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Modern Possibilities Of Using Essential Oils In The Pathology Of The Vulva And Vagina In Pregnant Women

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Abstract

The article describes the features of diagnosis, treatment methods for pregnant women with vulvovaginal infections. A clinical and laboratory examination of pregnant women with VVI was performed. In this case, complaints, data from a gynecological examination, microscopy, cultural, and gas chromatographic studies of vaginal microflora were taken into account. The effectiveness and tolerance of anise oil in the complex treatment of vulvovaginal infections in pregnant women were analyzed. The results of the comparative effectiveness of the treatment of vulvovaginal infections in pregnant women are presented, which are divided into 2 groups: the first group received standard two-stage treatment (antibacterial treatment and probiotics). The second - additionally, after standard therapy, the use of anise oil intravaginally for 4 days (complex therapy (CT). Complex therapy of vulvovaginal infections using ordinary anise oil increases the effectiveness of treatment, which is characterized by a decrease in the frequency of relapse of the disease 2.7 times per due to the persistent normalization of the microbiological characteristics of the vaginal microbiocenosis at the time of delivery, it does not cause an allergic reaction and is well tolerated by patients.

Keywords: essential oils, common anise, vaginal microbiocenosis, vulvovaginal infections, pregnancy.

INTRODUCTION

Worldwide, more than 50% of visits to a gynecologist are associated with an infectious pathology of the vagina and / or cervix, which, according to the WHO, is observed in 25-45% of pregnant women, which is relevant, which leads to a complicated course of pregnancy and childbirth. Violations of the vaginal microbiocenosis lead to the development of clinical manifestations of infection in the form of bacterial vaginosis, vulvovaginal candidiasis, aerobic vaginitis, or combinations thereof. In turn, according to WHO data, a stable tendency towards an increase in the incidence of sexually transmitted infections and an increase in extragenital diseases of inflammatory etiology, which reduce the body's immune resistance,

are noted throughout the world. The irrational use of antimicrobials, which increase the prevalence of dysbiotic and infectious diseases in pregnant women, also makes a great contribution.

The variety of methods for detecting cervico-vaginal infection in pregnant women makes it difficult to rationally diagnose the infection and remains an unresolved and controversial problem. The significance of CVI in pregnant women, complicated by the threat of interruption, the relationship of infection with indicators of the antioxidant system, and the degree of endogenous intoxication of pregnant women has not been adequately studied. In this regard, the analysis of the prognostic significance of endotoxicosis criteria and the parameters of objectification of the state of pregnant women in assessing the course, the outcome of pregnancy and childbirth, and the prognosis of an unfavorable course of pregnancy in women with CVI seems relevant and justified. The issues of treatment of pregnant women with genital infections complicated by the threat of abortion remain unclear.

Despite a large number of studies on the treatment of GI, drugs are being sought to treat mixed infections. So, A. NovakovMikić (2015) indicates the efficacy of pregnant women with oxygenated dihydrochloride/phenoxyethanol; F. Tara et al. (2016), who successfully used ozonated olive oil to treat vulvovaginal candidiasis, showed its advantage over clotrimazole; W. Mendling et al. (2016) report the use of Dequalinium chloride (Fluomizin), which has a wide spectrum of action, for the treatment of mixed vaginal infections.

The purpose of the study is to improve the diagnosis and treatment of complications in pregnant women with cervico-vaginal infections.

MATERIALS AND METHODS

A clinical and laboratory examination of 115 pregnant women with a cervico-vaginal infection complicated by the threat of abortion was performed. The diagnosis of cervico-vaginal infection was made based on microscopic, bacteriological methods, and the GLC method of detecting markers of microorganisms. The GLC method was carried out on a Color 100, Model 165 chromatograph with a flame ionization detector based on Samara State University. Identification of microorganism markers was carried out on an Agilent Technologies 5977A MSD gas chromatographic-mass spectrometric system at the High Technology Center. To achieve the goal, an anise oil in a ratio of 1:10 was used, which contains active anise oil in pregnant women with cervico as active ingredients vaginal infection complicated by the threat of abortion. Pregnant women with CVI were divided into 2 subgroups: subgroup A - 52 women who received traditional therapy (TT) - treatment according to the standard scheme, depending on the nosology. Subgroup B - 63 women who, along with the traditional treatment, used local sanitation of the vagina with anise oil at a dilution of 1:10, i.e. complex therapy (CT) for 4 days.

The indicated sequence of the use of drugs at the stages of therapy is due to the fact that after antibacterial treatment, the lipopolysaccharides of bacterial cells are released, which require their timely elimination from the vaginal biotope to weaken the local and systemic effects of lipopolysaccharide on the macroorganism, which is what essential oil contains in anise oil. At the final stage, the pregnant women of both clinical groups, according to the treatment regimen, used the probiotic Vagilax capsules for 10 days, 1 capsule per day orally.

