

Prevalence of vulvovaginal candidiasis and treatment with isoconazol nitrate

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Abstract

Background: Vulvovaginal candidiasis (VVC) was an infection caused by *Candida* species that affects millions of women every year. *Candida albicans* was the main cause of VVC. The development of VVC was usually attributed to the disturbance of the balance between *Candida* vaginal colonization and host environment by physiological or non-physiological changes. Several host-related and behavioral risk factors have been proposed as predisposing factors for VVC. Host-related factors include pregnancy, hormone replacement, uncontrolled diabetes, immunosuppression, antibiotics, glucocorticoids use and genetic predispositions. Behavioral risk factors include use of oral contraceptives, intrauterine device, spermicides and condoms and some habits of hygiene, clothing and sexual practices.

Materials and Methods: A total of 448 women with vaginal infection were studied retrospectively. Yeasts were isolated from the samples of 140 patients with vulvovaginal candidiasis. Routine diagnostic methods were used. A total of 113 patients were included to our treatment protocol.

Results and Conclusions: This study provides information about the current state of epidemiology and microbiology of VVC, as well as quite effective treatment of symptomatic and uncomplicated VVC with confirmed by laboratory results with isoconazole nitrate (a single dose of topical creams or vaginal ovules). We believe that all of them, as well as partner co-treatment and perineal hygiene increase the our success.

Key words: *Vulvovaginal candidiasis, C. albicans, Isoconazole nitrate*

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Introduction

Fungal disease in female genital organs was first demonstrated by Wilkinson in 1849. From this about a century later, the first fungal disease was shown in pregnant women (1). Nevertheless, the incidence and prevalence and importance of mycotic vaginitis has only been understood in recent years. The most common fungus in female genital organs was *C. albicans* (2, 3) and 75% of women suffer at least once during their lifetime (4). Sexual active women also accounted for 40-75% (5). However, to determine the incidence of vulvovaginal candidiasis (VVC) was very difficult. Because many patients were self-treated, others were symptom-free (6-8). Apart from *C. albicans*, there were other types of *Candida* such as *Candida glabrata*, *Candida tropicalis* and *Candida parapsilosis* (9,10).

Uncomplicated VVC was more common in sexually active women and in recent times in those who have received antibiotics, oral contraceptives and immunosuppressive medications, in those receiving radiotherapy, in pregnancy, and in those with diabetes mellitus (5). Although the main reservoir *Candida* was rectum, vaginal colonization was more frequent. It causes symptoms by penetrating vulvovaginal epithelium (11). Main symptoms and signs were thick yellowish-white, thick, adherent, viscous, odorless vaginal discharge, irritation, itching, burning, pain at the vulvovaginal region, dyspareunia, external dysuria, vulvar and vaginal erythema, excoriations, swelling or inflammation. (12,13). In complicated cases, patients with recurrent candidal vulvovaginitis (defined as four or more episodes of culture-proven candidal vulvovaginitis) in a year, it was recommended to perform additional screening for HIV or DM in recurrent cases (14).

As the complaints increase, treatment becomes more important. In the 1935s gentian violet, followed by boric acid, potassium sorbate, in 1955s, nystatins and imidazole derivatives. Gentian violet that has been widely used for many years causes chemical irritation. Boric acid increased the birth defects at least 2 times especially when used in the first 4 months of pregnancy. Because of this, it was not recommended (15). We performed this study retrospectively to assess the efficacy of imidazole derivatives (isconazole nitrate) that were routinely used in our clinic and almost all over the world today.

