessed the pain using special COMFORT and CRIES scales, it will be possible to determine the conduct of nopharmacological or pharmacological



analgesia, as well as monitoring vital signs taking into account neuroendocrine features.

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