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TREATMENT AND PREVENTION OF VAGINAL CANDIDASIS IN MEDICINE (LITERATURE REVIEW)

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ABSTRACT

In the analysis of this literature, general information about vaginal candidiasis, the relevance of the disease, symptoms, treatment and prevention, the fungus that causes this disease types, in particular, general information about the type of Candida albicans, etiology, diagnosis of this type about, How does acquired immunodeficiency virus (HIV) cause infectious vaginosis stimulation, the importance of the reduction of probiotics in pregnant women in the development of the disease, the estrogen hormone in women effect of the frequency of change on the disease, different in the metabolism of acids the effect of changes on Candida albicans, resistance of the species to various substances, vaccination work, this fungus and o on the disease conducted experiences of recent years, in particular, the effect of antifungal drugs such as nystatin, amphotericin, fluconazole, clotrimazole, their reception and according to instructions and so in theoretical and practical medicine in this field news of recent years information about planned and analyzed and the results are widely reported.

Key words: Vaginal candidias, Vulvovaginal candidiasis, Candida albicans, HIV, probiotics, antifungal, fluconazole, clotrimazole, infection, Candida spp; antifungal resistance.

INTRODUCTION

Among the vaginal complaints in women of reproductive age, yeast infection is the main part of the common diseases vulvovaginal candidiasis caused by a certain type of it. In the last 20 years, the incidence of vulvovaginal candidiasis (VVK) is clear tend to be. Currently, VVK is the second o after bacterial vaginosis stands in line [1]. According to different researchers 15 to 40 percent of infectious diseases of the vulva and vagina are caused by a fungal infection. About 75 percent of women Part p is at least once in a lifetime also suffers from this disease. 40-45% of patients have two (or more) VVKs during their lifetime episodes occur10-20% of women are yeast are asymptomatic carrier, fungi often localized in the vagina; fungal colonization can be as high as 40% in pregnant women [34]. *Candida* causes an estimated half-billion cases of vulvovaginal candidiasis (VVC) every year. VVC is most commonly caused by *Candida albicans*, which, in this setting, triggers nonprotective neutrophil infiltration, aggressive local inflammation, and symptomatic disease. Despite its prevalence, little is known about the molecular mechanisms underpinning the immunopathology of this fungal infection[7].

Vulvovaginal candidiasis (VVC) is the second most common cause of vaginal infection globally after bacterial vaginosis (BV) and associated with adverse reproductive and obstetric outcomes, including preterm delivery, sexually transmitted infections and pelvic inflammatory disease [38].

Epidemiological investigations show that`showed that the prevalence of chronic vulvovaginal candidiasis can occur in 7-8% of women who have experienced the first episode. Connect with VVK severe discomfort; significantly reduces the quality of life of young women. Cause candida widespread of vaginal infections and the development of resistance to existing drugs require the need for new special antifungal agents and new targeted drugs. In addition, genetic predisposition in individual patients is also taken into account [8].

Vulvovaginal candidiasis (VVC) has been identified as a global issue of concern due to its clinical, social and economic implications. The emerging relevance of VVC makes it crucial to increase the knowledge on its epidemiological and etiological features in order to improve its prevention and treatment [3].

The most common symptoms of the disease include vaginal itching, pain during urination, thick white discharge that usually does not smell bad, and redness

around the vagina [20]. In addition to the above symptoms, vaginal erythema (redness), vaginal fissures (skin cracks), edema (fluid, swelling), as well as in some cases, ulcers are formed around it includes [11]. *Candida albicans* is associated with vaginal candidiasis the most common fungus that type although it is a different type of fungus are the same can cause similar symptoms. Confirmed vaginal candidiasis infections 370 patients in Hungary The study identified the following types of infection: Bag to *Candida albicans* candidiasis: 85.7%; *Candida albicans* (8 types): 13.2% (*C. glabrata, C. krusei, C. kefir, C. parapsilosis, C. tropicalis, C. dubliniensis, C. guilliermondii, C. orthopsilosis*) (19). So, in more than 85% of cases, vulvovaginal candidiasis is primarily caused by *C. albicans* called This species is a conditional pathogen for the organism. It can cause pathogenicity in the following cases: Taking drugs (antibiotics, hormonal drugs, cytostatics, oral contraceptives); Imbalance of female sex hormones (pregnancy, menopause); Type 1 or 2 diabetes, obesity, impaired carbohydrate metabolism, thyroid dysfunction; Immunosuppression (cancer, HIV infection); Avitaminosis that lowers the body's immunity; Physical exertion and hypothermia; Stress [33].

