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Original Article

Impact of Treatment and the Contribution of Persistent Posttreatment Bacterial Vaginosis Infection on Pregnancy Outcome among Asymptomatic Women: A Cohort Study

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Abstract

Objective: The objective of this study was to evaluate the effect of antibiotic treatment and posttreatment persistent bacterial vaginosis (BV) infection on pregnancy outcome among asymptomatic women. **Materials and Methods:** A prospective cohort study was conducted among consenting, asymptomatic pregnant women without background medical disorders. All participants were recruited in the second trimester and had BV testing using Nugent score. BV-positive women were treated with a 7-day course of metronidazole with a repeat posttreatment laboratory testing after 4 weeks. The primary outcome was pregnancy outcome of BV-positive versus negative women; the secondary outcomes were posttreatment laboratory BV test result and pregnancy outcome among women with resolution versus persistent infection. Data analysis was performed using SPSS version 21.0 and $P < 0.05$ was significant. **Results:** The prevalence of BV in pregnancy was 24.1%; vulva itching and vaginal douching were more common among BV-positive women ($P = 0.011$ and $P = 0.001$), respectively. Adverse pregnancy outcomes such as premature rupture of membranes (PROM) (odds ratio [OR]: 8.185, 95% confidence interval [CI]: 3.196–20.962; $P = 0.005$), preterm delivery (OR: 24.517, 95% CI: 6.985–86.049; $P = 0.001$), and birth weight <2500 g (OR: 6.460, 95% CI: 2.893–14.429; $P = 0.005$) were more common among BV-positive women. Posttreatment persistent BV infection was 25.0% with significantly higher PROM (OR: 18.21, 95% CI: 4.654–71.317; $P = 0.001$), preterm delivery (OR: 14.571, 95% CI: 4.138–51.308; $P = 0.001$), birth weight <2500 g (OR: 14.57, 95% CI: 4.138–51.308; $P = 0.001$), and low 1st min Apgar scores (OR: 7.333, 95% CI: 1.223–43.960; $P = 0.049$). **Conclusion:** Symptom-based approach to BV in pregnancy excludes many asymptomatic women; we hereby recommend routine screening. Also, women with BV in pregnancy should undergo repeat testing posttreatment while those with persistent infection will benefit from repeat treatment pending further evidence to formulate a widely acceptable treatment guideline.

Keywords: Adverse pregnancy outcome, bacterial vaginosis, persistent infection

Introduction

Bacterial vaginosis (BV) is a polymicrobial vaginal infection due to an imbalance in the normal vaginal flora characterized by a reduction in the concentration of the dominant hydrogen peroxide-producing lactobacilli and an increase of anaerobic organisms in the vagina.[1,2] BV is a common cause of vaginitis in both pregnant and nonpregnant women[1-3] and its prevalence among pregnant women in sub-Saharan Africa ranged from 20% to 50%.[4] Etiological organisms in BV include *Gardnerella vaginalis, Mycoplasma hominis, Prevotella,* and various species of *Mobiluncus, Bacteroides, Fusobacterium, Veillonella, Propionibacterium, Bifidobacterium*, and *Eubacterium.*[2,5,6] Hydrogen peroxide-producing lactobacilli appear to be important in preventing overgrowth of the vaginal anaerobes; however, an imbalance in the vaginal flora causes the anaerobes to produce large amounts of

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proteolytic carboxylase enzymes which break down vaginal peptides into amines that are volatile and malodourous. The resultant vaginal discharge in symptomatic cases present as malodourous, thin vaginal discharge which can be grayish to homogenous-white in appearance.[6] Available evidence suggests that BV in the lower genital tract is associated with infections of the upper genital tract and the microorganisms may ascend to the amniotic cavity resulting in inflammation of the decidua and chorioamnion.[7] This can result in sequelae such as premature rupture of membranes (PROM), preterm labor, preterm delivery, low birth weight, increased vertical transmission of HIV, and postpartum endometritis.[1,5,7-11] In addition, these adverse pregnancy outcomes persist despite treatment raising the question about the possible explanation for these events. Women of African descent are at a three-fold increased risk of BV;[12] however, there is paucity of data in many sub-Sahara Africa countries while there is no consensus on routine screening and treatment protocols due to insufficient evidence.[13] This study aimed at evaluating effect of treatment on pregnancy outcomes and the contribution of persistent BV infection to these pregnancy outcomes.

