

Recommendations for infant feeding 2011

Summary

Introducing non-milk portions (rather than formula) before six months does not significantly increase the risk of infections. Conversely, exclusive breastfeeding for the first six months can increase the risk of food allergies, anemia and celiac disease .

Introduction

It is generally accepted that infant nutrition has a high potential for long-term health effects ^[1]. The following can currently be stated as claims supported by publications that meet the requirements of evidence-based medicine:

1. In terms of dairy nutrition:

- Infants breastfed until 6 months gain weight and grow more slowly, especially in the second half of the first year of life, than formula-fed infants (^[2], ^[3]).
- Compared to formula-fed, breast-fed infants are slimmer during childhood and adolescence ^[4].
- Breastfed infants have a significantly higher level of cognitive function at the age of 6-23 months, and the differences compared to artificially fed infants are still stable ^[5].
- Postnatal diet significantly affects LCPUFA levels, formula-fed premature babies have lower levels at the expected birth date ^[6], ^[7].
- No overall effect of breastfeeding on the risk of atopic dermatitis was found. The effect in the 4th month and beyond depends on the family allergic history (^[8]).
- The preventive effect of some hydrolyzed formulas administered in the first six months of life on allergic morbidity and atopic dermatitis up to six years of age has been confirmed ^[9].
- The longer the exclusive breastfeeding in children with a higher risk of allergy, the higher the risk of eczema ^[10].
- Infants with eosinophilic colitis receive breast milk with cytokines that increase the immunoregulatory imbalance (^[11]).
- The incidence of obesity and overweight at the age of six is lower the longer the child has been breastfed ^[12].
- A meta-analysis of 33 studies does not confirm the effect of breastfeeding on the incidence of obesity in adulthood; the protective effect of breastfeeding in relation to the development of type 2 diabetes was confirmed (^[13]).
- The consequences of fetal growth restriction may develop only after the postnatal catch-up period ^[14].
- Breastfeeding is associated with lower blood pressure at age 7.5 years. A reduction in systolic pressure of 0.2 mm Hg for every three months of breastfeeding ^[15].
- Breastfeeding is inversely associated with high blood pressure (^[16]).
- Adolescents who have been breastfed have a lower LDL/HDL ratio ^[17].

2. In terms of non-dairy portions - complementary nutrition (CF)

- The introduction of KV before the 15th week significantly increases the weight and amount of adipose tissue ^[18].
- The fat content of infant nutrition should not fall below 25% of energy intake ^[19].
- Meat intake is positively and significantly associated with psychomotor development ^[20].
- Extremely restrictive diets (vegan, macrobiotic) can be associated with protein-calorie malnutrition and impairment of psychomotor development. Such diets cannot be recommended in the KV period ^[21].
- Those exposed to KV before 4 months have a 2.9× higher risk of atopic dermatitis than those not exposed to a solid diet ^[22].
- There is no evidence that delaying any foods past 4-6 months of life reduced the incidence of allergic diseases ^[23].
- Introduction of eggs later than at 4-6. months increases the risk of egg allergy ^[24].
- Certainly early (0-3 months) and probably late (> 6 months) introduction of wheat into the diet increases the risk of developing wheat protein allergy ^[25].
- Early (0-3 months) and possibly late (> 6 months) introduction of gluten into the diet seems to increase the risk of type 1 diabetes in genetically predisposed children ^[26].
- When exposed to gluten in the first 3 months and after the 6th month, the incidence of celiac disease is significantly higher than in children exposed to gluten in the 4th-6th months. months ^[27].
- The gradual introduction of gluten in a child who is still breastfed reduces the risk of celiac disease in early childhood and probably later ^[28].
- The results suggest that sodium intake in infancy may be important for blood pressure levels later in life ^[29].

