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Changes in Baby Bowel Microbiota Depending on the Types of Natural and Artificial Nutrition

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ABSTRACT

The intestinal microbiota of infants is a complex ecosystem composed of many strains, species, and generations of bacteria. This large cell mass performs many unique functions. Its main functions include nutrition, metabolic, immunological and protective functions. Therefore, feeding infants with breast milk or artificial foods is important for the formation of the intestinal microflora and the prevention of various dysbiotic conditions and infectious diseases. **The purpose of the study:** to study the state of microbiocenosis in infants fed naturally and artificially. **Material and methods of examination:** feces were examined by bacteriological method and antibiotic susceptibility by disc-diffusion method. **Results:** 57% of infants were boys: 21% of them were 0-6 months old and 36% were 6-12 months old. Girls accounted for 43%, of which 14% were infants aged 0-6 months and 20% were infants aged 6-12 months. **Conclusions:** 73% of naturally fed infants and 27% of artificially fed infants. The norm is 83.5% in 51 breastfed infants, 12.8% in monoinfection, 3.7% in mixed infection, and 35.3% in 19 artificially fed infants mixinfection was detected at 64.7% higher rates.

KEYWORDS: natural and artificial nutrition of infants, normal intestinal microflora, dysbacteriosis

Actuality: The state of the normal intestinal microflora is constantly influenced by endogenous and exogenous factors. Exogenous factors include climatogeographic, ecological, occupational and other conditions. Endogenous factors include somatic diseases, diseases caused by conditionally pathogenic bacteria in different biotopes of the body, congenital immune deficiencies, etc. includes (5). The human microflora is a complex of many species of microorganisms, 100 times more numerous than human cells. Food, maternal lifestyle, and intake of antimicrobial drugs during pregnancy play a major role in the formation of microbiocenosis. If the first source of colonization at birth is the baby's gastrointestinal tract, the natural state is one of the main factors influencing the formation of microbiota. Breast milk contains vitamins, minerals, and essential components such as nucleotides and DNA. This is not present in any artificial food (1,2). During artificial feeding, the baby usually develops an unusual

"bifidoflora" over a period of time with other anaerobes in addition to bifidobacteria and facultative anaerobic bacteria. It has been suggested that there should be at least 1×10^9 colony-forming units (living microorganisms) to improve the condition of the gastrointestinal tract and to form intestinal colonization (3). The nature of the diet in the postpartum period plays an important role in the process of colonization of the baby's intestines. Breastfeeding a newborn is in many ways a crucial factor in the formation of intestinal microbes. Bifidobacterium spp. rich flora is formed. Other obligate anaerobes, such as Clostridium spp. and Bacteroides spp., are less isolated, while enterobacteria and enterococci are more isolated (4,6,8). Bacteroides spp. In newborns. the higher the amount, the slower the growth of other microbes. Disruption of the normal intestinal microflora occurs before the onset of clinical disease and causes discomfort to the baby (7,9,10). In view of the above,

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the study of the intestinal microbiocenosis of natural and artificially fed infants in the climatographic conditions of Uzbekistan remains an urgent problem.

Purpose of work: Study of the state of intestinal microbiocenosis in natural and artificially fed infants in the climatic conditions of Uzbekistan

Inspection material and methods

70 natural and artificially fed infants under 1 year of age from the 37th family polyclinic of Chilanzor district of Tashkent city were selected and their feces were checked in the SEO and bacteriological laboratory of Chilanzar district of Tashkent city. Samples of patients were transplanted into Endo, Bloody agar, Saburo, VSA, JSA, Müller hilton, Sugar broths, and if we saw diurnal microbial colonies of

the media, we evaluated the cultured, tinctorial, morphological features of the grown colony bacteria to determine the pure culture (Bacteriologicheskaya Diagnosis of dysbacteriosis of the intestine, Methodical instructions.R.Kazakhstan ot12.09.2003g.№60).

Results

In March 2021, the following results were obtained during bacteriological examination of feces of 70 natural and artificially fed infants under 1 year of age who applied to the 37th family clinic of Chilanzar district of Tashkent. Of the infants, 30 (43%) were girls and 40 (57%) were boys (Table 1). Of these, 73% are infants fed naturally and 27% are artificially fed (nestogen, nan, nuppi gold).