Materials and Methods

Study design

This was a prospective cohort study.

Study setting

This study was conducted in a tertiary facility in North-Central Nigeria.

Study participants

Participants were consenting, asymptomatic, antenatal clinic attendees receiving antenatal care services at the study site.

Inclusion criteria

Booked pregnant women in the second trimester of pregnancy without background medical disorders were included in the study.

Exclusion criteria

Unbooked women, those who used antibiotics within 2 weeks prior to recruitment, and those with underlying chronic medical disorders were excluded from the study.

Sampling method and sample size determination

Purposive sampling method was used and the sample size was calculated using the formula:[14]

$$n = \frac{z^2 pq}{d^2}$$

where n = sample size

z = standard normal deviation (a constant which is 1.96 at 95% confidence interval [CI])

p = known prevalence of BV in pregnancy, i.e., 0.25 (25%)[8]

d = observed difference at 0.05 (5%) level of significance.

$q = 1 - p = 1 - 0.25 = 0.75$

$$n = \frac{1.96^2 \times 0.25 \times 0.75}{(0.05)^2} = 228$$

Making provision for attrition rate of 10% (28), the total sample size was 316.

Study procedure

Antenatal clinic attendees were counseled about the study and those willing to participate were evaluated for eligibility using the inclusion and exclusion criteria. Informed consent was obtained from consenting eligible women after which the study questionnaire was administered. Thereafter, a sterile speculum examination was performed during which high vaginal swab samples were collected from the posterior fornix using a sterile swab sticks; a smear was made on a glass slide by rolling the swab stick on it and allowed to air dry followed by Gram staining and microscopy. The laboratory processing included wet sample preparations, microscopy, fixation with ethanol, and routine Gram staining followed by Nugent scoring.[15] A total Nugent score of 7 or more was diagnostic of BV, 4–6 was intermediate, while 0–3 was normal. All BV positive women were treated with a course of oral metronidazole 400 mg thrice daily for 7 days followed by a posttreatment repeat Gram staining for Nugent scoring 4 weeks after the treatment. All participants were followed up at the antenatal clinic until delivery.

Study outcome measures

The primary outcome measure was pregnancy outcome among the BV-positive and BV-negative women; the secondary outcomes were posttreatment laboratory testing result and comparative pregnancy outcome among women with resolution versus those with persistent BV infection.

Ethical issues and data management

Ethical approval was obtained from the ethical review committee of a teaching hospital (ERC/PAN/2016/01/1487) before the commencement of the study while informed written consent was obtained from each participant. Data analysis was performed using the Statistical Package for the Social Sciences software (SPSS version 21.0) (IBM, Armonk, NY, USA). Association between discrete variables was evaluated with Chi-square with level of significance set at $P < 0.05$ while structured t-test was used for continuous variables.

Results

Among the 316 women screened for BV in the study, 76 were BV positive with a prevalence of 24.1%. From Table 1, the biosocial and obstetric parameters showed a statistically significant difference in the age ($P = 0.001$), type of marriage, and parity ($P = 0.001$) among the participants. However, the occupation of participants ($P = 0.166$), level of education ($P = 0.384$), gestational age at recruitment ($P = 0.312$), and the social class ($P = 0.398$) were not statistically significant.

