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FEATURES OF OPPORTUNISTIC MICROORGANISMS ISOLATED IN THE DIAGNOSIS OF COLON DYSBIOSIS IN CHILDREN

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ANNOTATION

The article examines the characteristics of conditionally pathogenic microorganisms (CPM) isolated from children with colon dysbiosis and the selection of laboratory tests based on it, which are necessary to ensure the correct choice of Probiotic and antibacterial drugs.

KEYWORDS*: Pathogenic microorganism, dysbacteriosis, antibacterial drug, large intestine, microflora.*

INTRODUCTION

When correcting dysbiotic disorders of the intestinal microflora, simultaneously with the stimulation of the" useful " component of the microbiota, it is necessary to suppress microorganisms whose number is excessive. Choosing the optimal scheme for correcting the composition of microflora without laboratory tests is extremely difficult, but the optimal list of such studies is not defined [1,2,4,9]. Correction of the composition of the facultative-anaerobic part of the intestinal microflora requires the appointment of drugs such as bacteriophages and antibiotics [3,4,8]. Their correct choice is not possible without adequate laboratory tools. Special laboratory tests can facilitate the correct selection of probiotics and antimicrobials. The need for such tests is not yet fully understood by the medical community, and the technique of their implementation is not standardized [4,5,6,8].

The mechanisms of quantitative and qualitative changes in the biological properties of the indigenous microbiota of the colon and opportunistic microorganisms during the development of dysbiosis also remain poorly understood [2,5,7].

The study of these mechanisms is relevant, since the acquisition of new knowledge in this area and methods of their correction will reduce the negative impact on the macroorganism of dysbiotic conditions and will contribute to the improvement of the population, especially children of different ages. In this regard, there are difficulties in interpreting microbiological studies of feces, which leads to overdiagnosis of intestinal dysbiosis and unjustified correction of the composition of the intestinal microflora in healthy children [7,8].

PURPOSE OF RESEARCH

Characteristics of conditionally pathogenic microorganisms (CPM) isolated from children with colon dysbiosis and selection of laboratory tests based on it, necessary to ensure the correct choice of probiotic and antibacterial drugs.

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RESEARCH PROBLEM

To assess the significance of opportunistic microorganisms in the development of dysbiosis and determine the sensitivity of CPM to antibiotics, the antagonistic activity of probiotic microorganisms. Study of the properties of probiotic microorganisms that affect the effectiveness of their use against the background of an excessive number of CPM in the intestine.

MATERIALS AND METHODS

For the bacteriological diagnosis of dysbiosis on the basis of the Department of Microbiology and pharmacology, Tashkent State Dental Institute, we conducted a survey of 32 conditionally healthy children from 1 year to 10 years. Of these, 19 are boys (59.3%) and 13 (40.6%) are girls. Children who had no symptoms of acute diseases and had normal stools at the time of the examination were selected for examination. The survey included determining the number of bifidobacteria, bacteroids, lactobacilli, Escherichia coli with typical and atypical properties, opportunistic and pathogenic enterobacteria, non-fermenting gram-negative bacteria, staphylococci, hemolytic forms of microorganisms, enterococci, yeast-like fungi of the genus Candida. Incubation of crops in dense environments for the allocation of lacto - and bifidobakterii was carried out to hold dishes (HiMedia). Identification of opportunistic enterobacteria was performed using generally accepted schemes. Antibiotic sensitivity was determined on Muller-Hinton agar.

