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CHANGES IN THE INTESTINAL MICROFLORA IN THE BABY AND THE WAYS OF THEIR CORRECTION

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Abstract:

Purpose: to study the effect of probiotics on the intestinal microbiocenosis of young children who are naturally and artificially fed.

Materials and methods: 70 children under natural and artificial feeding, under the age of 1 year, were selected from the 37th family polyclinic of the Chilanzar district of Tashkent. Their feces were examined in the bacteriological laboratory of the SEO and OZTsChilanzar district of Tashkent and sensitivity to antibiotics was determined by the disk-diffusion method.

Analysis and discussion of the results. 43% of babies were girls and 57% boys. Breast-fed children account for 73%, and formula-fed children account for 27%. The norm is 83.5% in 51 breastfed children, 12.8% with monoinfection, 3.7% with mixed, 35.3% with monoinfection. In 19 children on artificial feeding, mixed infection was detected 64.7% more often.

Conclusions. After testing for dysbacteriosis, young children with altered normal microflora and identified pathogenic bacteria consumed probiotics for two weeks to several months. Re-examination showed positive results in sick infants. The effectiveness of such probiotics as Normoflorin-L, Bifolak active, Bifidobacterin has been shown.

Keywords: natural and artificial nutrition of young children, normal intestinal microflora, dysbacteriosis, probiotics.

RELEVANCE. Over millions of years of evolution, breast milk has become the ideal food for babies. Breast milk is not only a source of nutrition, but also contains a diverse microbiota and many biologically active components that contribute to the development of the infant's mucosal immune system (1). It is believed that with the action, the intestinal bacteria of the mother can act in breast milk and a healthy baby is born. This interaction between mother and child is necessary to create a healthy primary gut microbiome. These gut bacterias protect against many respiratory diseases and diarrhea, but are also sensitive to environmental influences such as antibiotics [2,3]. Microbiota development is controlled by maternal milk polysaccharides, synthesis determined in part by maternal genotype. Protecting mother's milk, starting in the respiratory tract and stomach, is associated with a reduced risk of intestinal infections and inflammatory diseases such as asthma, atopy, diabetes, obesity, and inflammatory bowel disease. Long-term and exclusive breastfeeding improves cognitive development. In breast milk, the baby begins to receive immunity from the mother, preventing infection in the womb and provides favorable conditions for the development of the intestine, intestinal mucosa, microflora and its own immunological defense [4]. Breast milk is not only a passive defense that adapts with the help of various microbes and intestinal colonization factors. The microflora begins immediately after birth and depends on many exogenous and endogenous factors, one of which is natural nutrition, but also the direct immune system, which allows modulating the child's immunological development [5].

Numerous immune, cellular and nutritional bifidogenic factors present in breast milk create the most favorable conditions for colonization through the physiological microflora of the colon, determine the optimal adaptation of the child's body to digestion and breastfeeding. In newborns and infants in the first months of life, intestinal colonization by obligate flora does not occur as quickly and intensively as with artificial feeding, even when using modern breast milk substitutes that are as close as possible to breast milk.

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When artificially fed with cow's milk, the microbial landscape of the intestine worsens significantly and the body's resistance to infections decreases [8]. If the quantitative and qualitative ratio of the intestinal microflora is violated, it cannot fully perform specific physiological functions, and dysbiotic disorders, as is known, are accompanied not only by local ones, but also by general ones.

With prolonged intestinal dysbiosis, systemic disorders in this area may occur. They cause increased bacterial sensitivity and food allergies, atopic dermatitis, and also contribute to the development of anemia, hypovitaminosis and other trophic diseases. In this regard, the use in the prevention and treatment of products with pre- and probiotic properties in the diet of infants deprived of breast milk is of great importance [6,7]. Numerous studies testify to the high effectiveness of such products in various diseases of the digestive system, usually accompanied by intestinal food allergies. Modern research shows that the use of pre- and probiotics, as well as probiotic products in healthy children, improves the activity of the intestinal epithelium, increases local immunity, thereby increasing the child's resistance to infections and other adverse environmental factors.

PURPOSE OF THE STUDY: to study the state of the intestinal microbiocenosis of infants who are breastfed and artificially fed.

MATERIALS AND RESEARCH METHODS: From the family polyclinic No. 37 of the Chilanzar district of Tashkent, 70 breastfed and formula-fed infants under the age of 1 year were selected and their feces were examined in the bacteriological laboratory of the CEO and CSO of the Chilanzar district of Tashkent. Patient samples were plated on Endo, Blood Agar, Sabouraud, Bismuth-Sulfite Agar, Yolk Salt, Mueller Hilton, Aesculin, Bifidobacteria, and Lactobacillus Agar media, and we examined daily microbial colonies of the agar media. We evaluated the cultured bacterial colonies according to their cultural, tinctorial, morphological characteristics to determine their pure culture. To determine the sensitivity of the isolated colonies to antibiotics, the disk-diffusion method of seeding on neutral agar was used.