The effectiveness of treatment was evaluated based on a subjective assessment of vaginal discharge. All pregnant women were observed on an outpatient basis with a repeated collection of vaginal smears after 15-30 days. Clinical observation in the dynamics of treatment showed that after CT in patients of the main group hyperemia of the vaginal mucosa and cervix uteri disappeared, the discharge became mucous and decreased in volume, the itching in the external genital area disappeared within 2-3 days. In patients of the 2nd group, these phenomena took place within 4-5 days. With the addition of a treatment regimen, the mucosa becomes shinier. The results of bacteriological and GLC studies are consistent with each other, and the number of markers of microorganisms is more accurately expressed if they are determined by GLC. In the dynamics of treatment, an effect on the coccal flora of the vagina was noted. So, in the patients who received CT, the content of these microorganisms decreased to 25.3% compared with the start of treatment (88.4%), and among those who received TT, they decreased to 58.2% (at the beginning of treatment 82.4%). The effect was also observed with gram-negative rods and fungi. Under the action of CT, their number after treatment decreased by 3.5 times, in after TT. - only 1.1 times. Gram-positive bacilli, reflecting environmental well-being, were sown before treatment in 35.6% of patients receiving CT, and in 38.8% of women receiving TT. After CT, their number increased to 64.7%, and after CT. decreased to 32.7%.

Additional criteria for evaluating the effectiveness of treatment is the absence of adverse side effects, which corresponded to a sufficient level of drug safety in the group of patients who received CT. After a CT scan, clinical recovery occurred in 61 (96.8%) patients. The fungal elements were found in 2 (3.2%) patients, in 3 (5.8%) patients the inflammatory type of vaginal smear was preserved, in 11 (21.2%) pregnant women, the native preparation corresponded to the intermediate type of smear, key cells were found in 1 (2.04%) women. After the course of TT clinical recovery in 45 (86.5%) patients. An inflammatory type of smear was found in 11 (22.4%) women, an intermediate type in 15 (30.6%); key cells were detected in 2 (3.9%), fungal elements - in 5 (10.2%).

During the bacteriological examination of the separated cervical canal, the growth of any microorganisms was absent in 3.9% of patients of the main group and, respectively, in 5.3 and 92.3% of the comparison group and the control group.

In 111 (96.5%) women, the main group, in 46 (93.9%) control groups, and in 3 (6%) of the control group, mainly colonies of staphylococci and enterobacteria grew in positive samples. 34.8% of

the examined main group showed growth of yeast-like fungi of the genus Candida. Staphylococci were seeded in 62.4% of cases. In 60% of cases, E. coli and Proteus were found. Various associations of anaerobic and aerobic microorganisms, including fungi, were seeded in 30 (19.1%). All detected UPM had diagnostically significant-high CFU / ml figures> 105.

In the main and comparison groups, monocultures were isolated in 10 (8.7%) and 11 (22.4%) examined, respectively, and associations of microorganisms represented by intestinal met in 105 (92.3%) and 38 (77.6%), respectively bacillus and staphylococci, as well as fungi of the genus Candida. Most often in high titer (CFU / ml9) Staph are highlighted. epidermidis - in 33% of cases in the main and 16.5% in the comparison group, Enterococcus faecalis - in 26.1 and 12.2%, respectively, Escherichia coli - in 60.0 and 42.9% ($p < 0.05$) There were also combinations of yeast and staphylococci, streptococci, staphylococci and E. coli, staphylococci and Klebsiella, yeast and E. coli (Table 3). Thus, in bacteriological research, a conditionally pathogenic flora was mainly found: Enterococcus faecalis, E. coli, Fungi of the genus Candida, Staph. epidermidis in high concentrations (CFU / ml> 105). It should be noted that during the bacteriological examination, “hidden” urogenital infections were not detected (Table 1).

Table 1: Microbiocenosis of the contents of the cervix during bacteriological examination

Microorganisms	Maingroup, n=115		Comparisongroup, n=49		χ2	P
	абс.	%	абс.	%		
Nogrowthdetected	9	7,8	4	8,2	0,59	>0,05
Microorganismgrowth	106	92,2	45	91,8	0,59	>0,05
Enterococcusfaecalis	30	26,1	6	12.2	3,84	<0,05
Str. agalactiae B	38	33,0	11	22,4	1,84	>0,05
Staph. epidermidis	38	33,0	8	16,5	4,76	<0,05
Staph. aureus	12	10,4	3	6,1	0,77	>0,05
E. coli	69	60,0	21	42,9	4,08	<0,05
Klebsiella	4	3,5	2	4,1	0,04	>0,05
Proteusspp.	15	13,0	4	8,2	0,80	>0,05
Candidamushrooms	40	34,8	16	32,7	0,07	>0,05

Bacteriological examination also revealed a general contamination of the cervical canal. As the calculation of χ2 shows, there are significant differences ($p < 0.01$) between the seeding rates in the patients of the main and comparison groups. As can be seen from table 2, the seeding rate in the main group was higher. Violation of quantitative ratios in the bacterial community of the genital tract leads to

the development of clinical manifestations of GI in the form of a threat of termination and other complications of pregnancy.

