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Gardnerella vaginalis in vaginal secretions in quilombola women in the municipality of Bequimão-MA

Gardnerella vaginalis em secreções vaginais em mulheres quilombolas no município de Bequimão-MA

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A B S T R A C T

The female reproductive system confers the form in which the vagina and cervix are organs that are considered complex and concentrate a considerable amount of aerobic and anaerobic bacteria of the natural vaginal microbiota. Gardnerella vaginalis plays a keys role in the development of bacterial vaginosis since the vagina is a suitable environment for its colonization, including by strictly anaerobic bacteria, which is associated with BV. Characterize the relationship between vaginal secretions and Gardnerella vaginalis infection in quilombola women. This is a descriptive, cross-sectional study, about the population was formed by quilombola women between 15 and 75 years of age. The Data was collected based on the cytopathological examination request form, the interview was conducted and personal information and sociodemographic data were collected. From a total of 140 participants, 25% were positive for Gardnerella vaginalis. With respect to the age bracket between 31-45 years, there was a prevalence of 44.3%, p= 0.8344. Regarding marital status, the largest group was married women or stable unions with 75 members, and only 14 women (18.66%) are associated with Gardnerella vaginalis with p= 0.2843. Concerning the Amsel test, A Whiff's test and Cells test, p <0.0001 was found. The sociodemographic profile of the quilombola women, showed a higher frequency of women between the ages 31 to 45 years, who studied up to primary schools, who were married, non-alcoholic and non-smokers. Gardnerella vaginalis-related inflammation represented 25% of the exams performed.

Keywords: STIs. Gardnerella vaginalis. Bacterial vaginosis

R E S U M O

O sistema reprodutor feminino confere a forma em que a vagina e o colo uterino são órgãos considerados complexos, concentra quantidade considerável de bactérias aeróbias e anaeróbias da microbiota natural vaginal. A Gardnerella vaginalis tem um papel fundamental no desenvolvimento de vaginose bacteriana, já que a vagina é um ambiente adequado para sua colonização, inclusive por bactérias anaeróbias estritas, que estão associadas ao quadro de VB. Caracterizar a relação entre a presença de secreções vaginais com a infecção por Gardnerella vaginalis em mulheres quilombolas. Trata-se de um estudo descritivo, de corte transversal, a população foi constituída de mulheres quilombolas entre 15 e 75 anos de idade. Os dados foram coletados com base no formulário de requisição de exame citopatológico, foi realizada entrevista e colhidas informações pessoais e dados sociodemográficos. De um total de 140 participantes, 25% foram positivas para Gardnerella vaginalis. Em relação a faixa etária entre 31-45 anos ocorreu uma prevalência de 44,3%, encontrou-se p= 0,8344. Com relação ao estado civil, o maior grupo foi o de mulheres casadas ou união

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estável com 75 integrantes, sendo que apenas 14 mulheres (18,66%) estão associadas com a Gardnerella vaginalis com p= 0,2843. Em relação ao teste de Amsel, teste de Whiff e Cells, foi encontrado p <0,0001. O perfil sociodemográfico das mulheres quilombolas, demonstrou maior frequência de mulheres em idade entre 31 a 45 anos, que estudaram até o ensino fundamental, que eram casadas, não etilistas e não fumantes. A inflamação relacionada com a Gardnerella vaginalis, representou 25% dos exames realizados.

Introduction

Vaginal secretions in women may be associated with vaginitis or vaginosis, depending on the existence or not of inflammatory processes. It is an inflammation of the stratified epithelium of the vulva and vagina, whose most frequent etiological agents are fungi, especially Candida albicans; anaerobic bacteria associated with bacterial vaginosis; and the protozoan Trichomonas vaginalis. In addition, there may still be cytolytic vaginosis, dysbiosis resulting from a growth of lactobacilli and the lytic action on squamous cells, as well as the possibility of occurrence of mixed vaginitis (Mcneil et al., 2022).

Mixed vaginitis is a state where two pathogens are present and cause vulvovaginal symptoms. They can be pathogens with a predilection for identical or no vaginal pH. May be, for example, Trichomonas vaginalis vaginitis associated with bacterial vaginosis (Sobel et al., 2013). The most frequent form of mixed vaginitis, however, is the association of Candida spp infection with bacterial vaginosis. Its frequency ranges from 7% to 22% of vaginal discharge cases, depending on the diagnostic method used (Morrill et al., 2020).

Trichomoniasis is the most common non-viral Sexually Transmitted Infection (STI), which affects about 140 million people a year worldwide. It is due to a flagellated parasite, T. vaginalis (Graves et al., 2019), which leads to changes in the vaginal microbiome, enhanced local inflammatory response, and a decline in the number of Lactobacillus sp. On some occasions, overgrowth of Lactobacillus sp occurs with severe destruction of intermediate squamous cells (cytolysis), associated with genital irritative symptoms (Yang et al., 2017).