Material and methods

Between July 2014 and March 2014, four hundred forty eight women (16-78 years) attending the Obstetrics and Gynecology outpatient clinic of Mevlana University Hospital with complaints of vaginal discharge and/or vaginal itching and irritation were included the study retrospectively. Four hundred forty eight vaginal discharge culture results in Microbiology Laboratory of Mevlana University Hospital and files of 140 women diagnosed with candidiasis were examined. It was also noted that age, marital status, pregnancy status, menstrual period, symptoms, systemic disease, drug usage before and during the treatment, our treatment protocol, check-ups, recurrences. After recording their history, local examination, wet mount, whiff testing, and pH testing was done vaginal discharge and secretions were collected from the upper part of the posterior vaginal fornix and lateral vaginal wall using sterile cotton tipped applicators and subjected to direct microscopy (saline

preparation and 10% KOH preparation) and culture for Candida species. After potassium hydroxide application, the provider could see budding yeast, hyphae, or pseudohyphae on microscopy. The vaginal samples were inoculated on blood agar and Sabouraud's Dextrose agar (SDA). The culture plates were incubated aerobically at 37°C for 24 to 48 hours. The candida isolates were further speciated by Gram stain, culture on SDA (SRL, India), germ tube test and chlamydo spor formation on cornmeal agar (SRL, India). Although candida were estimated with laboratory tests, no treatment was given without clinical complaints (7). Patient treatment were supported with clinical signs, symptoms and laboratory findings and diagnosis. The same procedures were repeated to see effectiveness of therapy after treatment and recurrence surveys. Pregnant women were carefully examined for treatment resistance and recurrence and examined whether there was any difference between them and those who were not pregnant.

Treatment protocol of our clinic:

- 1- If the patient was virgin at reproductive age: topically isoconazol cream, first day, 3x1, then 2x1 for 7 days.
- 2- If patients was married and / or pregnant women at reproductive age:
 - a) Isoconazole nitrate cream, isocanozol nitrate vaginal ovule; a single dose of 600 mg,
 - b) Isoconazole nitrate cream for their partners.
- 3- Sexual abstinence was recommended during treatment.
- 4- Known predisposing factor was removed if there was.
- 5- In the postmenopausal period, additional to protocol 2, estriol creams were given to improve vaginal atrophy and vaginal flora (full of ½ intravaginal applicators at 2 times a week for 3 months).
- 6- Patients are advised not to keep the genital areas wet or damp, to wear cotton underwear, avoid tight clothing.
7. After 15 days, patients are called up to the check-up examination. By re-evaluating, if the complaints of patients continue, one cure 2. Protocol was repeated.
8. After 3 months, second control was done. If the complaints continue, the predisposing factors were evaluated and eliminated. A single dose of vaginal ovul and cream with 600 mg isokonoazole nitrate was given before and after menstruation. Especially vaginal ovules containing estriol + Doderlein bacillus were administered for 6-12 days to regulate the PH of the vaginal flora. Oral antifungal drugs are given to those who were not pregnant by monitoring drug side effects and liver functions.

Results

Vulvovaginal cultures were obtained from 448 females. Candida spp. was isolated in 140 patients (31.75%) of the 448 patients and decreased vaginal flora was found in 24 patients. The predominant species was *C. albicans* in 35.72% (n=50) and the other Candida species identified in 64.28% (n=90).

Twenty seven of the 140 patient's samples reproduced at the control cultures. The number of the treated patients with Candidiasis who were followed up was 113.

These 113 patients who were diagnosed as VVC were between 16-78 years of age and the mean age was 37±8 years: 15 of them were virgin, 38 of them were pregnant,

13 of them were in postmenopausal period and 5 of them were receiving chemotherapy, 11 of them with DM, 19 of them were taken oral contraceptives (OCs) for long-term, 1 of them were receiving corticosteroids and 10 were receiving antibiotic (AB), 2 of them with anemia.

In the control performed after 15th day of first cure, 98 women (86.73) recovered and 15 women (13.27%) continued complaints and *C. albicans* has reproduced at control culture. In the history of unhealed patients in the first cure, we detected that antibiotic use in 1 patient, DM in 5 patients, postmenopausal period with urgency in 5 patient, anemia in 1 patient, oral contraception (OCs) use in 3 patient. So we reevaluated patients. In addition to antifungal treatment, estriol crem and anti-incontinence medications were given to women in postmenopausal period. The glucose level of patients with DM was regulated by consulting with internal specialists. The use of antibiotics and OCs was terminated. After 3 months follow-up, only 2 patients had complaints and symptoms. One of the patients was taking chemotherapy and the other patient was DM.

