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✓ *Resume*

Nowdays, the problem of diagnosing the etiological factor of intestinal infections is an urgent problem, since the epidemiological process in these infections is accompanied by global transformations in the population of microorganisms, a change in the role of individual pathogens, their virulence and resistance, the spread of pathogens with multiple resistance to antimicrobial drugs.

This is due to the fact that, in recent years, the growth of migration processes has been characterized, the structure of food and water consumption is changing, the technology of production, storage and sale of food products is being improved. Thus, in the current new conditions, it is necessary to identify the determinant of the etiological structure, which determines the trends in the development of the epidemic process in intestinal infections.

Key words: intestinal infection, microbiological landscape, resistance, epidemiological process, determinant, structure.

ИЗМЕНЧИВОСТЬ МИКРОБИОЛОГИЧЕСКОГО ЛАНДШАФТА ПРИ КИШЕЧНЫХ ИНФЕКЦИЯХ

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✓ *Резюме*

На сегодняшний день проблема диагностики этиологического фактора кишечных инфекций является актуальной, поскольку эпидемиологический процесс при этих инфекциях сопровождается глобальными трансформациями популяции микроорганизмов, изменением роли отдельных возбудителей, их вирулентности и устойчивости, распространение возбудителей с множественной устойчивостью к противомикробным препаратам.

Это связано с тем, что в последние годы наблюдается рост миграционных процессов, меняется структура потребления продуктов питания и воды, совершенствуется технология производства, хранения и реализации продуктов питания. Таким образом, в современных новых условиях необходимо выявить детерминант этиологической структуры, определяющий тенденции развития эпидемического процесса при кишечных инфекциях.

Ключевые слова: кишечная инфекция, микробиологический ландшафт, резистентность, эпидемиологический процесс, детерминанта, структура.

ICHAK INFEKTSIONLARIDA MIKROBIOLOGIK LANDSIZLIKNING O'ZGARUVCHANLIGI

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Hozirgi vaqtda ichak infeksiyalarining etiologik omilini aniqlash muammosi dolzarb muammo bo'lib qolmoqda, chunki bu infeksiyalarda epidemiologik jarayon mikroorganizmlar populyatsiyasining global o'zgarishi, individual patogenlar rolining o'zgarishi, ularning virulentligi va chidamliligi bilan birga keladi. mikroblarga qarshi dorilarga ko'p qarshilik ko'rsatadigan patogenlarning tarqalishi.

Buning sababi, keyingi yillarda migratsiya jarayonlarining o'sishi xarakterlanib, oziq-ovqat va suv iste'moli tarkibi o'zgarib bormoqda, oziq-ovqat mahsulotlarini ishlab chiqarish, saqlash va sotish texnologiyasi takomillashtirilmoqda. Shunday qilib, hozirgi yangi sharoitlarda ichak infeksiyalarida epidemik jarayonning rivojlanish tendentsiyalarini belgilaydigan etiologik tuzilmaning determinantini aniqlash kerak.

Kalit so'zlar: ichak infeksiyasi, mikrobiologik landshaft, qarshilik, epidemiologik jarayon, determinant, struktura.

Relevance

Acute intestinal infections occupies one of the leading places in the structure of infectious pathology. According to the WHO, more than 1 billion people suffer from diarrheal diseases annually, a significant part of whom are children under 5 years of age [1,15]. Despite the wide range of diagnostic and treatment options currently available, the problem of acute intestinal infections (AEI) is still relevant due to the high incidence of morbidity, mortality and the significant frequency of severe forms of the disease.

In addition, each acute intestinal infection suffered is one of the factors in the formation of chronic pathology of the gastrointestinal tract, including irritable bowel syndrome, a decrease in immunological resistance [2].

The number of clinical forms of acute intestinal infections exceeds 30 nosological units, the causative agents of which can be bacteria, viruses and protozoa [3].

The widespread prevalence of intestinal infections in Uzbekistan, due to the natural and climatic features of the region, emphasizes their socio-economic significance. If in 1988 in Uzbekistan, according to the incidence rate of AEI per 100,000 people. Republican Center by the State Epidemiological Service, 141,515 people were ill, of which 26,470 were identified, in 1998 this figure was 66,933 people, 12,074 were found, and in 2017 this figure was 43,864, 7727 were established [4].

Analysis of the structure of acute intestinal infections shows that they are still characterized by polyetiology. In recent years, there has been a change in the etiological structure of acute intestinal infections, especially in children. In the best laboratories in the world, it is possible to decipher the etiology of acute intestinal infections only in 67-85% of cases [5]. The important etiological role of bacteria and protozoa in the development of acute intestinal infections was established many years ago, and *Campylobacter* and *Cryptosporidium* have been revised recently.

To date, the main causative agents of acute intestinal infections of a bacterial nature are microorganisms of the Enterobacteriaceae family. The role of about 50 serovars of the genus *Salmonella* in the development of pathology in humans is known, mainly *Salmonella* of group B. The greatest distribution in recent years has received *S. Enteritidis* and *S. typhimurium*. According to Russian authors L.A. Kaftyreva et al. (2012) the leading serological variants of *Salmonella* isolated from humans in Europe are in 2010 - *S. enteritidis* 43563 confirmed cases (45.0%), *S. typhimurium* - 21671 cases (22.4%), other serovars 24453 (25.3%) [6].