Bacterial vaginosis is the most frequent disorder of the lower genital tract and associated with the reduction of Lactobacillus sp and the growth of numerous anaerobic and facultative bacteria, such as variable Gram short bacilli, Gram-negative curved bacilli, and anaerobic Gram-negative cocci, with individual variation, mainly Gardnerella, Atopobium, Prevotella, Megasphaera, Leptotrichia, Sneathia, Bifidobacterium, Dialister, Mobiluncus, Ureaplasma, Clostridium, and Mycoplasma, known as bacterial vaginosis associated bacteria (BVAB). Some alterations in the vaginal microbiome (dysbiosis) may be associated with a higher prevalence of bacterial vaginosis. Studies on the microbiome characteristics of Brazilian women of reproductive age revealed the microbiome type (community-stereotypes, CST) corresponding to CST IV, with depletion of lactobacilli and an increased vaginal pH in 27.4%, and bacterial vaginosis was present in 79.6% of cases (Boyanova et al., 2021).

The identification of Gardnerella vaginalis in cytological smears given by the presence of clue-cells in microscopic analysis, where it may or may not present symptoms such as

intense vaginal discharge, whitish in colour and with an unpleasant odour, classified as bacterial vaginosis (Castro et al., 2020).

As a woman goes through life, she changes her vaginal microbiota. When newborn, the microbiota is composed of microorganisms found in the skin and lower digestive tract, but the presence of Lactobacillus spp is evident. Among the most frequently found aerobic species are coagulase-negative Staphylococcus, Escherichia coli, and Streptococcus sp., while anaerobic species include Prevotella melanogenic, Veillonella parvula, Peptococcus, Peptostreptococcus, and Propionibacterium spp (Aragão et al., 2019).

With increasing age, circulating estrogen levels can influence changes in the dynamics of the vaginal microbiota. With the production of estrogen itself and the onset of menarche, the vaginal mucosa becomes thicker, and there is an increase in glycogen levels and a consequent increase in Lactobacillus spp. Over the course of a woman's reproductive years, the healthy vaginal microbiota dominated by Lactobacillus spp, mainly the species L. crispatus, L. gasseri, L. jensenii and L. iners, which represent 80% to 95% of the bacteria (Leite et al., 2021).

In response to the health inequality existing in the country among races and ethnicities, The National Policy for Integral Health of the Black Population (PNSIPN) was instituted through Ordinance No. 992 of May 13, 2009. Addresses the rights of this population regarding access to health and improvement of their living conditions, preventing social inequality and providing equitable and equal access to health services, outlining goals for improvements with specific attention to the quilombola population (Ministério da Saúde, 2009; Ministério da Saúde, 2017b).

The quilombolas constitute a segment that has been socially and historically discriminated against due to the inhumane impositions established by the obsolete Brazilian mercantile and production system. Today, even though they have a history of struggles and resistance, in the affirmation of their beliefs, culture and protection of their rights, the quilombolas of the Chácara das Rosas Community are immersed in the influences of the social determinants of health arising from the urban environment in which they live. Thus, it is relevant to understand the perception of health by this population in order to obtain subsidies for the formation and affirmation of targeted public policies, aiming at the legitimation of rights and recognition of the quilombolas as subjects in determining their health levels (Botega et al., 2016).

A study conducted on quilombola women assisted by the Unified Health System in municipalities of Maranhão found 27.7% cases of infection by Gardnerella vaginalis, however, with higher prevalence in women <30 years (Batista et al., 2014). In menopause, there is a decrease in estrogen secretion levels with atrophy of the vaginal epithelium and elevation of the vaginal pH. The natural microbiota is replaced by differentiated bacteria, as there is a

decline in Lactobacillus spp and an increase in coliforms, including Gardnerella vaginalis. The study aimed to meet the research questioning and to characterize the relationship between vaginal secretions with Gardnerella vaginalis in quilombola women in the municipality of Bequimão - Maranhão.

Material and Methods

The development is a fundamental part of the manuscript, is important that the exposition of the text without an argumentative set and in a detailed and orderly manner. To this end, it is suggested that it should divide into topics and subtopics.

In a descriptive, cross-sectional study, the population made up of quilombola women, users of the Unified Health System (SUS) in partnership with the municipality of Baixada Maranhense, western coast of Maranhão, for tracking infections by Gardnerella vaginalis and the relationship with cervicovaginal alterations.

The sample composed of women aged 15 to 75 years old, residents and registered in the coverage areas of the Family Health Strategy (FHS) teams who responded to the invitation, met the inclusion criteria and agreed to sign the Informed Consent Form. The research was initially approved by the Ethics and Research Committee of the Federal University of Maranhão, under Consent No. 3.938.604 on 03/27/2020. All participants received information about the objectives and procedures adopted in this study and signed the Informed Consent Form. The study included sexually active women between the ages of 15 and 75 who had already had vaginal intercourse and voluntarily agreed to participate in the exam. Women who are not yet sexually active or have not had vaginal intercourse were excluded from the study. Hysterectomized women, pregnant women, and women who did not understand enough to answer the questionnaire were also excluded.