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

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

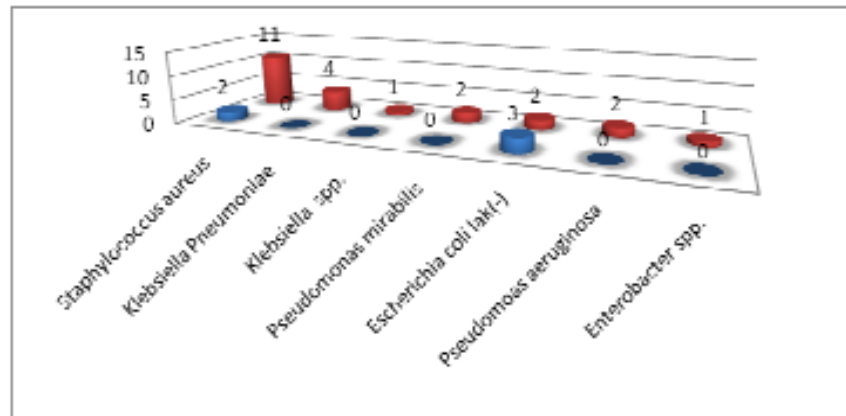
During the study, we divided infants under six months of age into two types, depending on the type of feeding: natural feeding and artificial feeding. Naturally fed infants accounted for 73% and artificially fed infants for 27%. This shows that more than 70% of babies under six months of age are breastfed directly. That's three times more than artificially fed babies. We have mentioned that babies from 1 month to 6 months are fed only naturally. This is because we have seen some breastfeeding mothers add extra nutrients when they find out that the baby is not getting enough after the baby is 4 months old. As a result, 31 of the 51 infants consumed complementary foods along with breast milk and 20 with breast milk.

Table 2 List of dysbiotic complaints in infants

№	Complaints	%
1	Pain in the abdomen	85,2
2	Abdominal relaxation	68,8
3	Make a note	25,4
4	Diarrhea	15,3
5	Constipation	45,7
6	Loss of appetite	25,6
7	Insomnia	50,9
8	Crying often for no reason	65,6
9	Refusal to breastfeed	46,4
10	Skin rash	12,4
11	Mucous, odorous stools when used	35,9
12	Weight loss	10,2

As can be seen from Table 2 above, the infants sought medical attention with varying degrees of complaints. Of these, abdominal pain was observed in almost 3/2 of infants, abdominal rest 68.8%, note 25.4%, diarrhea 15.3%, constipation 45.7% , Mucous, odorous feces when used, 35.9%, frequent crying for no reason 65.6%. Almost all infants had abdominal pain. Some babies lose weight as a result of prolonged diarrhea.

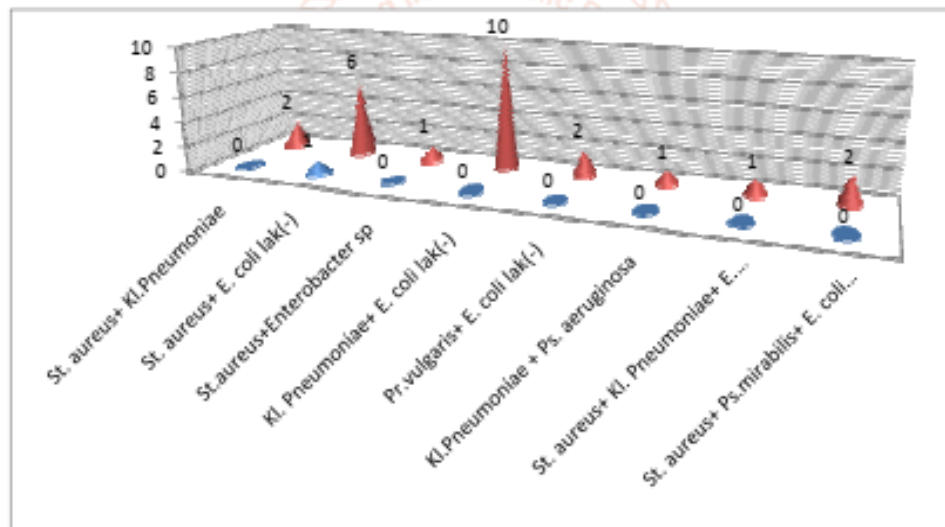
When feces of infants were examined for intestinal dysbacteriosis, it was found that they were infected with varying degrees of conditionally-pathogenic and pathogenic microorganisms. Of the infants with dysbiotic lesions, 28 had monoinfection (40%) and 26 infants (37%) had a variety of microbial associations. In the remaining 16 (23%) infants, no pathogenic microbes were detected and no abnormalities of conditionally pathogenic microbes were observed.



