

УДК 616.022.7:-57.083.37

ИЗУЧЕНИЕ ИММУНОЛОГИЧЕСКИХ ИЗМЕНЕНИЙ У ПАЦИЕНТОК С УРОГЕНИТАЛЬНЫМ КАНДИДОЗОМ

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Резюме. В статье приведены данные по проведению клинико-иммунологических обследований женщин с урогенитальным кандидозом — инфекционным заболеванием мочеполового тракта, вызванным грибами рода *Candida*; изучены параметры гуморального иммунитета у обследованных пациенток и уровень цитокинов.

Ключевые слова: *Candida*, цитокины, вторичный иммунодефицит, гуморальный иммунитет.

STUDY OF IMMUNOLOGICAL CHANGES IN PATIENTS WITH UROGENITAL CANDIDIASIS

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Resume. This article presents data on clinical and immunological examinations of women with urogenital candidiasis, an infectious disease of the urogenital tract caused by *Candida* fungi. Humoral immunity parameters and cytokine levels were studied in the examined patients.

Keywords: *Candida*, cytokines, secondary immunodeficiency, humoral immunity

Introduction. *Candida* is an infectious disease caused by yeast-like fungi of the genus *Candida* [1,2]. It is caused by active growth of fungus on the mouth mucous membranes, genital and internal organs, and on the skin. All members of the genus *Candida* are conditionally pathogenic microorganisms, that is, they are constantly present as part of the normal microflora. But with a decrease in immunity, a change in hormonal background and for a number of other reasons, these fungi can begin to actively colonize the mucous membranes and skin. *Candida* spp is known to number more than 80 species, the degree of pathogenicity of different strains of *Candida* spp varies widely from harmless to virulent. Only *C.albicans*, *C.tropicalis*, *C.pseudotropicalis*, *C.krusei*, *C.panacrusei* and *C.guilliermondi* are pathogenic for humans [3,4].

Culturing and quantification of *Candida* spp is important in diagnosing candidiasis infections and determining the degree of dysbiosis in various body biotopes. A change in their habitat conditions leads to a change in their biological properties, which will lead to a decrease in their excretion rate and to "false" results in mycological diagnosis.

Candidiasis infection is not transmitted from patient to healthy person, but the occurrence of this infection leads not only to serious medical consequences, but also is a social problem [1, 2].

The aim of the study was to investigate humoral immunity parameters and serum cytokine levels in patients with urogenital candidiasis.

Tasks:

1. Determine the incidence of risk factors for urogenital candidiasis

To study humoral immunity parameters and serum cytokine levels in patients with urogenital candidiasis.

Materials and methods. The study involved 45 women aged 19 to 35 years with chronic recurrent candidiasis vulvovaginitis during the period of exacerbation. The control group consisted of 36 healthy women.

Immunological studies were performed by studying the number of NK-cells and B-lymphocytes using the LT series MAT (produced by LLC "Sorbent", Russia) by fluorescent method, the concentration of IgA, IgM, IgG immunoglobulins in blood serum was performed by ELISA using "Vector Best" test system, RF. The levels of IL-4 and TNF α in blood serum were determined by ELISA using the Cytokine test system LLC (St. Petersburg, Russia).

The materials of the study were statistically processed using Student's t-test, using a standard Windows 2000 statistical software package.

Results and discussion.

The criteria for inclusion of patients in the groups were the following: consent of patients to participate in scientific research, absence of pregnancy at the time of examination, clinical and mycological confirmation of urogenital candidiasis, absence of cancer and acute somatic diseases at the time of the study.

Many factors in the formation and development of the disease have been identified. But among them, the study identified several clinically significant ones, and also determined the extent to which urogenital candidiasis is caused in the examined female population, the results are shown in figure 1.

The leading factors of disease formation were endocrinopathies (57.04 \pm 4.26%, n=77), followed by hypovitaminosis and long-term antibiotic use (17.04 \pm 3.24%, N=6, respectively) with convincingly high detection rates compared with other factors (Figure 1).