The collection of biological material occurred in partnership with the project: Vaginosis and Cytopathological Changes in Quilombola Women in the Baixada Maranhense. Attended in the Basic Health Units of the Municipalities of the Western Coast of the Baixada Maranhense, having been approved by Resolution CONSEPE/2020.

The data collection instrument consisted of (1) application of a socio-demographic questionnaire; (2) collection of cervicovaginal material; (3) application of the Amsel test; (4) Papa-Nicolaou staining; (5) slide reading; (6) database construction.

Data were collected based on the cervical cytopathology exam request form from the Ministry of Health. At the time, an interview was conducted gathering personal information and sociodemographic data, such as age, level of education, as well as reproductive data that included: sexual behaviour, marital status, smoking and alcoholism, use of contraceptive methods, number of children, age at the beginning of a sexual activity, number of sexual partners and other associated diseases.

The samples were collected between August and December 2021, in the municipality of Bequimão - Maranhão. The research included the performance of the cervical exam, by the conventional method. The cytological smear consisted of an ectocervical smear, collected with an Ayre spatula, and an endocervical smear, collected with an endocervical brush. After collection, slides were prepared and fixed and later stained using the Papanicolau technique.

At the same time as the exam was performed, secretion was collected from the vaginal wall with the help of a Ph strip to analyse the vaginal pH; with the help of a swab, secretion was collected and 2 drops of KOH were added for amine testing.

The stained slides were analysed at the Laboratory of the Department of Pathology of the Federal University of Maranhão (UFMA). All smears were submitted to the rigorous quality control adopted by the laboratory, which is done by quickly reviewing all smears negative for cervical cytological abnormalities. Results of sample suitability and degree of cervical abnormalities were interpreted according to the cytological criteria defined in the Bethesda System, revised in 2011.

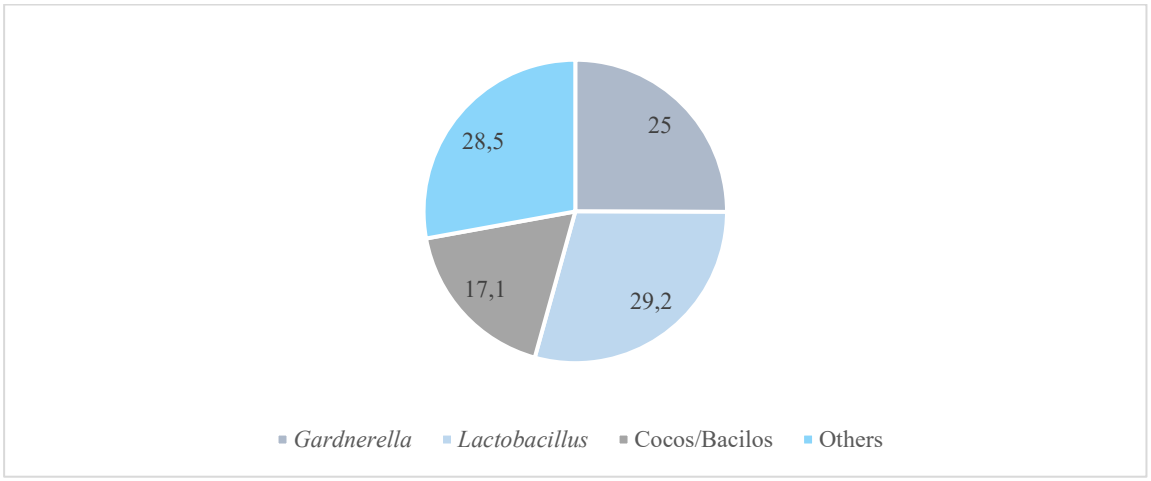
The statistical analysis was performed using BIOSTAT 5.0 resources. Initially, descriptive statistics were performed by calculating absolute and relative frequency measures. The samples were registered in a database in the Excel program and the categorical variables were analyzed in the Biostat 5.0 program, using the Chi-square test (test of independence). The significance level adopted was 5%.

Results

The microorganism analysis identified 35 patients with Gardnerella vaginalis (25%); 41 patients with Lactobacillus (29.2%); 24 patients with Cocci/Bacilli (17.1%) and 40 patients with Other Microorganisms (28.5%).

Figure 1.

Prevalence of Microorganisms present in the sample.



Source: Authors

Table 1 presents the positive cases of Gardnerella vaginalis according to sociodemographic factors. The data shows a total of 140 research participants, regarding age 27.14% are part of the age group <30 years, 44.28% of the age group 31-45 years, and 28.58% of the age group >45 years. The age group with the highest incidence is the 31-45 age group with 17 cases, the age groups <30 years and >45 years have 9 cases each. In the data analysis no significant differences were observed, p = 0.8344 was found.

As for the level of education, elementary school was the most prevalent with 52.14%, followed by high school with 37.85%, and illiteracy and higher education were 5% each. In relation to the incidence of Gardnerella vaginalis, both elementary and high school education presented 16 cases, followed by illiteracy with 2 cases and higher education with 1 case. The data analysis showed p = 0.6578.