Existing recommendations

There are currently two recommendations for infant nutrition:

1. The WHO recommendation from 2001, which states that optimal nutrition in the first half of the year is exclusive breastfeeding (28). This recommendation was supported by an extensive follow-up and review study ([30]).
 - The conclusions can be summarized as follows: Exclusive breastfeeding until the 6th month vs. breastfeeding until the 3rd-4th month. months:
 - No growth deficit was noted during full breastfeeding until the 6th month.
 - There were no differences in the incidence of allergies.
 - In a study from Honduras, a statistically significantly lower level of hemoglobin and ferritin was found in breastfed infants up to the 6th month.
 - Statistically significantly lower incidence of gastroenteritis during breastfeeding ([31]).
 - Studies related to breastfeeding duration that were published after 2001:
 - Children breastfed for more than six months had pneumonia and recurrent otitis media less often than children breastfed until 4-6 months. months ([32]).
 - full breastfeeding ([33]).
 - A higher incidence of gastroenteritis has been demonstrated in children breastfed for less than 4 months compared to those breastfed for 6 months ([34]).
 - Formula feeding, not the introduction of CV, increases the likelihood of hospitalization ([35]).
2. ESPGHAN (European Society for Pediatric Gastroenterology) recommendations for the introduction of complementary nutrition (non-dairy portions) in the ([36], [37]). These recommendations are based on publications showing that delaying exposure and restricting the introduction of potential allergens and gluten leads to a higher incidence of food allergies and celiac disease in developed countries, gluten is also considered as a trigger of type 1 diabetes ([38], [39], [40], [41], [42], [43], [44], [45], [46]). The development of immune tolerance requires repeated exposure to antigens in a critical period, the lower limit of which is the 17th and the upper limit is the 26th week of life. An important modulatory factor appears to be the simultaneous feeding with breast milk ([47]). Works have been published that identify iron deficiency or anemia in fully breastfed children of 6 months ([48], [49], [50], [51]). One of the main arguments for the WHO recommendation, i.e. exclusive breastfeeding until the end of the 6th month, is the lower incidence of infections. compared to the administration of formulas in developed countries with good hygiene standards ([52]).

Recommendations for infant nutrition in developed countries should currently accept the reality of the increasing incidence of allergic and autoimmune diseases, the possible occurrence of iron deficiency in fully breastfed infants, and the fact that the earlier introduction of non-dairy portions, but not before the 4th month, does not significantly increase the risk of infections. In addition, the administration of non-milk portions (with a spoon) to children whose mother's lactation is not sufficient does not lead to competition between the administration of breast milk and feeding with a pacifier during post-feeding with substitute milk formula ([53]).

Conclusion

In practice, the following situations can occur in infant nutrition:

1. A fully breastfed, thriving baby will receive KV at 26 weeks.
2. A breastfed child, in a situation where lactation is decreasing, will receive KV individually according to its weight development in the period from the 17th week of age.
3. Insufficient lactation is the reason for the introduction of a substitute milk diet already in the first three months of life. Non-milk portions are introduced according to the child's progress in the period between 17-26. week of life (including lean meat as an optimal source of iron).
4. KV also includes the introduction of gluten. According to current knowledge, postponing its introduction does not have a protective effect against the development of celiac disease. On the contrary, for the reasons mentioned above, it is advisable to give gluten in a situation where the child is still breastfed.
5. From the point of view of allergy prevention, the following opinions can currently be accepted ([54]):
 - For all infants:
 - exclusive breastfeeding for at least 4 months with continued breastfeeding up to six months
 - complete elimination of exposure to tobacco smoke before and after birth
 - introduction of KV between 4.-6. month of age
 - For at-risk infants (positive family history of allergy):
 - breastfed babies hydrolyzed formula up to 4 months
 - partially hydrolyzed are preferred over extensively hydrolyzed
 - parents should be aware of the limited effect of these measures - all allergic manifestations have a genetic basis
6. These recommendations do not in any way question the importance of breastfeeding, there is no reason why the infant should not receive milk portions in the form of breastfeeding - if possible - even after the first six months of age.

Links

Related articles

- Child nutrition : Newborn nutrition • Breastfeeding • Infant formula • Infant non-dairy diet • Toddler nutrition • Pre-school, school-age and youth nutrition • Recommendations for infant nutrition 2011 • Recommended

- nutrient intake (pediatrics)
- Nutritional recommendations : Nutritional recommendations (1. LF UK, NT) • Nutritional recommendations for the adult population • Nutrition of pregnant and lactating women • Nutrition in old age • Factors affecting nutritional needs
- Special nutrition
- Food composition: Carbohydrates in food • Proteins in food • Fats in food • Mineral substances in food • Trace elements in food • Vitamins • Microorganisms in food • Foreign substances in food
- Failure to thrive • Eating disorders • Nutrient excess or deficiency disease • Food allergy • Food intolerance • Cow's milk protein allergy

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