Peculiarities of Vaginal and Intestinal Ecosystem of Pregnant Women

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ABSTRACT

Peculiarities of vaginal and intestinal ecosystem were studied in 44 pregnant women. Pregnant women with different types of vaginal biocenosis had dissimilar frequency and degree of evidence of intestinal microbiocenosis.

Key words: vaginal microflora, pregnancy

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INTRODUCTION

The study of normal microflora of a human organism is currently in the centre of attention of clinical microbiologists. This is because of urbanization of the human society and growing ecological problems, in the era of antibiotics and under influence of other factors impacting the immune status of a macro-organism, significant changes in evolutionarily formed microbiocenoses of human organisms take place. As a consequence, one can consider the growing role of opportunistic pathogens in infectious diseases, including those in obstetric pathology.

Pregnant women and newborns in modern conditions of ecological pressing are in a risk cohort for forming dysbacterioses. It has been established that dysbiotic disorders are, as a rule, combined with high indicators of prenatal risk in pregnant women and formation of chronic forms of pathology in children.

Detection of a high percentage of pregnant women and newborns with dysbacterioses imposes a necessity of implementation of rehabilitative and curative measures for these cohorts.

It has been established that pathological abnormalities in vaginal microcnosis take place due to such stressful interventions as treatment with antibiotics (local or systemic), hormones, cytostatics, X-ray therapy, especially with endocrinopathy (diabetes in the first place), anemia, congenital malformation of reproductive organs, usage of contraceptives, and other conditions leading to damage of immune status.
In recent years some publications appeared that indicate that the condition of intestinal microflora late in the pregnancy can also have a significant impact on the process of formation of intestinal biocenosis in newborns. The goal of this investigation was the study of peculiarities of vaginal and intestinal microbiocenosis in pregnant women and determination of its role in processes of adaptation and microbial colonization.

The study of vaginal microbiocenosis included complex evaluation of results of cultural diagnostics and microscopy of vaginal fluid smears. Bacteriological evaluation of vaginal microflora determined species and quantitative composition of associates of vaginal microcenosis. In order to specify the clinical form of vaginal pathology, bacterioscopy of Gram-stained vaginal smears was used.

Bacteriological evaluation of intestinal contents of pregnant women and newborns was carried out in accordance with methodical recommendations from “Usage of bacterial biological preparations in practice of treatment of intestinal diseases. Diagnostics and treatment of intestinal dysbacteriosis” (G.N. Gabrichevskii Research Institute for Epidemiology and Microbiology, Ministry of Health of Russian Federation, 1986).

Identification of isolated cultures was performed according to the Bergey classification method.

Results were evaluated using parametric methods of comparison and applying the Student criteria. Disparities between groups were considered valid when P<0.05.

**MATERIALS AND METHODS**

Forty four pregnant women in a high risk group of infectious inflammatory disease (IID) development who were admitted to the pathology division of a probationary maternity hospital were under supervision.

After complex clinical microbiological examination all pregnant women were divided into two groups according to results of the bacteriological screening. The main (first) group was made up of 27 women with abnormalities of vaginal and/or intestinal microbiocenosis. The comparison (second) group consisted of 17 women with eubiotic condition of vaginal and intestinal microcenosis.

On the basis of the nature of microecological abnormalities the patients of the main group were divided into two subgroups: the first group (1A) included 17 pregnant women with dysbiotic deviations in the content of vaginal microflora, and the second group (1B) included 10 women with pathological changes in both vaginal and intestinal microflora.

Results. As a result of the performed microbiological screening it was established that the majority of pregnant women in high risk group had different dysbiotic abnormalities: 84.8% of patients had deviations from normal composition of vaginal microflora, and 48.6% were diagnosed with changes of intestinal biocenosis.

Besides, intestinal dysbacteriosis (DB) was detected in 57.3% of women with abnormalities of vaginal microflora, and 48.6% of pregnant women had combined pathological changes in vaginal and intestinal microflora. Eubiotic condition of the corresponding microcenosis was detected only in 15.2% of the total number of examined women.