Regarding marital status, the largest group was of married women or stable unions with 75 members, followed by the group of single women with 49 members, widows appear next with 12, and lastly the divorced women with 4 participants. As for the number of positive cases, the group of single women appears in first place with 15 cases, followed by married or stable union with 14 positive cases. The data analysis found p = 0.2843.

The variable alcoholism showed 63 (45%) patients who consume alcoholic beverages, with 22 positive cases in association with Gardnerella vaginalis and 77 who do not drink. The data analysis found p = 0.0140. There was a borderline association between the variable alcoholism for those who consume alcoholic beverages in association with Gardnerella vaginalis.

About smoking, 16 said they used tobacco, with 4 positive cases in association with Gardnerella vaginalis, and 124 said they did not use tobacco. The data analysis found p = 0.6338.

Table 1.

Sociodemographic factors associated with the presence of Gardnerella vaginalis

	Positive			Negative		***p*** (value)
	(T)	n	%	n	%	
Age						
< 30 years	38	9	23,68	29	76,31	0,8344
31-45 years	62	17	27,41	45	72,58	
>45 years	40	9	22,5	31	77,5	
Education						
Illiterate	07	2	28,57	5	71,42	0,6578
Elementary School	73	16	21,91	57	78,08	
High School	53	16	30,18	37	69,81	
Higher Education	07	1	14,28	6	85,71	
Marital Status						
Married/ Stable Union	75	14	18,66	61	81,33	0,2843
Divorced	4	2	50	2	50	
Single	49	15	30,61	34	69,38	
Widow	12	3	25	9	75	
Ethylist						
Yes	63	22	34,92	41	65,07	0,0140
No	77	12	15,58	65	84,41	
Smokers						
Yes	16	4	25	12	75	0,6338
No	124	31	25	93	75	

Source: Authors.

Table 2 expresses the risk factors associated with Gardnerella vaginalis. The distribution of the sample had a total of 140 participating women, in relation to the beginning of a sexual activity, those who started before 16 years of age represent 81 (57.85%) with 22 positive cases associated with Gardnerella vaginalis, and after 16 years of age represent 59 (42.15%) with 13 positive cases associated with Gardnerella vaginalis. The data analysis found p = 0.6112.

Regarding the number of gestations, 36 (25.72%) with up to one gestation and 104 (74.28%) with more than one gestation. The prevalence was in more than one pregnancy in association with Gardnerella vaginalis with 24 positive cases. The data analysis found p = 0.5029.

The variable abortion, with a yes answer, shows 43 women with 13 positive cases associated with G.V. and 97 women who had no abortion. In the data analysis, p = 0.4590 was found.

Regarding the number of partners, with up to one partner, 75 women were registered with 22 (29%) positive cases associated with G.V and 53 (70%) negative. With more than one partner, 65 (20%) women with 13 positive cases associated with GD and 52 (80%) negatives. The data analysis found p = 0.2818.

Contraceptive use presents 25 women for use, with 8 (32%) positive cases associated with G.V. and 17 (68%) negative cases. While 115 do not use, with 27 (23.47%) positive cases associated with G.V and 88 (76.52%) negative. The data analysis found p = 0.5241.

The genital complaint presents 50 reporting yes, with 16 positive cases associated with G.V. and 34 negatives. 90 women reported no, with 19 positive and 71 negative cases. The data analysis found p = 0.2217.

Regarding the Papanicolaou test, 123 women had already been submitted to it, with 30 positive cases associated with G.V. and 93 negatives. Seventeen women had never been submitted to the exam, with 5 positive and 12 negative cases. In the data analysis, p = 0.8812 was found.

Of the women who started (IAS) before 16 years old, 81 (57.85%) with 22 positive cases in association with GD and after 16 years old 59 (42.15%) with 13 positive cases associated with GD (22.0%), with up to one pregnancy and 74.28% with more than one pregnancy. The prevalence was in more than one pregnancy with 24 (23.07%) positive cases associated with GD. The data analysis found p = 0.6112.

Thus, it was possible to observe that no variable was statistically significant.

Table 2.

Association of risk factors with the presence of Gardnerella vaginalis

		Positive		Negative		*p* (value)
	T	n	%	n	%	
IAS						
< 16 years	81	22	27,1	59	72,8	0,6212
>16 years	59	13	22,0	46	77,9	
Number of gestations						
Up to 1 gestation	36	11	30,55	25	69,44	0,5029
More than 1 pregnancy	104	24	23,07	80	76,93	
Abortion						
Yes	43	13	30,23	30	69,76	0,4590
No	97	22	22,68	75	77,31	
Numbers of Partners						
Up to 1 partner	75	22	29,33	53	70,66	0,2818
More than 1 partner	65	13	20,0	52	80	
Contraceptive Use						
Yes	25	8	32	17	68	0,5241
No	115	27	23,47	88	76,52	
Genital Complaint						
Yes	50	16	32	34	68	0,2217
No	90	19	21,11	71	78,88	
Papanicolaou's test						
Yes	123	30	24,39	93	75,60	0,8812
No	17	5	29,41	12	70,58	

Source: Authors.

