



## ASSESSMENT OF THE EFFECTIVENESS OF CLINICAL AND MYCOLOGICAL TREATMENT OF PATIENTS WITH UROGENITAL CANDIDIASIS

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### ABSTRACT

*The goal is to determine the clinical and myocardiial efficacy of urogenital candidiasis in the treatment of patients with genital warts. It has been found that the main causes of urogenital candidiasis include endocrinopathies, antibiotics and cytostatics, and hypovitaminosis. Special clinical symptoms of urogenital candidiasis, clinical and mycological sampling of fluconazole are more common in men than in women.*

Candida yeast-like fungi are found in 30-50% of healthy individuals in cultures of sputum, feces, urine, scrapings from human mucous membranes. In human oral mucosa, its content is 46-52%, and in the vaginal mucosa of non-pregnant women, the excretion rate reaches 11-13%, increasing during pregnancy from 29% to 86%. In human feces, the frequency of isolation of these fungi reaches up to 80%, and on intact skin up to 9%. [7, 9].

Transformation of fungi from nonpathogenic microorganisms to aggressive pathogens, as well as infection from the outside occurs as a result of a decrease in the immune system of the body [1, 3, 5].

Candida spp has the peculiarity to influence the occurrence and course of infectious diseases caused by other

pathogenic and/or opportunistic microorganisms. This effect is characterized by the effect on the patient's body and the pathogen [10].

Candidiasis infection is not transmitted from person to person, but the occurrence of this infection has serious medical and economic consequences. Candidiasis is characterized by a multifocal and chronic recurrent course [2, 8].

**Purpose of research.** To determine the clinical and mycological efficacy of urogenital candidiasis treatment in dynamics depending on the gender and place of residence of patients.

**Materials and methods of research.** A total of 81 female and 15 male patients (control group) with urogenital candidiasis (UC) aged 18-55 years were examined. The age distribution of those examined gave the



following results: 18-21 years,  $2.1 \pm 1.4\%$  ( $n=2$ ), 22-30 years,  $49.0 \pm 5.1\%$  ( $n=47$ ), 31-40 years,  $36.4 \pm 4.9\%$  ( $n=35$ ), 41-50 years,  $8.3 \pm 2.8\%$  ( $n=8$ ) and 50-60 years,  $4.2 \pm 2.0\%$  ( $n=4$ ). The main group of patients was 22-30 and 31-40 years old.

Patients mainly lived permanently in Tashkent ( $n=46$ ) and Khorezm regions ( $n=50$ ). Most of the patients in Tashkent province were rural residents ( $73.9 \pm 6.5\%$ ,  $n=34$ ), in Khorezm province the figure was slightly lower -  $22.0 \pm 5.9\%$  ( $n=11$ ).

Distribution of patients by social status yielded the following results: workers and farm workers  $52.1 \pm 5.1\%$  ( $n=50$ ), housewives  $36.4 \pm 4.9\%$  ( $n=35$ ), students and female students  $2.1 \pm 1.4\%$  ( $n=2$ ), and temporarily unemployed  $9.4 \pm 3.0\%$  ( $n=9$ ). There were no employees or persons with higher education among the patients.

All ethical principles related to the recruitment of patients for medical research are based on the Declaration of Helsinki of the World Medical Association (Helsinki, 1964, last supplement, Seoul, 2008).

To verify the diagnosis of UC (for women, vaginal candidiasis), we used clinical examination methods generally accepted in dermatology [2, 6].

Identification of *Candida* spp was carried out in three stages: taking biological material from patients; microscopic examination; mycological examination - isolation of pure cultures and identification to species [7].

To determine the clinical and mycological efficacy of treatment, all patients were divided into 3 groups: Group 1 - female UC patients who received conventional treatment (OL) and the drug

fluconazole (flunol) - 66 patients; Group 2 - female UC patients who received only OL - 15 patients; Group 3 - male UC patients who received OL and the drug fluconazole (flunol) - 15 patients (control group).

Fluconazole (flunol) is an antifungal agent produced by Nobel Pharmsanoat (Uzbekistan). The drug belongs to the group of triazole derivatives. The mechanism of action is due to the highly selective inhibition of the synthesis of cytochrome P450-dependent fungal enzymes, which leads to a decrease in cellular styrene synthesis and disruption of cell wall permeability. When administered orally it is well absorbed from the gastrointestinal tract (up to 90%). Plasma concentrations reach a maximum of 0.5-1.5 hours after intake, with a plasma elimination half-life of about 30 hours. It is eliminated mainly by the kidneys (about 80%). Dose of 150 mg once for 7 days.

