

CLINICAL AND MICROBIOLOGICAL FEATURES INTESTINAL COLI INFECTION OF CHILDREN

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Abstract. *The problem of acute intestinal infections in children in our region is becoming even more relevant due to some climatic and social factors that contribute to their spread, an unfavorable course with the formation of clinical diarrhea syndrome, severe complications and frequent transition to a chronic form.*

Keywords: *anemia, rickets, constitutional abnormalities, polyhypovitaminosis, intestinal dysbiosis, fermentopathy.*

The problem of acute intestinal infections in children in our region is becoming even more relevant due to some climatic and social factors that contribute to their spread, an unfavorable course with the formation of clinical diarrhea syndrome, severe complications and frequent transition to a chronic form [5,10,13, 14]. The severity of the infectious process, prognosis and outcome of the disease are largely determined not only by the nature of the pathogen, but also by the presence of concomitant diseases: anemia, rickets, constitutional abnormalities, polyhypovitaminosis, intestinal dysbiosis, fermentopathy and others [1,2,8]. Despite the comprehensive and in-depth study of the problem of escherichiosis, at the present stage, many issues require revision and further research [4,6,12]. According to the literature, in recent years, escherichiosis in children increasingly occurs against the background of significant disturbances in the status of children, little dependent on the nature of the etiological factor of the infection [3,7]. Issues related to the activity of intestinal endoecology, their relationship and biocorrection during *Escherichia* infection in children still remain relevant [9,10]. Acute intestinal infections, which continue to be the most common diseases of childhood after acute respiratory viral infections, are relevant for pediatrics not only as diseases leading to the development of a serious condition in children, but also as diseases affecting the further development of the child [5,15,16]. The purpose of this study was to study the clinical and microbiological features of acute diarrhea caused by *E. coli* in young children.

Materials and methods. This study analyzed the course of *Escherichia* infection in 51 children aged from 3 months to 3 years who were hospitalized at Children's Infectious Diseases Hospital No. 4 in Tashkent. The study used general clinical laboratory research methods - general analysis of blood, urine, and feces. Bacteriological study of feces for obligate and conditionally pathogenic microflora. Polymerase chain reaction for the detection of rotavirus, norovirus RNA and *Salmonella* DNA. Statistical research methods.

Results and discussion. A total of 51 sick children aged from 3 months to 3 years were examined. The proportion of *Escherichia* infection in children under 1 year of age was 14.4% and almost doubled in patients aged 1-3 years (23%). All patients were admitted to the hospital with an acute onset of the disease. When distributing patients depending on the type of feeding, it was revealed that in most cases the children were mixed-fed - 35 (56%), breastfed - 18 (28%), and bottle-fed - 10 (16%). Of the concomitant diseases, hypochromic anemia (58%), rickets (41%) and perinatal encephalopathy (49%) predominated. The etiology of causative agents of *Escherichia*

infection in 37 (72.5%) sick children was established by bacteriological research. 14 patients underwent PCR diagnostics (Table 1).

The data in Table 1 also shows that of the 5 categories of *E. coli* (enterotoxigenic, enteroinvasive, enteropathogenic, enterohemorrhagic and enteroaggregative), enteropathogenic (EPE) and enterotoxigenic (ETE) were more common in our observations, and enteroinvasive (EIE) patients were less common. In 14% of patients, non-typing antibiotic-resistant strains of *Escherichia* were isolated.