Table 3 represents the relationship between the Amsel test and Gardnerella vaginalis. The vaginal Ph was divided into: women presented Ph < 4.5 with 93 cases, representing 100%. While 47 women presented Ph>4.5 with 35 (74.46%) cases positive with G.V and 12 negative (25.54%). In the data analysis, p <0.0001 was found.

As for discharge, 15 women presented, of these 9 (60%) were positive and 6 (40%) negatives. And 125 did not present discharge, of these 26 (20.8%) were positive and 99 (79.2%) were negative. In the data analysis p <0.0021 was found.

The variable Whiff's test had 35 (100%) positive cases and 105 (100%) negative cases. In the data analysis, p <0.0001 was found.

Regarding clue cells, of the 35 samples present, 35 (100%) were positive and of the 105 absent,105 (100%), were negative. In the data analysis, p <0.0001 was found.

Thus, it was possible to observe that all criteria were statistically significant.

Table 3.

Correlation of Amsel test with the presence of Gardnerella vaginalis

	Gardnerella vaginalis					
		Positive		Negative		*p* (value)
	T	N	%	N	%	
Vaginal PH						
<4,5	93	0	0	93	100	< 0,0001
>4,5	47	35	74,46	12	25,53	
Greyish and Yellowish Discharge						
Yes	15	9	60	6	40	< 0,0021
No	125	26	20,80	99	79,20	
Whiff's test (Amine test)						
Positive	35	35	100	0	0	< 0,0001
Negative	105	0	0	105	100	
("clue cells")						
Present	35	35	100	0	0	< 0,0001
Absent	105	0	0	105	100	

Source: Authors.

Table 4 expresses the relationship of discharge with the presence of Gardnerella vaginalis. Of the 51 cases with discharge, 17 (33.33%) were positive and 34 (66.67%) were negative. As for those without discharge, there were 89 cases, of which 18 (20.22%) were positive and 71 (79.78%) negatives. There was a small prevalence of no discharge with a difference of 1 case. The data analysis found an OR equal to 1.9722 and p was not statistically significant, with p equal to 0.1283.

Table 4.

Association of Gardnerella vaginalis and other microorganisms with the presence of vaginal discharge

	T	N	%	N	%	*OR*	*P (*value)
Discharge	51	17	(33,33)	34	(66,67)	1,9722	0,1283

No Discharge 89	18	(20,22)	71	(79,78)

Source: Authors.

Discussion

BV is one of the leading causes of vaginal discharge, can affect up to 30% of women worldwide and, if left untreated, can lead to serious complications (Bagnall & Rizzolo, 2017). Moreover, part of the women has recurrent cases, even with proper treatment.

BV has a high adhesion power on epithelial cells. They are fastidious, so they require culture media such as blood agar, Columbia or chocolate agar. The prolonged time, caused by the GV bacterium, increases the risk of acquiring an STI. It will only present clinical manifestations when there is an imbalance in the vaginal microbiota flora and vaginal pH, a fact that will culminate in the development of a vaginal discharge of unpleasant odour and presentation, being this bad smell characteristic of "rotten fish", so reported among women, which is more intense after sexual intercourse and menstruation, because semen and menstrual blood are alkaline, leaving the volatilization of amines present in the vaginal microbiota (Xavier et al., 2017).

Gardnerella vaginalis are bacteria that do not have a capsule and are catalase and oxidase negative. They possess a cytolytic toxin, which can destroy human RBCs, as well as local epithelial cells, being able to trigger the formation of IgA immunoglobulin, generating a local inflammatory response (Hernández et al., 2007).

In Gardnerella infection there is a production of organic acids, in greater quantity acetic acid, used for its multiplication, in addition to high amounts of aromatic amines, which are associated with high Ph, quickly volatilize, resulting in the "rotten fish" odour already reported above (Neto, 2011).

The prevalence rates of vaginosis vary according to the population studied and the method applied for diagnosis. In the present study, conducted in a population of quilombola women aged between 18 and 75 years, the prevalence was 25%. Some studies (Janulaitiene et al., 2017; Bitew et al., 2017) were conducted in countries such as Lithuania and Ethiopia and showed prevalence of 24.4% and 48.6%, respectively, the former result being obtained close to this study. Inequality in the composition of the vaginal flora is pointed out as one of the important factors for the difference in prevalence between populations. The high prevalence of vaginosis in African women may be related to the low occurrence of hydrogen peroxide-producing Lactobacillus species, which are less found in black women and have defence activity against pathogens (Linhares, Giraldo & Baracat, 2010).

There are also other risk factors that, although they were not found associated with the emergence of vaginosis in the present study, there are reports of this relationship in the literature, such as multiple sexual partners and sexual intercourse between women (Chávez et

al., 2009). In the present study, women with up to one partner (n=75) had 22 cases, while women with more than one partner (n=65) had 13 cases.

