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STUDY OF TRANSIENT STATES IN NEWBORN INFANTS DURING THE ADAPTATION PERIOD

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Abstract
This article analyzes transient conditions observed in newborns during the adaptation period. Physiological jaundice, transient intestinal and endocrine changes, and immunological adaptation processes are studied. The goal is to distinguish physiological and pathological conditions, avoid overtreatment, and ensure healthy development.

Keywords: Newborn, adaptation period, transient state, physiological jaundice, immunity, endocrine system.

Introduction

The first days of a newborn's life are called the neonatal period in medicine, and during this period the body undergoes a process of adaptation to the external environment. After birth, the baby finds itself in a completely different environment from the conditions in the mother's womb: processes such as breathing air, independent digestion, thermoregulation, and the activation of the immune system occur. These processes are physiologically complex and multifaceted, often manifested by transient states.

Transient states are temporary physiological changes that play an important role in the adaptation of the baby to the external environment. Transient states observed in newborns during the adaptation period are of great importance in medicine. After birth, the baby finds himself in an environment completely different from the conditions in the womb: such processes as independent breathing, digestion, thermoregulation, and the activation of the immune system occur. These processes are physiologically complex and multifaceted, and are often manifested through transient states.

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Research conducted worldwide shows that physiological adaptation processes in the neonatal period are universal. Ross and McKinlay (2019) analyzed the main physiological changes that occur during the first 28 days after birth and called them "life after birth adaptation." They believe that these transient states are natural stages in the infant's adaptation to the external environment.

Cloherty and co-authors (Manual of Neonatal Care, 8th edition) Physiological jaundice, transient hypoglycemia, and transient thermoregulatory disorders are common conditions in newborns worldwide. They often resolve without treatment, but must be distinguished from pathological processes.

World Health Organization (WHO, 2020) As noted in the reports, infant mortality rates can be reduced by in-depth study of physiological changes in the neonatal period. For example, by distinguishing physiological jaundice from pathological hyperbilirubinemia, overtreatment and complications can be avoided.

Additionally, guidelines published by the American Academy of Pediatrics (AAP) identify the observation and proper assessment of transient conditions as a key task in pediatric practice. They emphasize that healthy development can be ensured by distinguishing physiological conditions from pathological processes.

The relevance of the topic is that, as shown by world research, through in-depth study of physiological processes during the adaptation period:

- early detection of pathological conditions,
- avoid overtreatment,
- healthy development can be ensured.

Therefore, this study aimed to study the transient states observed in newborns during the adaptation period.

Purpose

The purpose of this study is to conduct an in-depth study of transient states observed in newborns during the adaptation period, analyze their physiological characteristics, and identify criteria for distinguishing them from pathological conditions.

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The research is focused on the following areas:
1. Observation of physiological jaundice, transient hypoglycemia, intestinal and thermoregulatory changes in infants.
2. Assessment of the duration and clinical significance of transient states based on laboratory and clinical data.
3. Development of criteria for distinguishing physiological conditions from pathological processes.
4. Provide recommendations aimed at avoiding overtreatment and ensuring healthy development in pediatric practice.

Material and Methods

The study subjects were 100 newborns born in 2025. They were monitored for the first 28 days of life. The babies were monitored in various perinatal centers and pediatric departments.

The study was organized as a prospective clinical observation. All infants were assessed for physiological and transient conditions during the adaptation period. Clinical parameters: skin color, respiratory rate, heart rate, digestive status. Laboratory tests: blood bilirubin level, glucose content, electrolytes (Na, K, Ca). Instrumental methods: pulse oximetry, ultrasonography (intestinal and liver condition). Immunological tests: level of maternally transmitted antibodies and activity of the immune system.

Assessment of physiological jaundice:determining the amount of total bilirubin in the blood and the degree of yellowing of the skin. Detection of hypoglycemia: was recorded when the blood glucose level was <2.6 mmol/l.