Symptoms often increase when women have periods,before puberty [29]. Vaginal candidiasis is very rarely new can cause congenital candidiasis in premature babies [27]. Not classified as an infection transmitted by l; but have frequent sex`It is common in adults [11]. Treatment of asymptomatic candidal vulvovaginitis in pregnancy is premature birth`There is tentative evidence that it may reduce the risk of stroke [22].

Diagnosis is made by examining a sample of vaginal mucus. Symptoms are sexual`Infections transmitted by l, chlamydia and gonorrhea , testing may be recommended [11].

Pregnancy and Vaginal Candidiasis

Studies show that showed that 20-30 percent of women get vaginal candidiasis during pregnancy. Estrogen hormone growth fungus created a favorable environment for colonization of vulvovaginal candidiasis in the vagina, because it binds to protein factor H on the surface of cells that cause vulvovaginal candidiasis will be. But the disease has no effect on the developing fetus does not show. Therefore, treatment is carried out only if candidiasis bothers you. Fungus during pregnancy or breastfeeding Several creams or vaginal suppositories are recommended to treat infections. Over-the-counter medications such as Miconazole, Clotrimazole, and Terconazole treat yeast infections , has been proven to safely and effectively eliminate infection. They usually last three to seven days`is used. It is important to finish the entire course of medication to prevent re-

infection. Studies show that showed that these drugs are safe for use during pregnancy [23].

Sex hormones and vaginal candidiasis

Have high estrogen levels The probability of infection with vaginal candidiasis increases. This is due to the high concentration of estrogen in the environment fungal infection white blood cells cannot recognize them and the fungus multiply without any resistance.

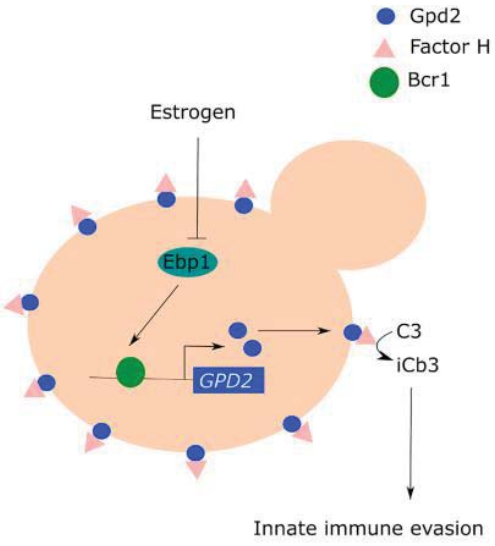

Figure 1. Effect of estrogen on *Candida albicans*

- Estrogen increases virulence of *Candida albicans*, reduces phagocytosis
- Estrogen-adapted *C. albicans* o`z binds more factor H on the cell surface
- Binding of estrogen to Gpd2 of *C.albicans*`a family that is immune evasion
- Overexpression of GPD2`growth increases the virulence of *C. albicans* [21).

Diabetes and vaginal candidiasis

In 2018, the data of more than 300,000 people The research that includes showed that people with type 1 or type 2 diabetes have a higher risk of infection, including vaginal candidiasis, than people without diabetes. Fungus feeds on sugar. In people with diabetes, blood sugar levels can be very high if they are not well controlled`can be strained`growth fungus`of co`can lead to an increase [16]. In addition, he has diabetes`conditional infections etc. in sick patients`there is a high risk of organ damage, which impairs their ability to fight pathogens [24]. Some more in the body of diabetics`changes, for example: decrease in intestinal secretion, nutritional reasons, gastrointestinal microflora changes, immunodeficiency and coexisting diseases, constant use of antibiotics or other drugs, changes in liver function, lack of necessary nutrients Candida creates a suitable environment for growth [17].

101 diabetic patients of De Leon et found that the frequency of Candida colonization was three times higher in type 1 diabetics compared to type 2 patients. In the same study, the most The most common colonies were Candida albicans, which were detected in 56% of type 1 diabetic patients, while Candida glabrata, in contrast, was found to have a prevalence of 54% of colonies in type 2 diabetic patients [4].(tab.1.)