One hundred and thirty-eight of the 140 patients (98.6 %) treated with isoconazole nitrate. Liver function tests of the patients were controlled and followed up for a long time. None of our patients experienced side effects such as itching or burning during therapy. The distribution of the patients according to the risk factors was shown in Table 1, and the healing and recurrence rates of the patients were shown in Table 2.

Table 1. Risk Factors and Demographic Features.

Risk Factors and Demographic Features	n (%)
Virgin	10 (8.85)
Pregnant	38 (35.40)
Antibiotic use	10 (8.85)
Patient with DM	11 (9.74)
Patients in postmenopozal period	15 (11.50)
OCs use	1 (0.88)
Korticosteroid use	1 (0.88)
Patients with anemia	2 (1.77)
Patients taking chemotherapy	5 (4.42)
Total	113

Table 2. Recovery and recurrence rates in patient's controls.

Healing and recurrence rates at patient's controls	1.Control-healing		2.Control-healing		3. Control, recurrence or chronic	
	n	%	n	%	n	%
	98	86.72	15	13.28	2	1.77

Discussion

Seventy five percent of women affected from vulvovaginal candidiasis at least once in their lives. Severity of patients symptoms can be different depending on the presence of candidal virulence, host inflammatory response, predisposing factors, severity of colonization. Some patients will have little to no discharge. The provider should not encounter ulcers, asymmetric swelling/masses, or foreign bodies. The degree of irritation is typically severe in patients with acute vulvovaginal candidiasis. Patients with infection with *Candida glabrata* usually have less severe symptoms. More than 20% of women may have yeast in the natural flora of the vagina. The majority of these are asymptomatic and do not require treatment (5, 7). However, until recent years, emphasis has not been given to symptomatic vaginal candidiasis proportional as incidence of VVC except the treatment of those who have been so complicated as to require treatment by being hospitalized in the hospital where the daily work will be disrupted has been seriously touched. An antimycotic agent has not been developed that was fully effective in the treatment of vaginal candidiasis and has fewer side effects, removing the possibility of recurrence, still yet (16). In recent years it has been reported that topical or oral antifungal medications have equal efficacy and symptoms resolve to 90% within 10 days (4,17). 86.73 % of our cases found healing in the first cure. In the literature, recurrence can be seen in up to 50 % of women, but in our cases, the second cure or recurrence rate appears to be low. In the control performed after 15th day of first cure, 98 women (86.73) recovered and 15 women had (13.27%) complaints and *C. albicans* has been produced on their routine vaginal culture. The patients who did not recover with this first cure were 1 in the continuation of AB use, 5 in DM, 5 in postmenopausal period with urgency stories, one in anemia had not yet recovered and three of them continued to use OCs. Estriol cream was continued to patients in the postmenopausal period (total 3 months, 2 times a week). Anti-incontinence medication was added to our antifungal treatment to prevent perineum from getting wet and irritation caused by urine. The glucose level of patients with DM was regulated by consulting with internal specialists. The use of AB and OCs was terminated. There were complaints and symptoms in only two patients at 3 months follow-up. The disease was evaluated as chronic vulvitis (18). One of the patients was taking chemotherapy and the other patient had DM. Liver function tests were checked for long-term follow-up and oral antifungal therapy. Ten virgin patients who received only topical cream and 38 pregnant patients who received a single dose of 600 mg vaginal ovules were all treated with the first cure and did not develop recurrence. We detected that presence of predisposing factors in almost all patients who require second cure or long-term treatment. As suggested by some researchers, we treated the symptomatic patients according to the vaginal discharge culture result, and we treated also the vaginitis due to other factors (5, 11, 18-20). It has been reported that the success rate of treatment without confirmation from the laboratory was lower (20). Our treatment success rate results seem to be higher than the literature; We thought that improving the predisposing factors and giving the partner co-treatment had contributed to the our treatment success.

Conclusion

It was observed that by treatment of symptomatic, uncomplicated VVC confirmed by laboratory tests with a single dose of topical cream or vaginal ovules containing isoconazole nitrate appears to be quite effective. We believe that all of them, as well as partner co-treatment and perineal hygiene increase the our success.

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