ANALYSIS AND DISCUSSION OF RESULTS. In March 2021, during a bacteriological study of faeces of 70 children under natural and artificial feeding under the age of 1 year who applied to the family clinic No. 37 of the Chilanzar district of Tashkent, the following results were obtained. Of the infants, 30 (43%) were girls and 40 (57%) were boys (Table 1).

Table 1
Family polyclinic No. 37 of Chilanzar district of Tashkent city Distribution of children by age and sex (Absolute,%)

Age groups	total (monthly)	men		nen	
		abs	%	Abs	%
0-6	29	15	21	14	20
6-12	41	25	36	16	23
Total:	70	40	57	30	43

Of these, 73% of infants receive natural nutrition and 27% of infants receive artificial (NAN, Nestogen and NuppiGold) (Figure -1). In this chart, we have divided babies under six months of age into two types based on how they are fed: natural and artificial.

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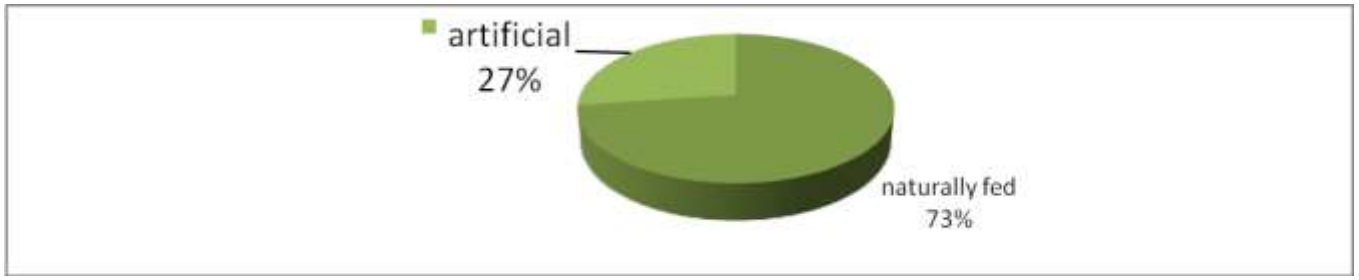

Diagram 1. Distribution of infants (1-6 months) by type of nutrition.

Naturally fed infants accounted for 73% and artificially fed infants at 27%. This shows that more than 70% of children under six months of age are directly breastfed. This is 3 times more than formula-fed babies.

Table 2
Comparative analysis of bacteria isolated from the feces of breastfed and formula-fed infants, CFU/ml 1g (M±m)

№	Isolated microorganisms	eat naturally cfu/ml 1g	artificial nutrition CFU/ml 1g
1	*Staphylococcus aureus*	4,47 ± 0,23	5,02± 0,17*
2	*KlebsiellaPneumoniae*	0	5, 91 ± 0,09**
3	*Klebsiella spp.*	0	4,74 ± 0,18**
4	*Pseudomonas mirabilis*	0	6,33 ± 1,14**
5	*Escherichia coli lak(-)*	6,06 ± 0,18	6,03 ± 0,19
6	*Pseudomoas aeruginosa*	0	4,73± 0,11**
7	*Enterobacter spp.*	0	4,15± 0,17 **
8	*Proteus vulgaris*	0	4,05± 0,45 **

Note:* -; ** - convincing differentiation in relation to the 1st group (R<0.05, R<0.001).

As a result of our study (Table 2), it was found that pathogenic and opportunistic bacteria were detected in formula-fed infants to a greater extent than in breast-fed infants. This indicates a convincing increase in the quantitative indicators of bacteria compared with the 1st group. In the first group, this indicator was 4.47±0.23 CFU/ml 1g, and in the second group it was 5.02±0.17 CFU/ml 1g.