Table 1.

People with diabetes`in healthy patients with VVK`studies comparing lame people

The author	Year	O`studied population groups	Experimental results
Gunther et al	2014	717 women were screened for Candida species`woven; Diabetes group numbers (n); n= 48, Control group n=669	Type 2 diabetes patients in Brazil are healthy significantly more than the lom group more colonization, symptoms and repeated infections they showed 18.8% of diabetics have vaginal Candida species showed, healthy and only 11.8% in disabled people (10).
Goswami et al	2000	166; n=78 Diabetics, n=88 diabetics those who are not.	People with diabetes`46% (36/78) of patients with diabetes had Candida species and only 23% (21/88) of healthy`Candida species in humans`showed(1).
Kendirci and others	2004	57; n=35 type 1 diabetes, n=22 healthy subjects	To`52.5% (32/61) of type 1 diabetes samples showed the presence of Candida species`showed, healthy`only 18.2% (5/22) of the subjects acknowledged its existence`showed (15).
Donders et al	2002	94 women; n=62 women with ≥ three episodes of candidiasis and positive microscopic Candida findings, n=32 for healthy Candida negative controls.	Patient with chronic vulvovaginal candidiasis`36% of patients with diabetes have at least one glucose value above 95%`However, only 12% of the control study population had this finding. HbA1c levels were found to be 25% higher in the recurrent vulvovaginal candidiasis group compared to the control group(5).

AIDS and vaginal candidiasis

Frequency of asymptomatic vaginal colonization o`When studied, it was found that different population groups differ. Candida colonization in HIV negative pregnancy`occurs in 10±20% of women without In pregnant women, this frequency is up to 15±30%`is narrowed and significantly reduced in post-menopausal women. Women in STD clinics have a higher frequency of asymptomatic colonization. Be pregnant`and be pregnant in non-HIV-positive women conducted a number of studies, microscopy and culture including z, found that vaginal colonization increases significantly in HIV-infected women showed [14,28,30]. Also, based on the data, we can say that *Candida albicans* species prevails in causing vaginal candidiasis even in women with HIV [12].

Vaginal microflora and vaginal candidiasis

Fungus in the vagina In addition to external factors, the vaginal microflora is also of great importance for the diseases. Especially dominant in the vaginal microflora *Lactobacillus* types. Studies have shown that the dominance of *Lactobacillus crispatus* and *Lactobacillus iners* in the vagina has an antagonistic effect on the development of *Candida albicans.*

In the experiment, 266 women of reproductive age were taken and their vaginal microflora was analyzed: *L.crispatus* dominant in 54 (20%), L. iners dominant in 106 people (38 %), Other species of *Lactobacillus* dominate in 106 (42%). The percentage of chronic vulvovaginal candidiasis was almost 2 times higher in women with other types of Lactobacillus dominating, occupying 42% of it [18].

Treatment

The different Lactobacillus strains of probiotics have been applied to the treatment and prevention of bacterial vaginosis and vulvovaginal candidiasis. The experimental data demonstrated that it works well via reducing the number of harmful bacteria, maintaining the acidic microenvironment, inhibiting the immune response, and so on, to restore the vaginal microecology. However, the clinical data indicated that it is not sufficient to support the use of probiotics in the intervention of vulvovaginal candidiasis rather than bacterial vaginosis [37]. Patients with vaginal infection are treated with saline cream, suppositories and tablets. Medicines usually range from 1-7 days depending on the severity of the disease`is accepted in Treatments are mainly taken at night. The reason for this is keeping creams and suppositories on the affected area longer. Below is the duration of 1 course of treatment of some drugs shown.

Table 2.

Medications used in the treatment of vaginal candidiasis

Medicine	How long to use
Clotrimazole 1% (cream)	7-14 days
Clotrimazole 2% (Cream)	3 days
Miconazole 2% (cream)	7 days
Miconazole 4% (cream)	3 days
Miconazole 100 mg (vaginal suppository)	7 days
Miconazole 200 mg (vaginal suppository)	3 days
Miconazole 400 mg (vaginal suppository)	1 day

Besides thatdrugs such as butoconazole, clotrimazole, miconazole, nystatin, tioconazole, terconazole are also prescribed [11].

