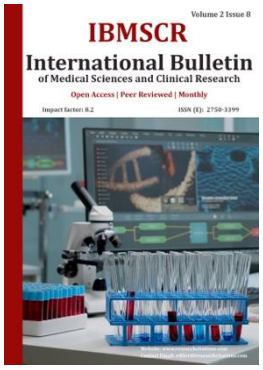

NEWBORN INFANT: CHARACTERISTICS OF THE NEONATAL PERIOD, TRANSITIONAL CONDITIONS, MATURITY, AND SIGNS OF PREMATURITY (ICD – NEWBORN)

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Abstract

The neonatal period represents a critical stage in human development, covering the first 28 days of life. During this time, the newborn undergoes rapid physiological adaptation from intrauterine to extrauterine life. This article discusses the characteristics of the neonatal period, common physiological (transitional) conditions, the concept of newborn maturity, and the clinical signs of prematurity according to international classifications. Understanding these aspects is essential for early diagnosis, appropriate management, and reduction of neonatal morbidity and mortality.

Keywords

Neonatal period, newborn, physiological adaptation, transitional states, prematurity, maturity, ICD classification.

Introduction

The neonatal period is defined as the first 28 completed days after birth. It is divided into the early neonatal period (first 7 days) and the late neonatal period (8–28 days). This stage is characterized by profound physiological, metabolic, and functional adaptations as the newborn transitions from placental support to independent life. Neonatal health plays a decisive role in overall child survival and long-term development. According to global health data, a significant proportion of under-five mortality occurs during the neonatal period, emphasizing the importance of timely and effective care.

Newborn assessment includes evaluation of gestational age, birth weight, physical maturity, and the presence of pathological or transitional conditions. Special attention is given to premature infants due to their increased vulnerability to complications.

Materials and Methods

This article is based on a review of contemporary pediatric and neonatology textbooks, international clinical guidelines, and World Health Organization (WHO) recommendations. Relevant ICD (International Classification of Diseases) criteria for newborn conditions were analyzed. The study synthesizes theoretical and clinical data regarding neonatal adaptation, physiological transitional states, maturity assessment, and signs of prematurity.

Results

1. Characteristics of the Neonatal Period

The neonatal period is marked by adaptation of all major organ systems. Respiratory adaptation begins with the first breath, leading to lung expansion and establishment of functional residual capacity. Circulatory changes include closure of the foramen ovale, ductus arteriosus, and ductus venosus. The cardiovascular system transitions from fetal to adult-type circulation.

Thermoregulation is immature, making newborns susceptible to hypothermia. Metabolic adjustments involve regulation of blood glucose levels, calcium balance, and bilirubin metabolism. The immune system is also immature, relying partially on maternal antibodies transferred through the placenta.

2. Physiological (Transitional) Conditions of the Neonatal Period

Several conditions observed in newborns are considered physiological and reflect adaptation rather than disease. These transitional states include:

- Physiological weight loss (up to 10% of birth weight in the first days);
- Physiological jaundice due to increased bilirubin production and immature liver function;
- Transient tachypnea of the newborn;
- Hormonal crisis (breast enlargement, vaginal discharge in girls);
- Erythema toxicum neonatorum (transient skin rash);
- Transitional stool changes from meconium to normal stool.

These conditions usually resolve spontaneously without specific treatment but require monitoring to distinguish them from pathological states.

3. Concept of Newborn Maturity

Newborn maturity refers to the degree of physical and functional development at birth, primarily determined by gestational age. A full-term infant is born between 37 and 42 completed weeks of gestation. Assessment of maturity includes evaluation of skin texture, lanugo hair, ear cartilage development, breast tissue, genital maturity, muscle tone, and reflex activity.

The Ballard scoring system is commonly used to estimate gestational age based on neuromuscular and physical criteria. Mature newborns typically weigh between 2500 and 4000 grams and demonstrate strong reflexes, good muscle tone, and stable physiological functions.

4. Signs of Prematurity (ICD – Newborn)

Prematurity is defined as birth before 37 completed weeks of gestation. According to ICD classification, prematurity is categorized based on gestational age and birth weight (e.g., extremely preterm, very preterm, moderate to late preterm).

Clinical signs of prematurity include:

- Low birth weight (less than 2500 grams);
- Thin, translucent skin with visible veins;
- Abundant lanugo;
- Soft ear cartilage;
- Hypotonia and weak reflexes;
- Underdeveloped genitalia;
- Immature respiratory function leading to respiratory distress.

Premature infants are at increased risk for complications such as respiratory distress syndrome, intraventricular hemorrhage, necrotizing enterocolitis, sepsis, and hypothermia. Early identification and specialized neonatal care significantly improve outcomes.

Conclusion

The neonatal period is a unique and vulnerable stage of life characterized by rapid physiological adaptation. Understanding normal transitional conditions helps healthcare professionals distinguish them from pathological states. Assessment of newborn maturity and recognition of prematurity signs are essential for proper clinical management. Comprehensive

neonatal care, guided by international standards and ICD classifications, contributes to reduced neonatal morbidity and mortality.

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