Vodstrcil et al., (2018) report use of hormonal contraceptives is associated with reduced incidence ratios of BV in observational studies. This issue is due to a hypothesized mechanism of oral contraceptives containing estrogen, and increased glycogen in vaginal epithelial cells, which increase the growth of Lactobacillus spp, increasing concentrations of lactic acid and inhibiting the growth of bacteria associated with BV (O'Hanlon, Moench & Cone, 2011).

Probably the diversity of bacteria in the vaginal microbiota is linked to a higher number of sexual partners (Wessels et al., 2017). Fethers et al., (2009) report a woman's exposure to a greater number of male partners or changing partners recently raises the risk of BV 1.6-fold (Jespers et al., 2014).

When there is increased colonization of anaerobic bacteria associated with BV, especially Gardnerella, there is a barrier breakdown that facilitates the entry of HPV and other viral loads that can accelerate the process of epithelial injury to the vaginal mucosa (Kim, & Park, 2017).

In a study of 9165 women in Costa Rica, it showed that women with vaginal Ph greater than 5 presenting with a clinical picture of GV infection were significantly associated with a 10-20% risk of positivity for HPV infection in the menopausal phase, as it is during this period that women have drastic changes in their natural microbiota and decreased hormone production (Mitra et al., 2016).

Much has been discussed currently regarding the implementation of probiotics in the conventional treatment of bacterial vaginosis, in order to improve and/or prevent recurrences of the infection and restore the normal conditions of Lactobacillus spp. Since the vaginal microbiota does not have endogenous bacteria, these probiotics can be administered either orally or dermally, since in addition to carrying microorganisms, these drugs can be associated with drugs that help the Immune System fight viral infections (Teixeira, 2018).

Regarding the health system and the performance of preventive Pap smears, another important issue is the early detection of pathogens, as well as adequate screening to reduce the incidence of CCU, it is the pre-analytical phase where preliminary information is obtained. For this, it is up to the professionals of the area to know how to deal with the situation so that, this investigation covers not only health issues but social inquiries, as described by Soares et al., (2011) produce health care for women as a whole, in the expression of their needs and problems, regardless of the stage of the life cycle or their condition as a worker, is to consider an action plan that directs to the learning of individual and collective needs of women in their social context.

In addition to this concept, the posture and the way professionals perform their work also become decisive for the success in tracking the prevalence of pathogens in the investigation of cervical cancer incidence, so the more skilful the professional is in describing and filling out all the key information, the fewer the failures in the health system. For this statement, Amaral et al., (2014) highlight in their work that the correct filling of this information is extremely important, because it assists the professional in the interpretation of cytopathological results during the analysis of the exams in the laboratory, besides enabling the identification of cases that should be searched according to what is recommended by the internal quality control of the Ministry of Health.

In addition, the decline of this shortage is associated with the interposition of humanized methods aimed at welcoming patients, regardless of the social conditions in which they are inserted with the success of prevention programs, depending on the establishment of more humanized and equitable interventions that respect the socioeconomic differences between women and are focused on eliminating barriers and inequities in access and use of preventive services (Fonseca et al., 2010).

In a study conducted by Agorastos et al. (2015), 4009 women were analyzed, obtaining a mean age of 39.9 years, with the majority at reproductive age. Silva et al., (2014) in a retrospective study, recorded 139,505 cytopathological exams performed in the UBS of Maranhão in 2011, where 76.8% were women aged 25 to 64 years, with the most frequent age group being 25 to 29 years. The same research observed that incomplete elementary education had the highest prevalence (41.8%). The present study showed a mean age of women of 39.3 years. In addition, women aged 31 to 45 years with incomplete elementary school education were prevalent.

A study by Swidsinski et al., (2010) observed 20 women with symptomatic bacterial vaginosis and 10 of their partners in their studies. However, it was shown that the 20 women with symptomatic bacterial vaginosis consistently had G. vaginalis, as did the 10 partners investigated. The same study further suggests that of all the bacteria associated with bacterial vaginosis, the GV species may be the initial colonizer of the vaginal epithelium due to its adherence and ability to form a biofilm (Verstraelen & Swidsinski, 2013). Added to this, a high concentration of GV may be associated with the presence of bacterial vaginosis due to the imbalance of the vaginal microbiota (Oliveira, 2014).

In a study conducted by Renata and collaborators in 82 quilombola women 34 (41.5%) presented cases of vaginal infections, 21 (25.6%) being positive for Gardnerella vaginalis, with a corresponding mean age of 42.4 years, (Aragão et al., 2019). A study conducted in quilombola women assisted by the Unified Health System of municipalities in Maranhão6 found 27.7% cases of infection by Gardnerella vaginalis, however, with higher prevalence in women <30 years. In both studies, the data were compatible with the values found equal to 25%.

This situation worsens when the subject refers to quilombola communities, especially women, highlighting the difficulty of medical consultation, performance of the preventive exam and the association with CCU, and nutritional risks, among other problems. Black women have lower life expectancy when compared to white women, highlighting the complications of access to health care (Oliveira, 2019).