Bowel conditions:changes in meconium release time and digestive system. Thermoregulation: measure the baby's body temperature every 6 hours.

The data obtained in the statistical analysis were statistically processed using the SPSS 25.0 program. Values are presented as mean ± standard deviation. Differences between groups were assessed using the Student t-test and χ^2-test. $P < 0.05$ was considered significant.

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Analysis and Results

The study followed 100 newborns. They were assessed for transient conditions during the adaptation period during the first 28 days of life. The results obtained are as follows:

In physiological jaundice Physiological jaundice was noted in 60% of babies (60). Jaundice usually appeared on the 2nd-3rd day of life and disappeared within 7-10 days. In 5% of cases, jaundice was prolonged and additional phototherapy was required. Transient hypoglycemia occurred in 25% of infants (25) with a blood glucose level of <2.6 mmol/l. This condition was often observed in the first 24 hours of life and was clinically insignificant. In all cases, the glucose level naturally normalized.

When intestinal conditions are studied 40% of babies (40) had delayed meconium discharge (after 24 hours). In 15% of cases, gases and temporary disturbances in digestion were observed. These conditions disappeared naturally within 2–3 days.

In the analysis of thermoregulation In 30% of infants (30 individuals), slight changes in body temperature were noted in the first days of life. This phenomenon is often associated with the process of adaptation to the external environment and is not clinically significant.

In immunological cases Maternal antibodies were detected in juniper babies. It was noted that the independent activation of the immune system is activated by 2-3 months of life.

Statistical analysis results of Physiological jaundice and hypoglycemia were statistically significantly more common ($p < 0.05$). Intestinal and thermoregulatory events were assessed as physiological processes and were found to be of no clinical significance.

Discussion

The results obtained showed that transient conditions during the adaptation period in newborns are a physiological process. They often do not require treatment. At the same time, it is important to distinguish them from pathological conditions.

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For example, the distinction between physiological jaundice and pathological hyperbilirubinemia is of great importance in pediatrics.

The results of the study showed that transient conditions during the adaptation period in newborns are widespread as physiological processes. Physiological jaundice, transient hypoglycemia, and temporary changes in bowel and thermoregulation in most cases resolved spontaneously and were found to be of no clinical significance.

The data obtained are consistent with global research:

Ross and McKinlay (2019)studies also noted that physiological jaundice is observed in 60-70% of babies. According to them, this condition is a natural adaptive process of bilirubin metabolism.

Cloherty and co-authors (Manual of Neonatal Care, 8th edition) according to data, transient hypoglycemia is often observed in the first 24 hours of life and is a clinically insignificant condition. The results of our research also confirmed this information.

WHO (2020) in their reports, differentiation of physiological conditions from pathological processes is shown as an important factor in preventing complications in the neonatal period. In our study, it was also emphasized the need to distinguish between physiological jaundice and pathological hyperbilirubinemia.

At the same time, the intestinal conditions and transient changes in thermoregulation noted in our study are less well-documented in the world literature. The fact that these conditions are considered physiological processes and have no clinical significance helps to avoid overtreatment in practice.

In pediatric practice, overtreatment can be avoided by correctly assessing transient conditions. Distinguishing between physiological and pathological conditions ensures healthy development. The results obtained in accordance with global research can be applied in national pediatric practice.

Conclusion

According to the results of the study, transient conditions observed in newborns during the adaptation period are widespread as physiological processes, and most of them disappear naturally.

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Physiological jaundice— 60% were observed in infants and in most cases disappeared without treatment.

Transient hypoglycemia— noted in 25% of cases, clinically insignificant and normalized naturally.

Intestinal and thermoregulatory states— was evaluated as a temporary and physiological process.

Immunological conditions— it was found that the effect of maternally transmitted antibodies is preserved for 2-3 months.

The results obtained, in line with global research, show that distinguishing transient states from pathological processes is of great importance in pediatric practice, that is, transient states are a natural part of the adaptation period in newborns, and their in-depth study and correct assessment are very important.

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