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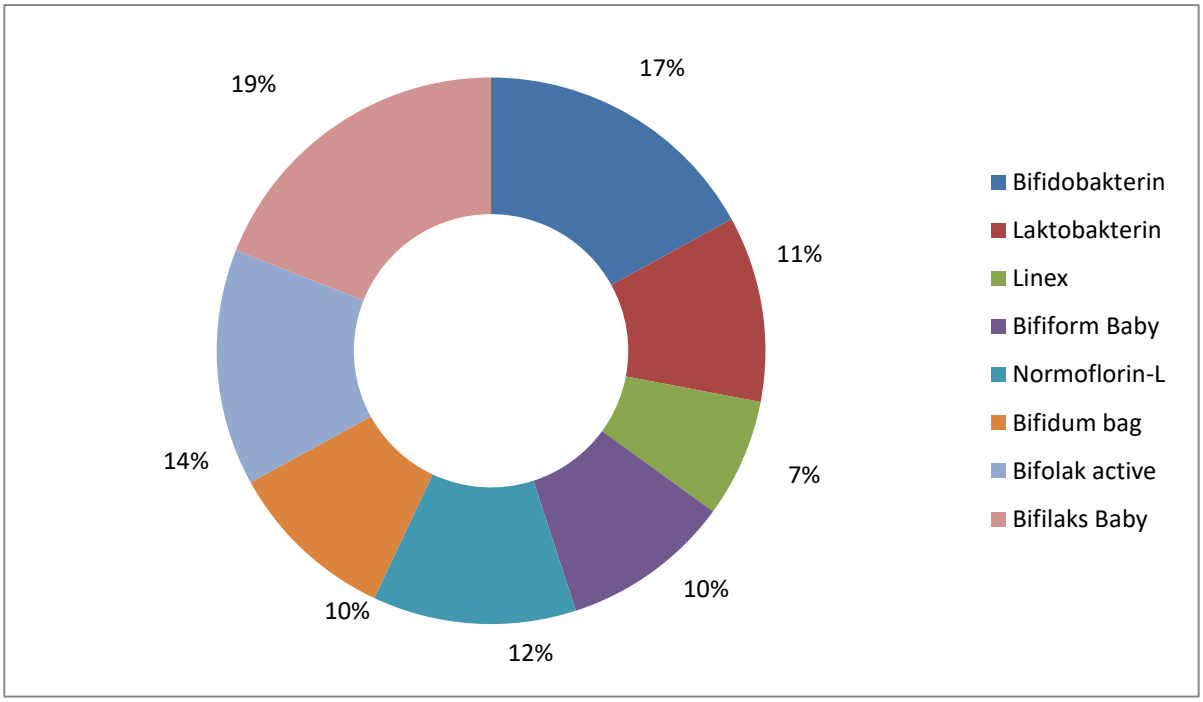

Chart 2 Recommended Probiotics

In our study, we also found that (diagram 2), all children use different artificial foods. Out of 70 babies, 1 eats Belakt, 2-Human, 10-Nestlé, 11-Nutrilak, 13-Nuppy Gold, 14-Nestogen and 15-NAN. The most commonly used formulas for artificial feeding are NAN, Nestogen and NuppyGold

Table 3
The state of the intestinal microflora of the baby after taking probiotics

№	Isolated microorganisms	Up to 1 year	I degree n=16(42)	I I degree n=28(8)	III degree n=26(4)
1	*Bifidobacterium*	$10^{10}10^{11}$	9,89±1,52	8,75±2,35	7,85±2,44
2	*Lactobacillus*	$10^{6}10^{7}$	6,35±0,78	5,41±1,08	5,25±2,18
3	*Enterococcus*	$10^{5}10^{7}$	6,23±1,54	5,47±1,22	5,32±1,04
4	*Escherichia coli (lac+)*	$10^{7}10^{8}$	7,57±0,64	6,46±1,35	5,44±2,13
5	*Escherichia coli (lac-)*	10^{5}	5,42±0,55	6,58±1,33	6,03 ± 0,19
6	*St.aureus*	0	0	5,02± 0,17*	0
7	*KlebsiellaPneumoniae*	0	0	4,72±1,43	5,91±0,09**
8	*Klebsiella spp.*	0	0	4,74 ±0,18**	0
9	*Pseudomonas mirabilis*	0	0	0	6,33±1,14**
10	*Pseudomoas aeruginosa*	0	0	4,73±0,11**	0
11	*Proteus vulgaris*	0	0	0	0
13	Candida	10^{3}	0	3.26±2.07	0

Note:* -; ** - relative to the 1st group (R<0.05, R<0.001)

After examination for dysbacteriosis, in infants with normal microflora and a detected pathogenic bacterium, the probiotic, according to our indication and on the recommendation of a doctor, was used by

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infants from two weeks to several months. Re-examination showed that positive results were achieved in sick infants. In particular, the pathogenic bacterium St. aureus growth on culture media was highly defined. After the treatment procedure, the body was free from pathogenic bacteria. The number of bifidobacteria, lactobacilli, enterococci, clostridia, candida and other bacteria returned to normal. The first place was taken by the I degree of dysbacteriosis. Clinical signs in infants abdominal pain, diarrhea, constipation, loss of appetite and other symptoms decreased, and the infants slept soundly.

CONCLUSION

1. Dysbacteriosis of the microflora of infants of I degree was observed in 16 infants (22.9%), II degree - in 28 infants (40%), III degree - in 26 (37.1%).
2. In 28 infants who were diagnosed with dysbacteriosis, there was a monoinfection (40%), and in 26 infants (37%) various microbes were associated. In the remaining 16 (23%) infants, pathogenic microbes were not detected.
3. After taking probiotics, the microflora returned to normal. I degree was 45 people (64.2%), II degree - 15 people (21.4%), III degree - 26 people (14.4%). Probiotics such as Normoflorin-l, Bifolac active, Bifidobacterin are the most effective, and we can recommend giving them to children with dysbiotic complaints.

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