Table 2. Total contamination of the cervical canal in pregnant women with genital infections, CFU / ml

Incidencerate	Maingroup, n=115		Comparisongroup, n=49		χ2	P
	abs.	%	abs.	%		
Low (0-10^3)	-	-	-	-		
Medium (10^3-9 × 10^4)	42	36,5	30	61,2	7,49	<0,01
Tall (10^5-9 × 10^5) andabove	73	63,5	19	38,8	8,51	<0,01

In order to increase the effectiveness of the diagnosis of VVI, we applied PCR and GLC. To detect "hidden" urogenital infections, cervical smears were studied by PCR. The spectrum of pathogens separated from the cervix of the pregnant women of the main and comparison groups verified by PCR (Fig. 3.1). A PCR study of microbiocenosis by the method of “hidden infections” showed that the most common microorganism in the main group was Ureaplasmaurealyticum (20,7%) and cytomegalovirus infection (13,8%) (p <0,05).

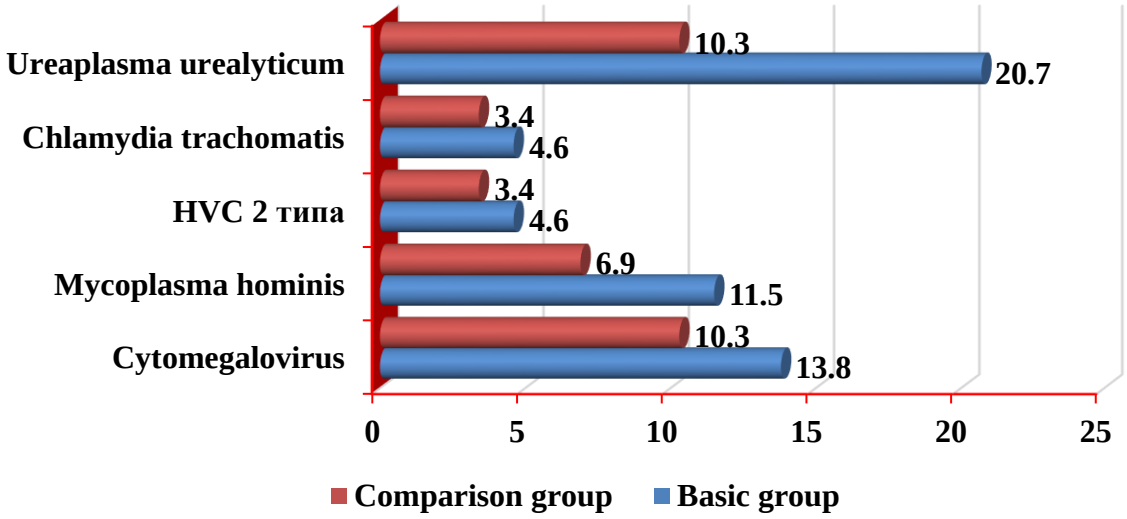

Figure 1. Microbiocenosis of the contents of the cervix by PCR (%)

In 98 (85.2%) patients of the main group and in 40 (81.6%) comparison groups, a massive increase in the bacterial flora was observed against a background of viral infection. So, cytomegalovirus infection was combined with massive bacterial growth in 8 (13.8%), with HSV 2 - in 6 (5.2%) of the examined main group. This indicates a violation of secretory immunity under the influence of viruses and, probably, the attachment of a secondary bacterial infection. We carried out a qualitative PCR study, which is the "gold

standard" in the diagnosis of pathogens, GI pathogens, but at the same time it is not quantitative, it is used mainly for the detection of obligate pathogens.

In the diagnosis of infection, the GLC method was used, with the help of which the composition of the fatty acids, hydroxy acids and aldehydes that make up the microbial cell lipids and metabolites was studied. GLC allows the simultaneous determination of markers of opportunistic flora, as well as “hidden” urogenital infection, both qualitatively and quantitatively, and is an express method.