Table 1: Comparison of biosocial and obstetric parameters among participants

Variable	BV positive, *n* (%)	BV negative, *n* (%)	χ^2	*P*
Age group				
20-24	9 (11.8)	31 (12.9)	24.904	0.001
25-29	46 (60.5)	77 (32.1)		
30-34	18 (23.7)	76 (31.7)		
35-39	3 (3.9)	56 (23.3)		
Occupation				
Artisan	6 (7.9)	8 (3.3)	6.484	0.166
Traders/business	21 (27.6)	75 (31.3)		
Civil servant	18 (23.7)	70 (29.2)		
Professional	15 (19.7)	56 (23.3)		
Unemployed	16 (21.1)	31 (12.9)		
Level of education				
Primary	0	3 (1.3)	1.913[Y]	0.384
Secondary	15 (19.7)	30 (12.5)		
Tertiary	61 (80.3)	207 (86.3)		
Type of marriage				
Monogamy	64 (84.2)	225 (93.8)	6.722	0.010
Polygamy	12 (15.8)	15 (6.3)		
Gestational age				
20	6 (7.9)	26 (10.8)	7.099	0.312
21	7 (9.2)	38 (15.8)		
22	12 (15.8)	46 (19.2)		
23	15 (19.7)	32 (13.3)		
24	15 (19.7)	32 (13.3)		
25	6 (7.9)	28 (11.7)		
26	15 (19.7)	38 (15.8)		
Social class				
I	49 (64.5)	152 (63.3)	4.053[Y]	0.398
II	12 (15.8)	55 (22.9)		
III	12 (15.8)	19 (7.9)		
IV	3 (3.9)	11 (4.6)		
V	0	3 (1.3)		
Parity				
0	37 (48.7)	66 (27.5)	11.790	0.001
1-4	39 (51.3)	174 (72.5)		

[Y]Yates corrected Chi-square. BV: Bacterial vaginosis

From Table 2, the observed significant clinical features for BV-positive compared to BV-negative women were vulva itching (odds ratio [OR]: 1.958, 95% CI: 1.161–6.463; $P = 0.011$) and vaginal douching (OR: 2.889, 95% CI: 1.658–15.503; $P = 0.001$). However, vaginal discharge (OR: 2.126, 95% CI: 0.861–5.253; $P = 0.096$), lower abdominal pain (OR: 1.176, 95% CI: 0.574–2.411; $P = 0.657$), and fever (OR: 0.539, 95% CI: 0.154–1.892; $P = 0.479$) were not significant.

From Table 3, comparison of pregnancy outcome in BV-positive to BV-negative women showed statistically significant occurrence of PROM (15 vs. 7, OR: 8.185, 95% CI: 3.196–20.962; $P = 0.005$), preterm delivery (18 vs. 3, OR: 24.517, 95% CI: 6.985–86.049; $P < 0.001$), birth weight <2500 g (18 vs. 11, OR: 6.460, 95% CI: 2.893–14.429; $P = 0.005$), and mean birth weight (2925.00 ± 503.09 vs. 3072.29 ± 396.55; $P = 0.009$). There was no statistical significant difference in Apgar score at the 1st min (OR: 2.486, 95% CI: 0.834–7.506; $P = 0.172$) as well as the need for active neonatal resuscitation (6 vs. 7, OR: 2.853, 95% CI: 0.928–8.768; $P = 0.116$).

From Table 4, posttreatment BV persistence was 25.0% (19 out of 76). Women with posttreatment persistence of BV infection had significantly higher occurrences of PROM (11 vs. 4, OR: 18.21, 95% CI: 4.654–71.316; $P = 0.001$), preterm delivery (OR: 14.57, 95% CI: 4.138–51.308; $P = 0.001$), birth weight <2500 g (OR: 14.57; 95% CI: 4.138–51.308; $P = 0.001$), and low 1st min Apgar scores (OR: 7.33, 95% CI: 1.223–43.960; $P = 0.049$) compared to women with resolution of infection.

Discussion

From this study, the prevalence of BV in pregnancy was 24.1% among apparently asymptomatic women. Some BV-positive women did not have clinical features while other BV-negative women had clinical features. Despite treatment, adverse pregnancy outcomes were higher among BV-positive women with significant PROM, preterm delivery, birth weight <2500 g, and lower mean birth weight compared to BV-negative women. Posttreatment BV persistence was 25.0% while adverse pregnancy outcomes were significantly higher among women with persistence compared to those with resolution of infection.