RESEARCH RESULT

In the course of the survey, a decrease in the number of native anaerobic microflora was registered in almost all the examined groups: bifidumbacteria in 22 cases (68.7%), bacteroids - in 26 cases (81.2%), lactobacilli - in 29 cases (90.6%). Changes in the number of CPM were also detected in almost all groups of examined patients, both against the background of a decrease in the number of native flora, and without it. At the same time, an increase in the number of opportunistic enterobacteria (CPE) was most often observed, which were isolated in 21 patients (65.6%), while associations of enterobacteria were isolated in 16 of them (50%). The total number of isolated enterobacteria cultures was 22. Among them: Enterobacter spp. - 15 strains (68.1% of the total number of finds of opportunistic enterobacteria), Klebsiella spp.-11 (50%), Citrobacter spp. - 7 (31.8%), Proteus spp. - 19 (86.3%). The presence of hemolytic microorganisms was detected in 4 patients (12.5%). An increase in the number of coagulase-negative staphylococci was observed in 12 cases (37.5%), and the presence of Staphylococcus aureus - in 5(%). Yeast - like fungi of the genus Candida were found in excess of the norm in 18 patients (56.2%), Clostridium - in 2 (6.2%), non-fermenting gram-negative bacteria-in 11 (34.3 %). The greatest number of changes was detected in the group of children from 1 to 5 years (n= 20) (62.5%), CPE was identified in amounts exceeding the norm, while in 12 (60%) they were detected in associations. An increase in the number of coagulase-negative staphylococci was observed in 11 cases (55%), the appearance of S. aureus - in 2 cases (10 %). There was no statistically significant relationship between a decrease in the number of bifidobacteria and an increase in CPM in any of the groups. Thus, a decrease in the number of bifidobacteria may lead to excessive reproduction of CPM, but may not affect this process, and, on the contrary, with a normal content of bifidobacteria, an increase in the number of CPM may occur. Probiotics often serve as the main means for suppressing CPM and correcting the number of resident microflora. The most commonly used drugs are based on bifidobacteria and lactobacilli. They must have a certain set of properties in order to compete with CPM and successfully colonize the biotope. These include antagonistic activity and the ability to adhere to the epithelium.

To assess the antagonistic activity of probiotic strains, the delayed antagonism method was used (a strip of agar was cut out in a Petri dish from MPA using the delayed antagonism method, where the corresponding agar medium was poured into which the culture of the antagonist was sown). 15 CPM strains were studied as test cultures: 12 strains of Enterobacter spp., Klebsiella spp., Citrobacter spp., S. aureus, "atypical" E. coli and 3 strains of P. aeruginosa. When determining the antagonism of probiotic drugs by the stroke method, a small number of sensitive CPM strains were detected. Against strains of Enterobacter spp. the antagonistic activity of probiotic drugs varied from 0 to 10%, for isolates of Citrobacter spp., S. aureus and "atypical" E. coli from 0 to 15%, among Klebsiella spp. no sensitive strains were detected. Antagonistic activity of probiotic lactobacilli against Klebsiella spp strains. ranged from 30 to 75%, Enterobacter spp. from 15 to 70%, Citrobacter spp. from 0 to 70%," atypical " E. coli from 25 to 90% and S. aureus from 20 to 45%; The activity of probiotic bifidumbacteria was also unstable and varied with respect to Klebsiella spp strains. from 25 to 100 %, Enterobacter spp. from 20 to 75 %, Citrobacter spp. from 0 to 90 %," atypical " E. coli from 0 to 60% and S. aureus from 0 to 100 %.

Antagonistic activity of probiotics containing lactobacilli was detected in "Lactobacterin", lactobacilli from "Lacto-G" (83 %, - 80 %). Antagonistic activity of probiotics containing bifidobacteria was detected in "Bifidumbacterin Forte" and "Maxilac" to 84 % of the tested CPM strain.

CONCLUSIONS

1. Depth of dysbiotic disorders is largely determined by the conditionally-pathogenic microorganisms and their associations. Most often, the number of opportunistic enterobacteria increases in feces in dysbiotic conditions (65.6% of cases), including Enterobacter spp. (68.1% of the total number of finds of opportunistic enterobacteria), Klebsiella spp. (50%), Citrobacter spp. (31.8%),%), Proteus spp.-(86.3%).

2. The choice of probiotic drugs should be based on preliminary laboratory testing, including determining the adhesive properties of the drug to the patient's epithelial cells, antagonistic properties in relation to indigenous strains-representatives of its microflora and opportunistic microorganisms, the number of which is excessive.

3. The level of sensitivity of conditionally pathogenic bacteria isolated in dysbacteriosis to antibacterial drugs and eubiotics is a strain sign, which requires laboratory testing of each isolate before prescribing a drug for its elimination.

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