Table 1

Etiological structure of Escherichia infections

| Total patients | Etiological interpretation of the diagnosis | | Etiological decoding by O-antigen group (N-37) | | | |
|----------------|---|-----------------|--|-----------|----------|--------------|
| | Bacteriological | PCR diagnostics | EPE | ETE | EIE | Non-typing E |
| 51 100% | 37 72,5% | 14 27,5% | 13 35% | 15 40% | 4 11% | 5 14% |

In enteropathogenic escherichiosis, the O55, O117, O44, O18, O126, O142, O114, O127 serovars of *Escherichia* are mainly isolated. In enterotoxigenic escherichiosis, *Escherichia* serovars O128, O20 and O75 were isolated. In enteroinvasive escherichiosis, 2 serovars have been identified: O143, O151. *Escherichia* serovars O20, O114, O143 and O44 developed a moderate form of the disease. In severe cases, O55, O11, O151 serovars of *Escherichia* were more often recorded. However, it should be noted that the microbial association was three times higher among children from three months to one year. Seeding of these microorganisms may be the result of endogenous infection (activation of endogenous flora) against the background of changes in the pH of the environment during the inflammatory process caused by undoubtedly pathogenic microorganisms.

When distributing patients according to topical diagnosis, i.e. according to the type of gastrointestinal tract lesion, it was established: in 34 - gastroenteric form, enteric form - in 4, gastroenterocolitic - in 13 patients.

In 100% of patients, clinical signs began acutely. The general condition of the patients was aggravated by the development of signs of dehydration. 46 (90.2%) of the examined patients were diagnosed with a moderate form and 5 (9.8%) with a severe form. A mild form of the disease was not diagnosed in our patients. Among the examined children, patients with a moderate form of the disease predominated. In moderate cases of *Escherichia* infection, *Escherichia* serovars O20, O114, O143, and O44 were more often isolated. The severe course was caused by *Escherichia* serovars O55, O111, O151. The disease in all patients was accompanied by toxicosis and dehydration, which was noted in 51 children, of which moderate dehydration was detected in 43, severe dehydration in 8 patients. Our studies have shown that general toxic signs of the disease develop quickly and simultaneously with the appearance of diarrhea and vomiting. The greatest severity of toxicosis occurred on days 2-4 of illness. Among the toxic signs, lethargy, weakness, adynamia (100.0%), loss of appetite (100.0%), pallor and marbling of the skin (51.0%), and rarely convulsions (8%) came to the fore. The duration of diarrhea was 8.8 ± 0.42 days.

Various complications were observed in a certain group of sick children with EPE. Thus, in 5 (9.8%) children with enteropathogenic escherichiosis, manifestations of hypovolemic shock were revealed, in 4 (7.8%) - acute renal failure.

In sick children with enteroinvasive escherichiosis, the following complications were determined: in 4 (7.8%) and infectious-toxic shock, in 7 (14%) - manifestations of neurotoxicosis, in 3 (5.9%) - DIC syndrome.

Subsequently, we studied the picture of peripheral blood. Thus, out of 51 examined, 20 children had anemia of varying severity, of which 2 had very severe anemia. It must be assumed that they developed anemia before contracting Escherichia infection, but was not diagnosed. Escherichia infection obviously aggravated the course of anemia, but was not its consequence. According to our observations, 22 children had normal ESR values. In the rest, it was increased within the range of 12-25 mm/h, and only in one patient the ESR reached 36 mm/h. The hematological changes we noted in the peripheral blood applied equally to all children under the age of 1 year and from 1 year to three years.

When studying the composition of the intestinal microflora, it was found that dysbiotic disorders were recorded in all children in 100% of cases in the acute period of the disease (grade I - in 31, grade II - in 15, grade III - in 5). Conditionally pathogenic flora was found in more than half of the children, more often Candida fungi, enterococcus, and less often staphylococcus.

Conclusion. Our clinical and microbiological analysis shows that in the etiological structure of Escherichia infection in the children we examined, we identified EPE (40%), ETE (35%), EIE (11%) and in 14% of cases non-typing Escherichia. At the same time, 43.8% of E. Coli cases were caused by a multidrug-resistant strain. Diarrhea of Escherichia etiology is characterized by: clinical manifestations of gastroenteritis, gastroenterocolitis and enteritis with moderate or mild pain; moderate dehydration. The clinical course was dominated by moderate forms and without relapse of the disease. In young children, the most common causes of a combination of microbial associations with Escherichia infection are early artificial feeding, which can lead to premorbid changes in the quantitative and qualitative composition of the microflora.

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