Blue- naturally fed
Red- artificially fed

Diagram 1. Representatives of monoinfections detected in infants (comparative analysis of infants fed naturally and artificially, n = 28)

As shown in diagram 1, monoinfection detected in the infant dysbacteriosis test, i.e. Staphylococcus aureus, was detected in 13 as well as in 2 of the naturally fed infant and in the remaining 11 in the artificially fed infant. Escherichia coli lak (-) 5 cases, Klebsiella pneumoniae 4 cases, Pseudomonas mirabilis 2 cases, were detected in artificially fed infants. Staphylococcus aureus is the most commonly detected strain of other microorganisms.



Blue- naturally fed
Red- artificially fed

Diagram 2. Representatives of myxin infections in infants (comparative analysis in infants fed naturally and artificially n = 28)

As can be seen from diagram 2 Staphylococcus aureus + Escherichia coli varnish (-) in 7 individuals; in 6 artificially fed infants and in 1 naturally fed infant. Staphylococcus aureus + Klebsiella pneumoniae 2 people; observed in artificially fed infants but not detected in naturally fed infants. Klebsiella pneumoniae + Escherichia coli lak (-) 10 people, Proteus vulgaris + Escherichia coli lak (-) 2 people; Staphylococcus aureus + Pseudomonas mirabilis + Escherichia coli lak (-) 2 people; detected in formula-fed infants. The highest rate is 45.71% for

pathogenic airborne infections such as Staphylococcus aureus and Klebsiella pneumoniae.

On bacteriological examination, we assessed the intestinal microflora of infants with grade 3 dysbacteriosis. As a result, grade I dysbacteriosis was 16 (22.9%), grade II dysbacteriosis was 28 (40%), and grade III dysbacteriosis was 26 (37.1%). Interestingly, grade I dysbacteriosis was detected mainly in breastfed infants, while grade II and III dysbacteriosis was detected in infants consuming artificial feed.

Discussion

Bacteriological examination of the intestinal microflora of children in Tashkent was conducted abroad, for example, the intestinal microflora of 1390 children living in different stages of the first year of life in the city of Rostov region and neighboring districts of Krasnodar region. Examination of children was carried out for 3 years, taking into account the nutritional characteristics of the child. Children with various pathologies, pregnancy pathologies, children born with hypoxia and included in the general group with appropriate treatment were selected. 23.5% of children were deprived of breast milk from the first days after birth and received artificial feeding with various nutrient mixtures. All children were divided into 4 age groups. Intestinal microflora in different cases of the first year of life of the child in most cases ($85.4 \pm 1\%$), grade II and III microbiological diseases were recorded. In the intestines of most children, the most important representatives of the obligate flora - bifidoflora - are found to be abnormal. In the 1-year-old group of infants, bifidobacteria (BB) decreased by $73.6 \pm 2.6\%$ in the amount of $<106-107$ IUF/g, and BB fed with artificial nutrient mixtures also decreased by $63.3 \pm 4.5\%$.