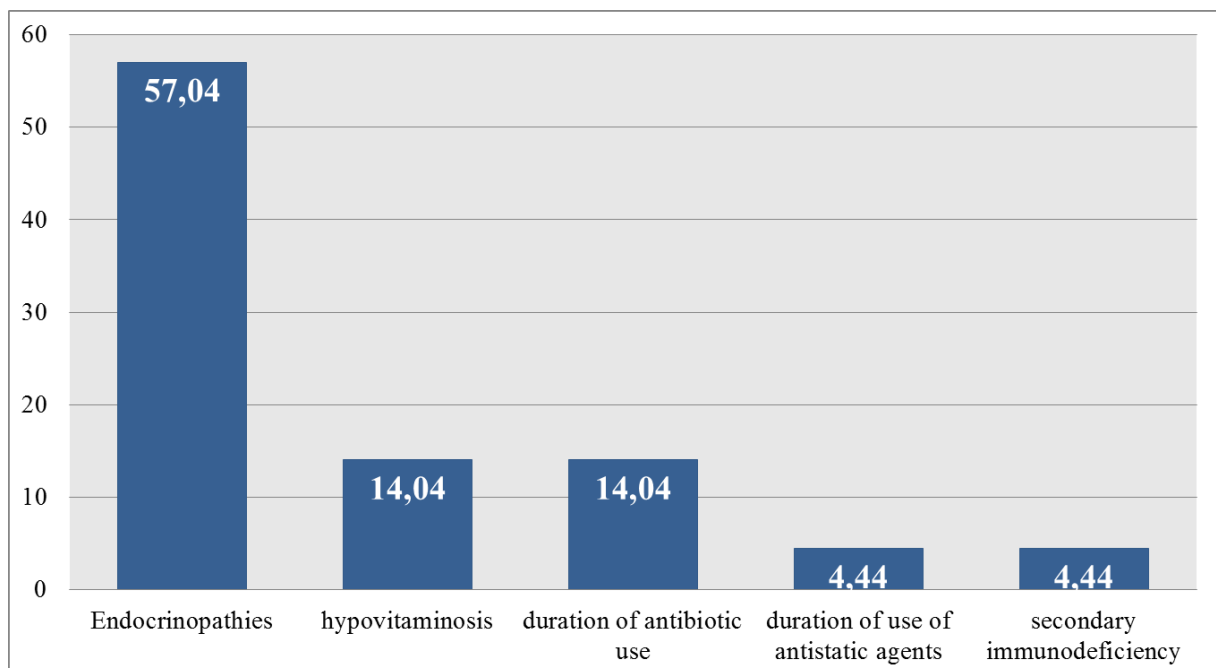


Figure 1 – Incidence of urogenital candidiasis formation factors (%)

Analysis of the results of immunological tests showed that the level of NK-cells was reduced. At the same time, the number of B-lymphocytes in the blood of the examined patients did not undergo significant changes, while there was a sharp suppression of their ability to produce immunoglobulin's. The blood levels of IgM, IgG, IgA decreased. The fact of decrease in the level of immunoglobulin's together with the decrease in the representation of NK-cells makes the insufficiency of mechanisms of antibody-dependent cytolysis of target cells with the antigenic determinants of the candidiasis pathogen on the membrane evident (Table 1).

Table 1.

The studied parameters of the immune system in the examined persons

Indicators	Control group, n=35	Patient group n=45	P
CD16+, %	14,8 ± 0,7%	9,4 ± 0,8 %	<0,05
CD20+, %	21,5 ± 0,9%	23,6 ± 1,2 %	>0,01
IgA, g/l	2,7 ± 0,02	1,4 ± 0,1	<0,01
IgG, g/l	12,6 ± 0,72	7,3 ± 0,56	<0,01
IgM, g/l	1,8 ± 0,021	1,5 ± 0,06	>0,05
ИЛ-4, pg/ml	5,8 ± 0,1	13,5 ± 0,3	<0,01
ФНО α , pg/ml	24,6 ± 1,1	45,8 ± 1,4	<0,001

Decreased levels of complement-binding IgG and IgM indicate insufficient development of cytolytic reactions of the humoral type, which play a supporting role in infectious allergy. The decrease of IgA level in systemic circulation that we found suggests insufficiency of local immunity of genital mucosa, which closely correlates with the level of IgA in blood. At the same time, there was an increase in the studied cytokines, both proinflammatory (TNF α), (P<0.001) and anti-inflammatory cytokine (P<0.01).

Thus, the results of our studies indicate deregulation of intercellular interactions in the lymphoid tissue against the background of antigenic stimulation, which leads to cellular and humoral immunodeficiency. The revealed patterns of immune status changes in the group of patients with chronic relapsing candidiasis vulvovaginitis allow us to recommend determination of blood parameters of CD16-lymphocytes, NK-cells, IgA, IgG, IgM, IL-4 and TNF α as an objective criterion of evaluation and efficiency of the performed complex therapy.

Conclusions. 1. The main factors predisposing to the development of candidiasis infection (endocrinopathies (57.04±4.26%, n=77), followed by hypovitaminosis and long-term antibiotic use (17.04±3.24%, N=6, respectively) should include secondary immunodeficiency.

2. Patients with urogenital candidiasis are characterized by increased levels of pro- and anti-inflammatory cytokine and decreased levels of serum immunoglobulins of classes A, G, and M.

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