Statistical processing of the obtained results was performed using traditional methods of variation statistics with the application package Excel in a personal computer based on the processor "Pentium-IV". The principles of evidence-based medicine were used in organizing and conducting the research.

### **Research results and discussion.**

Given the unambiguous place of various factors in the formation and development of UC in patients, we have studied the detectability of different causes of morbidity in a comparative aspect in the regions studied.

We found that the main causes of UC formation in the examined patients were: endocrinopathies, hypovitaminosis, long-term intake of cytostatics, long-term intake of antibiotics, and other reasons.



In Tashkent province, unlike residents of Khorezm province, endocrinopathies in women were detected significantly more ( $69.3 \pm 7.4\%$  vs.  $54.8 \pm 7.7\%$ ). No differences were found in other reasons for the formation of the studied nosological unit.

There were cross-gender differences in the main causes of UC. While in women the leading causes were endocrinopathies, in men the first place was such an indication as "long-term use of antibiotics. No significant differences were observed for other causes of UC ( $P > 0.05$ ).

The next sign that characterizes the course and prognosis of the pathological condition is the age of the disease. It is known that the success of treatment depends on this parameter; the sooner patients are referred for specialized treatment, the sooner the symptoms of the disease can be controlled.

In this regard, we studied the parameters of the timing of primary treatment of UC patients, depending on the place of residence during the examination and questioning of patients (Table 1).

**Table 1**

**Comparative parameters of the time of primary treatment of patients with urogenital candidiasis depending on the place of residence**

Days	Khorezm region, n=50		Tashkent region, n=46	
	abs	%	abs	%
4 days	13	$26,0 \pm 6,2$	14	$30,4 \pm 6,8$
5 days	14	$28,0 \pm 6,3$	14	$30,4 \pm 6,8$
6 days	13	$26,0 \pm 6,2$	5	$10,9 \pm 4,6$
7 days	4	$8,0 \pm 3,8$	6	$13,1 \pm 5,0$
8 days or more	6	$12,0 \pm 4,6$	7	$15,2 \pm 5,3$

The data obtained show that sick residents of Tashkent region applied mainly on the 4th day and 5th day ( $30.4 \pm 6.8\%$  each) of the disease. The same figures for Khorezm region were  $26.0 \pm 6.2\%$  and  $28.0 \pm 6.3\%$ , respectively, indicating no statistically significant difference between the indicators ( $P > 0.05$ ). There were no intersex differences in this trait.

Thus, intersex differences were found in indicators of the main causes of UC for endocrinopathies and prolonged antibiotic use, but no significant differences were

found by place of residence. There were also no differences by place of residence in terms of the primary referral of patients for specialized medical care.

The next stage of our research was to study the detection rates of the main clinical symptoms in this population. It was found that there was virtually no difference in these parameters by place of residence.

There were intersex differences in the detection of clinical symptoms in patients. Six main clinical symptoms were detected in female UC patients (Table 2).



**Table 2**  
**Rates of detection of major clinical symptoms in women with urogenital candidiasis, n=81**

Symptoms	abs	%
Burning and itching that increases in the evening, in case of hypothermia, in case of untimely hygiene, before or after menstruation	80	98,8±1,1
Reddening and swelling of the mucous membranes of the genitals	79	97,5±1,7
Abundant or scanty white discharge of curd-like consistency	77	95,1±2,4
Sour odor from vaginal discharge	77	95,1±2,4
Pain and burning when urinating	75	92,6±2,9
Discomfort during sexual intercourse	61	75,3±4,8

The results show that the most frequently revealed clinical symptoms in female patients were burning and itching, which intensified in the evening, during hypothermia, untimely hygiene, before or after menstruation (98.8±1.1%, n=80), redness and swelling of the genital mucosa (97.5±1.7%, n=79). The following clinical symptoms followed: copious white

discharge of curd-like consistency (95.1±2.4%, n=77), presence of an acidic odor from vaginal discharge (95.1±2.4%, n=77), pain and burning during urination (92.6±2.9%, n=75), and discomfort during sexual intercourse (75.3±4.8%, n=61). Male patients were found to have disease-specific clinical symptoms (Table 3).



**Table 3**  
**Parameters of detectability of basic clinical symptoms in men with urogenital candidiasis, n=15**

Symptoms	abs	%
Redness and itching in the area of the penis head	14	93,3±6,5
Soreness in the area of the penis head	13	86,7±8,8
White, curd-like buildup on the penis head	12	80,0±10,3
Pain when urinating	12	80,0±10,3
Pain and discomfort during sexual intercourse	11	73,3±11,4
Swelling of the penis head	10	66,7±12,2

In male patients, redness and itching in the area of the penile head were detected most frequently (93.3±6.5%, n=14). The following symptoms were the next most frequently detected: Pain in the penile head area (86.7±8.8%, n=13), white, curd-like plaque on the penile head (80.0±10.3%, n=12); pain during urination (80.0±10.3%, n=12); pain and discomfort during intercourse (73.3±11.4%, n=11) swelling of the penile head (66.7±12.2%, n=10).