Although effective control of VVC is achievable with the use of traditional treatment strategies (i.e., antifungals), the possibility of drug intolerance, treatment failure and recurrence, as well as the appearance of antifungal-resistant Candida species remain critical challenges. Therefore, alternative therapeutic strategies against VVC are urgently required. In recent years, an improved understanding of the dysbiotic vaginal microbiota (VMB) during VVC has prompted the consideration of administering -biotics to restore the balance of the VMB within the context of VVC prevention and treatment[38].

Lactobacilli in the vaginal tract are essential to protect against microbial infections. We therefore focused on isolating vaginal lactobacilli from pregnant women and testing their functional properties. Lactobacilli were isolated from 50 vaginal swabs and the purified isolates were identified by MALDI-TOF MS. Functional properties (antimicrobial activity, organic acids and hydrogen peroxide production, antibiotic susceptibility, auto-aggregation, and hydrophobicity) of selected isolates were tested. Lactobacilli (41 strains) were identified in 58% of swabs with a predominance of Lactobacillus crispatus (48%) followed by L. jensenii (21%), L. rhamnosus (14%), L. fermentum (10%), and L. gasseri (7%). The highest antibacterial activity was determined for L. fermentum and L. rhamnosus. Strong anti-Candida activity was observed for strains L. crispatus, L. fermentum, and L. rhamnosus. Strain L. jensenii 58C possessed the highest production of hydrogen peroxide (6.32 ± 0.60 mg/l).Strains L. fermentum and L. rhamnosus showed high antibacterial activity and hydrophobicity, and strains L. crispatus possessed high auto-aggregation and anti-Candida activity. Thus, these strains alone or in a mix could be used for the preparation of probiotic products for treatment and prevention of vulvovaginal infections of pregnant and non-pregnant women [21].

High vaginal samples were collected from 470 symptomatic and asymptomatic participants; Candida spp. were identified with molecular techniques and their antifungal susceptibility was analyzed with E-tests. The results revealed an incidence of VVC among women with vulvovaginitis of 74.4%. Furthermore, 63.7% of asymptomatic women were colonized with Candida spp.Candida albicans was the most common species (59%), followed by Candida glabrata (27%), in a total of eight distinct species, with similar distribution among colonized and infected participants. Of note, various isolates, especially of the most common species, showed low susceptibility towards fluconazole. In contrast, only few isolates showed low susceptibility towards caspofungin. Overall, this study suggests that the identification of species causing VVC and their antifungal

susceptibility are urgently needed in clinical practice in order to improve the decision for the most adequate treatment[3].

Is it possible to get a vaccine against vaginal candidiasis?

Determination of the immune response in the vagina is the basis for the discovery of vaccination or immunotherapy methods against vaginal candidiasis`ldi Important immunodominant antigen and virulence factors of C.albicans affecting mucosal infections`lgan aspartyl-proteinase (Sap2) with viromas`and received the PEV7 vaccine. In a mouse model and by Pevion in women o`results of a clinical trial suggest that intravaginal PEV7 vaccine is effective for the treatment of recurrent vulvovaginal candidiasis.`that it has a stimulating therapeutic potential`showed This is a method of protection against Candida at the mucosal level`l opens [8].

Prevention

You often the usual way by changing the vaginal fungus You can prevent infection. This o`changes may include: Use the shower less often - it weakens the vaginal microflora; Fragrance`Do not use tampons; Use cotton clothes; If you have diabetes If so, try to keep your blood sugar in a normal range; Always use antifungal agents when taking antibiotics accept; If you are pregnant or infected with HIV`If necessary, consult your doctor for treatment [11].

CONCLUSION

Vulvovaginal candidiasis is still worldwide`threat to women's health`is standing and numerically it's getting worse. Especially, patients with diabetes and acquired immune deficiency syndrome are more than that`are suffering more. In addition, pregnant women and those with low immunity women are also suffering from this disease. Although the treatment measures are simple, the course of treatment is completed. Incontinence causes vaginal candidosis into a chronic for puts, therefore, be more attentive to treatment we are required. Vaginal candidiasis vaccine has been tested in recent experiments is being made. We hope that this test will be successful. But if everyone tries to prevent the disease, healthy’If you follow a healthy lifestyle, you can avoid vaginal candidiasis and other diseases and we concluded that vaginal microbiologic analyses are urgently required in clinical practice in order to improve the prevention and treatment of this disease.

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