Table 3. The level of markers of microorganisms of the contents of the vagina (cells / ml) in pregnant women, determined by GLC

Typeofmicroorganism	Marker (MIS MIDI base "Sherlock", 1992)	Maingroup, n=75	Comparisongroup, n=23
Cytomegalovirus	Cholestadienone	$2{,}17\cdot10^{5}$	$1{,}92\cdot10^{3}$
Herpessimplexvirustype 2	Cholestendiol	$3{,}24\cdot10^{5}$	$2{,}13\cdot10^{3}$
Chlamydiatrahomatis	Hydroxyeicosanoicacid (3h20)	$2{,}58\cdot10^{7}$	$1{,}88\cdot10^{4}$
E. coli	3-hydroxymyristic acid	$2{,}44\cdot10^{8}$	$1{,}98\cdot10^{4}$
Enterococcusfaecalis	CyclononadecanoicAcid (19cyc)	$8{,}23\cdot10^{7}$	$6{,}23\cdot10^{3}$
Staphylococcusspp.	Anteisononadecanoicacid (a19)	$2{,}10\cdot10^{8}$	$1{,}70\cdot10^{5}$
Streptococcusagalactiae B	Decanoicacid (C10: 0)	$7{,}07\cdot10^{9}$	$4{,}02\cdot10^{5}$
Candidamushrooms	Heptadecenoicacid (C17: 1)	$7{,}40\cdot10^{7}$	$5{,}63\cdot10^{4}$
Lactobacillus	1-methylenocadecanoic acid (C19cyc)	$5{,}29\cdot10^{2}$	$5{,}44\cdot10^{3}$

So, we found that each type of microorganism has an inherent composition of fatty acids. At the same time, not only microorganism markers were identified (qualitative assessment), but also their quantitative content. In CVI complicated by the threat of termination of pregnancy, the level of microorganism markers has higher concentrations (in the titer) of concentration of 105–9 and higher, while in the comparison group their titer was in the range up to 105 (Table 3).

Data on the frequency of cure for cervico-vaginal infections in pregnant women complicated by the threat of abortion are shown in Fig. 2. Against the background of the proposed method of treatment, a decrease in the clinical manifestations of CVI and normalization of the microbiocenosis of the vagina and cervix in the examined pregnant women were noted. From fig. 2 shows that the most effective treatment was with CT, which leads to a decrease in the frequency of infection, relapse of the disease by 2.7 times due to the normalization of the microbiological characteristics of the vaginal microbiocenosis at the time of delivery. Relapses after treatment were observed in 5 (7.9%) and 11 (21.2%) pregnant women, respectively, who received complex and traditional therapy.

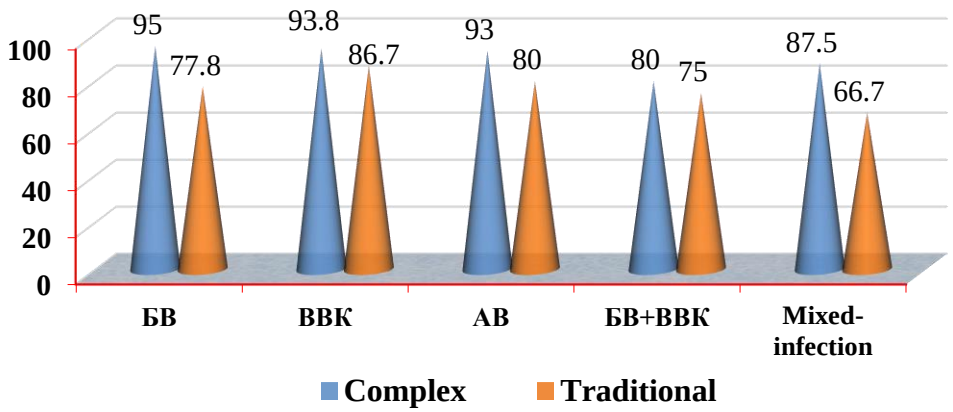

Fig. 1. The frequency of cure of VVI in pregnant women.

Thus, the diagnostic efficiency of detecting microorganisms by GLC in combination with bacteriological and PCR studies was 85,5% (sensitivity - 90%, specificity - 81%), while separately diagnostic efficiency with GLC was 82%, with the bacteriological method - 56 %, PCR - 79%.

A method for the treatment of cervico-vaginal infections complicated by the threat of termination of pregnancy, including the local sanitation component, is significantly more effective than the traditional one, since it allows to reduce the recurrence rate of the infection by 2,7 times due to the persistent normalization of vaginal microbiocenosis before childbirth, leading to a decrease in the frequency of premature births in 2,4 times, prenatal rupture of the fetal membranes 3,9 times, uterine subinvolution 4,8 times, the use of anise oil does not cause an allergic reaction and is well tolerated by patients.

CONCLUSION

Thus, the complex therapy developed by us with the inclusion of phytosbor and the local use of common anise in the form of tampons leads to an improvement in the indicators of endogenous intoxication, antioxidant therapy, contributes to an effective improvement in the state of vaginal microbiocenosis, which is reflected in a significant improvement in the outcomes of pregnancy, childbirth, the newborn period and the postpartum period.

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