Thus, it was found that the main clinical symptoms of UC in women were burning and itching of the genitals, redness, swelling of the mucous membranes, copious or scanty white discharge of curd-like consistency and sour odor, pain when urinating and discomfort during sexual intercourse. Men had similar symptoms - redness, itching, soreness, swelling and white curd in the area of the penile head, pain during urination and intercourse. Attracting attention is the fact that the

intensity of detection of clinical symptoms of UC was significantly higher in women than in men.

The next stage was to study the clinical and mycological efficacy of treatment methods in UC patients in a comparative aspect.

In Group 1 patients parameters of clinical symptom relief were reliable ( $P<0.001$ ), the reduction was up to 1.5-3.0%, and some clinical manifestations, such as copious, white discharge of cystic consistency, pain and burning during urination, discomfort during sexual intercourse disappeared in all patients.

In patients of the 2nd group, although there was a reliable decrease in the definition of clinical symptoms ( $P<0,001$ ), but the intensity of symptom relief was not as characteristic as in the 1st group of female patients ( $P<0,05$ ). Thus, redness and swelling of the genital mucous membranes decreased from 93.9±6.2%



(n=62) to 13.3±8.8% (n=2), burning and itching from 100.0% (n=15) to 13.3±8.8% (n=2), profuse white discharge of curd-like consistency from 86.7±8.8% (n=13) to 6.7±6.4% (n=1), sour odor from discharge from 86.7±8.8% (n=13) to 26.7±11.4% (n=4). In addition, the post-treatment isolation rate of *Candida* spp. in Group 1 patients was 0%, while in Group 2 patients it was 13.3±8.8% (P<0.05), which proves

the mycological efficacy of fluconazole (Group 1) along with its clinical effectiveness in female UC patients.

In the control group of patients (men who were treated with fluconazole), the clinical and mycological efficacy of treatment was as high (Table 4) as in the group 1 women, but the intensity of clinical symptom definition was significantly reduced (P<0.05).

**Table 4**

**Clinical symptom manifestation in men with urogenital candidiasis (group 1) before and after treatment**

Symptoms	Mens, % (n=15)	
	Before treatment	After treatment
Redness and itching in the area of the penis head	93,9±6,2	6,7±6,4*
Soreness in the area of the penis head	86,7±8,8	6,7±6,4*
Swelling of the penis head	66,7±12,2	0
White curd on the glans of the penis	80,0±10,3	0
Pain when urinating	80,0±10,3	13,3±8,8*
Pain during sexual intercourse	73,3±11,4	6,7±6,4*
Seedability <i>Candida</i> spp	100,0	13,3±8,8*

Note: \* - sign of reliability before and after UC treatment.

This fact indicates that fluconazole included in the OC course has the most effective effect on female patients than on male patients, regardless of place of residence. In addition, it should be emphasized that full mycological efficacy is not achieved, since in patients in Group 2 (13.3%) *Candida* spp. continued to be excreted after a course of treatment.

Thus, there was a significant decrease in the detection of clinical symptoms of UC in both comparison groups in women and in the control group, but in the group of female patients whose OI course included fluconazole, the relief of symptoms was more intense than in the comparison groups. Similar results were obtained with regard to the isolation rate

of *Candida* spp. from biological material obtained from these patients. These facts indicate high clinical and mycological efficacy of fluconazole. In addition, the clinical and mycological efficacy of this drug was found to be significantly greater in women than in men, regardless of their place of residence.

**Conclusions.** 1. The main causes of onset and development of UC were endocrinopathies, prolonged intake of antibiotics and cytostatics, hypovitaminosis, with the first 2 causes being the most frequent. There were some intersex differences in endocrinopathies and prolonged antibiotic intake, but no differences by place of residence of the patients were found.

2. It has been found that the main specific clinical symptoms of UC are more



often detected in women than in men, regardless of age and place of residence.

3. There was a significant decrease in the detection of clinical symptoms of UC in the group of female patients whose OL course included fluconazole. In this group of patients, the relief of symptoms was more intense than in the compared groups.

Similar results were obtained for *Candida* spp.

4. High clinical and mycological efficacy of fluconazole was revealed. The clinical and mycological efficacy of this drug was significantly higher in women than in men regardless of their place of residence.

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