

# Clinical Manifestations of Gastrointestinal Tract Disorders in Children under 1 Year of Age with Perinatal Nervous System Damage

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**Abstract** Hypoxic damage to the brain of the fetus and newborn, caused by chronic intrauterine hypoxia and acute asphyxia during childbirth, and the development of effective methods for their correction are pressing problems in pediatrics and neurology.

**Keywords** Hypoxia, Asphyxia, Perinatal nervous system damage, CNS, Vegetative visceral syndrome

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## 1. Introduction

According to WHO experts, up to 65–80% of pathologies of the nervous system in children are associated with perinatal brain damage. In 35–40% of cases, diseases of the nervous system lead to disability and maladaptation of children [1,2].

The brain is extremely sensitive to a lack of oxygen, since a feature of its metabolism is intense oxidative metabolism, as a result of which the brain utilizes 20–25% of the oxygen received by the body [3-7]. The severity and duration of hypoxia determine a significant range of perinatal hypoxic-ischemic brain lesions: from minor dysgenesis to gross anomalies in the development of the central nervous system, leading, on the one hand, to severe neurological outcomes, and on the other, to functional disorders of psychomotor development. This explains the variety of clinical symptoms in the acute period, which do not always truly determine the degree and level of damage to the central nervous system, and the difficulties in determining the immediate and long-term prognosis for the course of the disease [12,17,25,8-13].

Today, there are a number of unresolved problems, including the clinical and pathogenetic aspects of perinatal hypoxic-ischemic damage to the central nervous system [7,9,18,14-16].

Among the risk factors for damage to the central nervous system at the antenatal stage of development, somatic pathology of the mother is of significant importance, and, against its background, fetoplacental insufficiency - a syndrome caused by clinical and morphological changes in

the placenta, manifested by intrauterine hypoxia, resulting from a combined reaction of the fetus and placenta to various conditions maternal body. Nutritional disorders that arise in this situation can have irreversible consequences for the fetus, especially in the early stages of intrauterine ontogenesis. The rapidly growing fetus is more sensitive to nutritional deficiency; The permanent effects of disordered eating include a decrease in total cell number, disruption of organ structure, and changes in hormonal ratios [17-20].

In other words, the impact of a combination of unfavorable factors can persistently and irreversibly influence the structure and characteristics of the functioning of the most important organs and systems of the fetus, which is the basis for clarifying, systematizing and determining the significance of individual risk factors for predicting and timely prevention of pathology of vital systems, including The special place is occupied by the central nervous system [14,21].

Disorders of the autonomic nervous system in children of the first year of life are manifested by vegetative visceral syndrome, which is characterized by lability of the cardiovascular and respiratory systems, thermoregulation disorders, gastrointestinal dysfunction with regurgitation, impaired intestinal motility, rumbling, constipation, flatulence [8,10,19,22-24].

One of its dangerous manifestations is regurgitation, which can lead to aspiration of gastric contents. When regurgitation occurs, an involuntary passive reflux of stomach contents into the esophagus and oral cavity occurs - gastroesophageal reflux. In the diet of such children, mixtures with thickeners are used, which reduce the frequency and severity of regurgitation. Over the past decade, two groups of thickeners have been used in infant formula: gums (indigestible carbohydrates) and starches [24].

The undoubted role of the immune system and disorders of the autonomic nervous system (impaired digestion and absorption processes, metabolism in tissues) in the pathogenesis of allergic (neuroimmunological) reactions has been proven [2,5,15].

In children with perinatal damage to the central nervous system, disorders of autonomic regulation are observed already in the first stages of digestion and breakdown of nutrients in the gastrointestinal tract. Insufficiency of the glands of the digestive system leads to incomplete breakdown of nutrients and the accumulation of antigenic substances. Food allergy, being the first sensitization in terms of development, has a huge impact on the formation and subsequent development of all allergic diseases in children. Most skin, respiratory and gastrointestinal manifestations of allergies are associated with it. The prevalence of food allergies in children varies, according to different authors, from 0.5% to 30% [1,25].

Features of somatic pathology, pronounced deviations in physical and neuropsychic development necessitate further research.

An analysis of the studied scientific and medical documentation and state registration materials showed that perinatal damage to the nervous system in recent years has become one of the key problems not only in neurology, but also in pediatrics. Many domestic and foreign experts recognize the leading role of the nervous system in the development of gastrointestinal disorders. At the same time, pathology of the central nervous system of hypoxic, traumatic or infectious origin is considered the most common risk factor for gastrointestinal disorders in newborns and infants.

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