In our study, 73% of naturally fed infants and 27% of artificially fed infants. This shows that more than 70% of babies under six months of age are breastfed directly. That's three times more than artificially fed babies. Of the infants under 12 months of age, 49% were natural-mixed infants and 51% were artificially fed infants. From the age of 6 months, infants gradually began to switch to a mixed diet. As a result, both natural and artificially fed babies are equal in number. In fact, the proportion of people who only artificially feed their children was 25: 1 or 30: 2. This is due to various pathological diseases of the mother, naturally, lack of breast milk, and others. Bifidobacteria were observed to decrease in grade I by 17%, grade II by 46%, grade III by 37%, and lactobacilli by grade 40%, grade II by 28%, and grade III by 32%. According to foreign data, 85% of infants were diagnosed with grade II and III dysbacteriosis, while our results showed that grade II and III dysbacteriosis was observed in 60-77% of infants. This proves that the artificial or natural feeding of infants is directly related to the formation of normal intestinal microbiota.

Conclusion

1. 57% of infants with dysbiotic complaints are boys: 21% of them are 0-6 months old and 36% are 6-12 months old; girls accounted for 43%: 14% of them were infants aged 0-6 months and 20% were infants aged 6-12 months.

2. Dysbacteriosis in the intestinal microflora of infants. Of these, grade I dysbacteriosis was 22.9%, grade II was 40%, and grade III was 37.1%. Grade I dysbacteriosis was detected mainly in breastfed infants, while grade II and III dysbacteriosis was detected in infants consuming artificially different feed grains.
3. In 28 infants diagnosed with dysbacteriosis, monoinfection was detected (40%), and in 26 infants (37%), various microbial associations were identified. No pathogenic microbes were detected in the remaining 16 (23%) infants. Staphylococcus aureus in monoinfections (40%) and the highest rate in mixed infections was 45.71% for pathogenic microorganisms such as Staphylococcus aureus and Klebsiella pneumoniae.

Adabiyotlar ro'yxati:

- [1] Алексанина Н.В., Твердохлебова Т.И. Динамика параметров микробиоценоза кишечника детей на протяжении первого года жизни в зависимости от характера вскармливания. // Педиатрия. Журнал им. Г.Н. Сперанского. - 2016. - Т. 95. № 1. - p. 156-157.
- [2] Аргынбаева А.Т., Тойчуева А.У., Маматжанкызы Г. Сравнительные данные о формировании микрофлоры кишечника у новорожденных, проживающих в горных и в городских условиях. // Медицина Кыргызстана. -2018.-№ 2.-p.92-96.
- [3] Беляева И. А. Кишечные колики у новорожденных и грудных детей: от вопросов диагностики к дифференцированной коррекции / И. А. Беляева // Вопр. соврем. педиатрии. -2011. - Т. 10, № 2.-p.137-140.
- [4] Богданова С. В. и др. Метаболическая активность кишечной микрофлоры и характер сенсibilизации при различных видах вскармливания у здоровых детей // Российский вестник перинатологии и педиатрии. 2015, 60 (5), 135-142.
- [5] Вахлова И.В., Федотова Г.В., Боронина Л.Г. Метаболическая активность микробиоты кишечника у детей первого года жизни. // Педиатриск. Консилиум. Медисум 2018. №2, p.97-103
- [6] Грибакин С. Г. Минимальные пищеварительные дисфункции у детей грудного возраста и их диетологическая коррекция // Педиатрия. -2011.-Т. 90, № 4.-p.73-77.

- [7] Евдокимова О.А., Степанова Н.И., Воробева И.В., Головина Н.А. Формирование биоценоза кишечника новорожденных, находящихся на искусственном вскармливании. // Биология в высшей школе: актуал. вопр. науки, образования и междисцип. интеграции: матер. всерос. науч. конф. с межд. участием Под ред. О.В. Баковецкой. 2019. -р.23-24.
- [8] Chen Z. Pan W.G. Xian W.Y. et al. Identification of Infantile Diarrhea Caused by Breast Milk-Transmitted Staphylococcus aureus Infection // Curr. Microbiol. – 2016. – Vol. 4. – №73. – P. 498–502.
- [9] Clarke G, Stilling RM, Kennedy PJ, et al. Minireview: Gut microbiota: the neglected endocrine organ. //Mol Endocrinol. 2014; 28(8):1221–1238.
- [10] Zhuang L, Chen H, Zhang S. et al. Intestinal Microbiota in Early Life and Its Implications on Childhood Health. //Genomics Proteomics Bioinformatics. 2019 Feb; 17(1):13-25.