Shigellosis or dysentery is caused by bacteria of the genus *Shigella*, which includes more than 40 serological variants with the greatest distribution of Flexner's and Sonne's *Shigella*. The problem of shigellosis is still far from being solved, so according to the analysis of morbidity in the Russian Federation in 2013, 11,872 cases of various nosological forms of dysentery were registered [7]. The proportion of

shigellosis among AEI in children remains consistently high and depends on their age. The incidence of shigellosis increases among children over 1 year old and becomes maximum at the age of 2-6 years. The etiological structure of shigellosis depends on the climatic characteristics of the region, as well as on the sanitary and hygienic conditions in them. Studies carried out in several Asian countries (Indonesia, China, Thailand, etc.) have shown that among the isolated *S. flexneri* shigella of the sub-seotype *S. flexneri* 2a predominated (on average 29%) [8]. *S. flexneri* 2a may be responsible for the occurrence of epidemic outbreaks [9]. *S. sonnei* is the main causative agent of shigellosis in industrial areas, and *S. flexneri* - in developing ones [10].

Of other bacterial agents, *Yersenia* (*Ierseniya* enterocolitica, of the known serovars of which O3, 4, 5, 8 are of primary importance in human pathology), as well as pathogenic escherichias, are of significant importance as causative agents of acute intestinal infections. 5 groups of pathogenic bacteria of the genus *Escherichia* are known as causative agents of Escherichiosis: 1) enteropathogenic *Escherichia coli* are causative agents of colienteritis in children; 2) entero-invasive *Escherichia coli* cause dysentery-like diseases in children and adults. The strains O124 and O151 are of the greatest importance; 3) enterotoxigenic *Escherichia coli* cause cholera-like diseases in children and adults, these include the following serogroups O6, O8, O15, O20, O25, O27, O63, O78, O115, O148, O159, etc.

4) enterohemorrhagic *Escherichia coli* are the causative agents of dysentery-like diseases in both children and adults. These include strains O157, H7, O141, which produce a shig-like toxin. 5) enteroaggregative *Escherichia coli* cause long-term diarrhea in children and adults, which is associated with strong adhesion of bacteria on the surface of the epithelium of the mucous membrane of the small intestine [11].

Conditionally pathogenic microflora also plays an important role in the development of acute intestinal infections in children. According to Anganova E.V. (2012), bacteria of the genus *Citrobacter*, *Staphylococcus aureus*, *Klebsiella*, *Hafnia*, *Serratia*, *Proteus*, *Morganella*, *Providencia*, *Bacillus cereus* and others are among the most relevant opportunistic pathogens. Gram-positive bacteria such as *Enterococcus faecalis*, *Enterococcus faecium* are relevant, from among gram-negative bacteria - *Proteus mirabilis*, *Enterobacter* spp., *E. coli*, *Pseudomonas aeruginosa*, etc.

The formation of new factors of pathogenicity and resistance of pathogens of bacterial intestinal infections to drugs may be due to the acquisition of new genetic information or a change in the level of expression of its own genes [11].

The etiological structure of acute intestinal infections in recent years in Uzbekistan is characterized by the following indicators: the etiological agents of ODD using the bacteriological method were established in 39.5% (*Salmonella* spp. -

9.2%, *Shigella* spp. - 6.6%, pathogenic *E. coli* - 19.7%, UPM - 63.8%), while mono-infections accounted for 31.9%, associations - 7.9%, and etiological agents of ODD deciphered using the PCR method (two test systems) were established in 72.8% (*Salmonella* spp. - 9.3%, *Shigella* spp. - 7.5%, pathogenic *E. coli* - 52.6%, *Campylobacter* spp. - 2.8%, viruses - 27.8%), while mono-infections - 36.3%, associations - 36.5% [12].

Despite the positive changes in the sanitary and hygienic living conditions of the population, in recent years in Uzbekistan there has been a tendency for the sustainability of the incidence of acute intestinal infections. This is due to the fact that the last two decades have been characterized by an increase in migration processes, the development of international tourism, a radical change in the structure of food and water consumption, and an improvement in the technology of production, storage and sale of food products.

These processes are accompanied by global transformations in the population of microorganisms, a change in the role of individual pathogens, their virulence and resistance, the spread of pathogens with multiple resistance to antimicrobial drugs, a natural change in the nature of the manifestations of the epidemic process of acute intestinal infections [13].

Despite advances in molecular genetic research, which have significantly expanded the possibilities of diagnosing pathogens of acute intestinal infections, the proportion of diarrhea of unknown etiology remains high [14].

Thus, in the current new conditions, it is necessary to identify the determinants that determine the trends in the development of the epidemic process, search for ways to increase the effectiveness of the epidemiological surveillance system, as the basis for the successful prevention of widespread acute intestinal infections.

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