Conclusions

The sociodemographic profile of the quilombola women found in this work showed a higher frequency of women between 31 and 45 years of age, who had studied up to elementary school, was married, non-drinkers, and non-smokers, and these characteristics cannot be related to cervical cancer.

In the present study, it was possible to detect a prevalence of inflammation related to VG in 25% of the exams performed, data that are compatible with other studies.

This study was extremely important, because with the data obtained, women's health education and expansion of knowledge about the frequency of this disease and the age groups most associated with this infection, will allow health professionals to evaluate and program strategies for prevention, control and treatment of these gynaecological infections in a more effective way.

Thus, it becomes evident the need for guidance and ways to rescue these women for better monitoring and performance of the preventive exam.

References

Agorastos, T., Chatzistamatiou, K., Katsamagkas, T., Koliopoulos, G., Daponte, A., Constantinidis, T., ... & HERMES Study Group. (2015). Primary screening for cervical cancer based on high-risk human papillomavirus (HPV) detection and HPV 16 and HPV 18 genotyping, in comparison to cytology. PloS one, 10(3), e0119755.

Amaral, A. F., Araújo, E. S., Magalhães, J. C., Silveira, É. A., Tavares, S. B. D. N., & Amaral, R. G. (2014). Impacto da capacitação dos profissionais de saúde sobre o rastreamento do câncer do colo do útero em unidades básicas de saúde. Revista Brasileira de Ginecologia e Obstetrícia, 36, 182-187.

Aragão, FBA, dos Santos, GRB, de Lobão, WJM, de Oliveira, AP, Monteiro, SG, Santos, LM, ... & Batista, JE (2019). Associação do perfil microbiológico com alterações citológicas em mulheres quilombolas atendidas em unidades básicas de saúde. *Medicina (Ribeirão Preto)* , *52* (4), 311-318.

Boyanova, Lyudmila et al. Gardnerella vaginalis in urinary tract infections, are men spared?. Anaerobe, v. 72, p. 102438, 2021.

Bagnall, P., & Rizzolo, D. (2017). Bacterial vaginosis: A practical review. Journal of the American Academy of PAs, 30(12), 15-21.

Bitew, A., Abebaw, Y., Bekele, D., & Mihret, A. (2017). Prevalence of bacterial vaginosis and associated risk factors among women complaining of genital tract infection. International Journal of Microbiology, 2017.

Chávez, N., Molina, H., Sánche, J., Gelaye, B., & Sánchez, S. E. (2009). Duchas vaginales y otros riesgos de vaginosis bacteriana. Revista peruana de medicina experimental y salud pública, 26(3), 299-306.

Castro, Joana et al. Gardnerella vaginalis enhances Atopobium vaginae viability in an in vitro model. Frontiers in Cellular and Infection Microbiology, v. 10, p. 83, 2020.

Fethers, K. A., Fairley, C. K., Morton, A., Hocking, J. S., Hopkins, C., Kennedy, L. J., ... & Bradshaw, C. S. (2009). Early sexual experiences and risk factors for bacterial vaginosis. The Journal of infectious diseases, 200(11), 1662-1670.

Fonseca, A. J. D., Ferreira, L. P., Dalla-Benetta, A. C., Roldan, C. N., & Ferreira, M. L. S. (2010). Epidemiologia e impacto econômico do câncer de colo de útero no Estado de Roraima: a perspectiva do SUS. Revista Brasileira de Ginecologia e Obstetrícia, 32, 386-392.

Forsum, U., Holst, E., Larsson, P. G., Vasquez, A., Jakobsson, T., & Mattsby-Baltzer, I. (2005). Bacterial vaginosis–a microbiological and immunological enigma. Apmis, 113(2), 81-90.

Graves, K., Ghosh, A. P., Kissinger, P. J., & Muzny, C. A. (2019). Trichomonas vaginalis virus: a review of the literature. International journal of STD & AIDS, 30(5), 496-504.

Hernández, J. A. S., García, L. L. C., González, E. V., Gordillo, L. V., & Tapia, J. A. R. (2007). Diagnóstico clínico, de laboratorio y tratamiento de la vaginosis por Gardnerella vaginilis. Universitas médica, 48(4), 382-395.

Janulaitiene, M., Paliulyte, V., Grinceviciene, S., Zakareviciene, J., Vladisauskiene, A., Marcinkute, A., & Pleckaityte, M. (2017). Prevalence and distribution of Gardnerella vaginalis subgroups in women with and without bacterial vaginosis. BMC infectious diseases, 17, 1-9.

Jespers, V., Crucitti, T., Menten, J., Verhelst, R., Mwaura, M., Mandaliya, K., ... & Vaginal Biomarkers Study Group. (2014). Prevalence and correlates of bacterial vaginosis in different sub-populations of women in sub-Saharan Africa: a cross-sectional study. PloS one, 9(10), e109670.

Kim, J. M., & Park, Y. J. (2017). Probiotics in the prevention and treatment of postmenopausal vaginal infections. Journal of Menopausal Medicine, 23(3), 139-145.