The study of somatic, obstetric and gynecological anamnesis determined that the presence of chronic infectious diseases in pregnant women predisposes them to dysbiotic shifts in the content of vaginal and intestinal microflora. Among these diseases the most significant are chronic pyelonephritis, chronic pelvic inflammatory disease and pathology of the gastro-intestinal tract.

Special attention should be given to usage of antibacterial therapy. Thus, systematic usage of different antimicrobial preparations during pregnancy was observed in 53.3% of the examined women, while the conducted analysis detected significant difference in frequency of antibiotics usage in patients of different groups.

In the 1B subgroup general antibacterial therapy was administered almost 4 times
more often, and local therapy almost 3 times less more often that for pregnant women with eubiosis. After conduction of 2 and more courses of systemic antibiotics treatment, the frequency of combined dysbiotic changes in vaginal and intestinal microflora significantly increased.

A deeper study of vaginal microbiocenosis established nonuniform nature and different degrees of detected abnormalities. Absolute normocenosis was identified only in 3.3% pregnant women. Also, 11.9% of women had insignificant changes in vaginal microflora content, which did not involve its main representatives (lactobacilli), and was not accompanied by clinical symptoms of a pathological process. This allowed us to determine the given condition as a transitive type of vaginal biocenosis and to refer to it as a norm analog.

In 31.9% of the examined women vaginal dysbacteriosis (bacterial vaginosis) was detected. Its stigma was disappearance or sharp decline in the quantitative content of lactobacilli in the contents of the vagina and absence of symptoms of an inflammatory process. In 52.9% of patients, clinical manifestations of vaginitis were observed, which in 48.6% of cases were caused by Candida fungi, in 37% by aerobic Gram-negative opportunistic pathogenic microorganisms (OPM) and staphylococci, and in 14.4% a combined form of bacterial vaginosis (BV) and vaginal candidosis was found.

Minimal microecological changes were observed in inflammatory processes caused by pure culture Candida fungi. Any aggregations of yeast-like fungi with other representatives of opportunistic pathogenic flora led to more significant deviations from eubiotic condition of the vagina. Maximum degree of dysbacteriosis was identified in pregnant women with bacterial vaginosis. In the group of pregnant women examined in the antenatal period, facultative aerobic microflora of the reproductive tract was presented by the following geni of bacteria: Lactobacillus, Streptococcus, Aerococcus, Micrococcus, Staphylococcus, Corynebacterium, Bacillus, Enterobacteriaceae, Gardnerella vaginalis, Acidetobacter, Moraxella, Pseudomonas. Much more frequently Lactobacillus (56%), Staphylococcus (63%), Corynebacterium (39%), and Enterobacteriaceae (37%) representatives were identified. Seldom Bacillus (5%), Acinetobacter (4%), and Moraxella (3%) were present. Among staphylococci the majority of isolates were identified as Staphylococcus epidermidis (64%), 14% as Staphylococcus aureus, 22% as Staphylococcus saprophyticus. Enterobacteria in most cases were presented by E. coli (72%), and much less frequently Klebsiella (7%), Proteus (5%), Morganella (3%).

**DISCUSSION**

The study of intestinal microflora established that almost every second examined woman (48.6%) had changes in intestinal biocenosis, which manifested as decrease in the quantitative level of the main components of the protective flora (lactobacilli and bifidobacteria) and higher concentration of OPM. 23.5% of pregnant women were diagnosed with DB of I degree, 60.8% had II degree DB, and 15.7% had III degree DB. Disruptions of vaginal microbiocenosis were not always accompanied by intestinal dysbiosis, while patients with intestinal dysbacteriosis in 100% of cases had changes in vaginal microflora contents. Pregnant women with different types of vaginal biocenosis had dissimilar frequency and degree of evidence of intestinal DB. Intestinal dysbiosis in patients with BV (73.1%) was registered 1.5 times more often than in the group of pregnant women with vaginitis (48.6%) and was fully absent in cases of normocenosis and transitive type of vaginal biocenosis.

Besides, women with BV were noted to have not only higher frequency, but also higher intensity of dysbiotic changes in intestinal microflora. Thus, if with vaginitis I-II degree
of intestinal dysbacteriosis prevailed; with BV it was II-III degree.

REFERENCES