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THE ROLE OF NUTRITIONAL SUPPORT FOR PREMATURE NEWBORNS – ANALYSIS OF VARIOUS FEEDING SCHEMES AND THEIR EFFECTIVENESS

Introduction. Premature newborns, especially children with extremely low body weight (<1500 g), require special attention in terms of nutritional support. According to the World Health Organization (WHO), about 15 million premature babies are born every year, which is 11% of all births in the world [1]. Nutritional deficiencies during this critical period can have a lasting impact on growth, development, and overall health. The main task of feeding premature infants is to ensure an adequate supply of energy and nutrients to maintain growth and development close to intrauterine rates [2]. This article discusses various feeding schemes for premature newborns, their features and effectiveness.

1. Physiological features of premature newborns

Premature babies have a number of physiological features that make it difficult to have a proper diet:

- Immaturity of the gastrointestinal tract, leading to problems with digestion and assimilation of food [3].
- High demand for energy and nutrients due to active growth and immaturity of organs.
- The risk of necrotizing enterocolitis (NEC), especially with the introduction of inappropriate nutrition [4].

These factors make the choice of a nutritional strategy especially important. Premature babies require more protein, energy and fats to compensate for the growth that was not received during the prenatal period [5].

2. Types of nutritional support

There are two main types of nutritional support for premature newborns:

- Parenteral nutrition – used in the first days of life or when adequate enteral nutrition is impossible. Parenteral nutrition ensures the supply of nutrients through the vein, which is necessary to ensure vital processes in deeply premature babies. However, prolonged parenteral nutrition is associated with the risk of infections and liver failure [6].
- Enteral nutrition – involves the introduction of food through the gastrointestinal tract. This is the preferred method, as it promotes intestinal development and reduces the risk of infections [7].

3. Enteral nutrition: schemes and approaches

Enteral nutrition is divided into several types depending on the method of administration and the type of milk:

- Minimum enteral nutrition (MEP): This is a strategy of introducing a small amount of milk, usually about 10-20 ml/kg/day, to stimulate intestinal maturation and prevent the development of atrophy [8].
- Breast milk: Breast milk is considered the optimal nutrition for premature babies. It contains not only essential nutrients, but also immune factors that help protect against infections. However, the mother's milk of a premature baby may not always contain sufficient protein and energy, which requires the addition of special fortifiers [9].
- Fortified breast milk: Fortifiers are added to breast milk to increase the content of protein, calcium, phosphorus and other trace elements, which allows for optimal growth and development [10].
- Specialized mixtures: In case of absence or insufficient amount of breast milk, specialized mixtures for premature babies are used. They are enriched with proteins, fats, carbohydrates, vitamins and minerals. The use of such mixtures has shown good results in ensuring growth and reducing the risk of complications [11].

4. Efficiency of various nutrition schemes

- Breast milk and its fortification: Studies show that children receiving breast milk with the addition of fortifiers have better growth rates and are less likely to face complications such as necrotizing enterocolitis and late sepsis [12]. The immune properties of breast milk also contribute to reducing the incidence of infectious diseases [13].
- Specialized mixtures: Studies show that mixtures for premature infants are effective for maintaining normal growth and development, however, breast milk with fortifiers remains the preferred option because it better supports the development of the immune system and reduces the risk of infections [14].
- Minimal enteral nutrition: MEP has shown its effectiveness in preventing intestinal atrophy and preparing the child for full enteral nutrition. It reduces the risk of NEC development, especially in deeply premature newborns [15].

5. Problems and prospects of nutritional support

Despite the successes in the field of nutritional support for premature babies, there are still issues that require further study. Among them are the optimal time to start enteral feeding, the duration of breast milk fortification and the role of probiotics in the prevention of NEC [16].

Modern research is also aimed at developing new types of fortifiers that will take into account the individual needs of each child, as well as improving parenteral nutrition technologies to reduce the risks of infections and other complications [17].

Conclusion

Nutritional support for premature newborns is an important aspect of neonatal care. Adequate nutrition helps to support growth, development and reduce the risks of complications such as necrotizing enterocolitis and infections. Breast milk fortified with specialized supplements remains the gold standard for premature babies. However, specialized mixtures and parenteral nutrition also play an important role, especially when enteral feeding is not possible. Prospects for further research include the development of more individualized approaches to nutritional support and improvement of existing nutrition methods.

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