Linhares, I. M., Giraldo, P. C., & Baracat, E. C. (2010). Novos conhecimentos sobre a flora bacteriana vaginal. Revista da Associação Médica Brasileira, 56, 370-374.

McNeil, CJ, Tan, A., Powell, JA, Pontius, A., Lewis, A., Myler, N., & Schwwebke, JR (2022). Avaliando a eficácia da erradicação da colonização vaginal de Gardnerella vaginalis com amoxicilina: um estudo randomizado, duplo-cego, de fase 2. Doenças sexualmente transmissíveis , 49 (2), 133–138.

Mitra A, MacIntyre DA, Marchesi, JR, Lee YS, Bennett PR, Kyrgiou M. A microbiota vaginal (2016) a infecção pelo papilomavírus humano e neoplasia intraepitelial cervical: o que sabemos e para onde vamos a seguir? *Microbioma*.

Morrill, Sydney; GILBERT, Nicole M.; LEWIS, Amanda L. Gardnerella vaginalis as a cause of bacterial vaginosis: appraisal of the evidence from in vivo models. Frontiers in cellular and infection microbiology, v. 10, p. 168, 2020.

Neto P. G.S.G. Vaginose bacteriana por *Gardnerella vaginalis*. Monografia (Pós graduação "Lato Sensu" em Citologia Clínica). Universidade Paulista e Centro de Consultoria Educacional, Recife- PE, 2011.

O'Hanlon, D. E., Moench, T. R., & Cone, R. A. (2011). In vaginal fluid, bacteria associated with bacterial vaginosis can be suppressed with lactic acid but not hydrogen peroxide. BMC infectious diseases, 11(1), 1-8.

Oliveira LMA. Diversidade bacteriana e determinação da carga de Gardnerella vaginalis, Atopobiumvagina e, Mobiluncus spp., Mycoplasmahominis e Lactobacillus spp. em amostras de secreção vaginal de mulheres com e sem diagnóstico clínico de vaginose bacteriana. 2014. 107 f. Dissertação (Mestrado) – Universidade Federal de Juiz de Fora. Juiz de Fora, 2014.

Santana, Jean Railan et al. Prevalência de Gardnerella vaginalis em mulheres atendidas em uma Unidade Básica de Saúde no município de Macapá-AP. Pubsaúde,[SL], v. 5, p. 1-6, 2021.

Silva, D. S. M. D., Silva, A. M. N., Brito, L. M. O., Gomes, S. R. L., Nascimento, M. D. D. S. B., & Chein, M. B. D. C. (2014). Rastreamento do câncer do colo do útero no Estado do Maranhão, Brasil. Ciência & Saúde Coletiva, 19, 1163-1170.

Soares MC, Mishima SM, Silva RC, Ribeiro CV, Meincke SMK, Corrêa ACL. (2011) Câncer de colo uterino: atenção integral à mulher nos serviços de saúde. Revista Gaúcha Enfermagem.

Sobel, J. D., Subramanian, C., Foxman, B., Fairfax, M., & Gygax, S. E. (2013). Mixed vaginitis—more than coinfection and with therapeutic implications. Current infectious disease reports, 15, 104-108.

Swidsinski, A., Doerffel, Y., Loening-Baucke, V., Swidsinski, S., Verstraelen, H., Vaneechoutte, M., ... & Mendling, W. (2010). Gardnerella biofilm involves females and males and is transmitted sexually. Gynecologic and obstetric investigation, 70(4), 256-263.

Teixeira, P. M. (2018). Prevalência e fatores associados à vaginose bacteriana em mulheres atendidas pelo SUS no município de Ouro Preto/MG.

Verstraelen, H., & Swidsinski, A. (2013). The biofilm in bacterial vaginosis: implications for epidemiology, diagnosis and treatment. Current opinion in infectious diseases, 26(1), 86-89.

Vodstrcil L.A, Hocking JS, Law M, Walker S, Tabrizi SN, Fairley CK, *et al*. A contracepção hormonal está associada a um risco reduzido de vaginose bacteriana: uma revisão sistemática e meta-análise. *PLoS ONE*. 2013;8(9):e73055.

Wessels, D., Lusche, D. F., Voss, E., Kuhl, S., Buchele, E. C., Klemme, M. R., ... & Soll, D. R. (2017). Melanoma cells undergo aggressive coalescence in a 3D Matrigel model that is repressed by anti-CD44. PloS one, 12(3), e0173400.

Xavier, M. P., de Carvalho, T. A., do Vale, B. N., & Boas, A. F. V. (2017). Incidência de Alterações da Microbiota (Vaginose) por Gardnerella vaginalis em Mulheres Sexualmente Ativas. Revista Eletrônica de Ciências Humanas, Saúde e Tecnologia, 1(11), 13-27.

Yang, S., Zhang, Y., Liu, Y., Wang, J., Chen, S., & Li, S. (2017). Clinical significance and characteristic clinical differences of cytolytic vaginosis in recurrent vulvovaginitis. Gynecologic and obstetric investigation, 82(2), 137-143