The prevalence of BV in pregnancy varies widely with values of 25%[8] from Maiduguri and 26%[16] from Lagos both in Nigeria, 20.5%[7] from India, and 28.1%[11] from Brazil which compares to this study report. However, lower figures of 19.4% from Ethiopia[9] and 16%[10] from Denmark and a higher report of 37.3%[17] from South Africa have also been reported. However, a meta-analysis estimated 20%–50% prevalence for BV in pregnancy for sub-Saharan Africa.[14] This variation may be due to the differences in methodology across the studies ranging from the sociodemographic characteristics of the participants to the method of laboratory testing.[5,7-10,15,16]

There is no consensus on the approach to BV in pregnancy; the divide has been the choice to focus on asymptomatic or symptomatic women. A report indicated a high burden of asymptomatic infection among HIV uninfected women[4] while another showed that the use of clinical approach will result in asymptomatic women going untreated.[18] This forms the bedrock of the suggestion for a universal testing for BV among pregnant women, especially since asymptomatic disease poses similar risks as symptomatic disease. Many studies on BV which recruited apparently asymptomatic women documented clinical features of which the women were either unaware or did not consider worthy of reporting. In addition, there were women without these features who tested positive while a number with the features tested negative. This observation limits the reliance on the symptom-based approach to BV testing in pregnancy. Although this study recruited apparently asymptomatic women, evaluation showed that vulvar itching, vaginal discharge, fever,

Table 2: Clinical features observed at recruitment of participants

Parameter	BV positive (*n*=76), *n* (%)	BV negative (*n*=240), *n* (%)	OR (95% CI)	χ^2	*P*
Vaginal discharge					
Yes	70 (92.1)	203 (84.6)	2.126 (0.861-5.253)	2.778	0.096
No	6 (7.9)	37 (15.4)			
Vulva itching					
Yes	39 (51.3)	84 (35.0)	1.958 (1.161-3.300)	6.463	0.011
No	37 (48.7)	156 (65.0)			
Lower abdominal pain					
Yes	12 (15.8)	33 (13.8)	1.176 (0.574-2.411)	0.197	0.657
No	64 (84.2)	207 (86.3)			
Fever					
Yes	3 (3.9)	17 (7.1)	0.539 (0.154-1.892)	0.502^Y	0.479
No	73 (96.1)	223 (92.9)			
Vaginal douching					
Yes	36 (47.4)	57 (23.8)	2.889 (1.685-4.495)	15.503	0.001
No	40 (52.6)	183 (76.3)			

^{Y}Yates corrected Chi-square. BV: Bacterial vaginosis, CI: Confidence interval, OR: Odds ratio

Table 3: Pregnancy outcome among bacterial vaginosis-positive compared to bacterial vaginosis-negative women

Variable	BV positive (*n*=76), *n* (%)	BV negative (*n*=240), *n* (%)	OR (95% CI)	χ^2	*P*
GA recruitment					
Mean±SD	23.37±1.85	23.01±1.96		1.414	0.158
PROM					
Yes	15 (19.7)	7 (2.9)	8.185 (3.196-20.962)	25.212	0.005
No	61 (80.3)	233 (97.1)			
Preterm delivery					
Yes	18 (23.7)	3 (1.3)	24.517 (6.985-6.049)	46.827	0.001
No	58 (76.3)	237 (98.8)			
GA at delivery					
Mean±SD	37.66±2.12	37.93±1.62		−1.196	0.233
Birth weight (g)					
<2500	18 (23.7)	11 (4.6)	6.460 (2.893-14.429)	25.266	0.005
2500-4000	58 (76.3)	229 (95.4)			
Mean±SD	2925.00±503.09	3072.29±396.55			0.009
1st min Apgar					
4-7	6 (7.9)	8 (3.3)	2.486 (0.834-7.506)	1.861	0.172
>7	70 (92.1)	232 (96.7)			
Active resuscitation					
Yes	6 (7.9)	7 (2.9)	2.853 (0.928-8.768)	2.474^Y	0.116
No	70 (92.1)	233 (97.1)			

^{Y}Yates corrected Chi-square. BV: Bacterial vaginosis, CI: Confidence interval, OR: Odds ratio, SD: Standard deviation, GA: Gestational age, PROM: Premature rupture of membranes

lower abdominal pain, and vaginal douching were present in a number of both BV-positive and BV-negative women similar to previous reports. Vulvar itching was recorded among 17%[5] and 17.2%[16] of asymptomatic women in two previous BV studies. Douching has been shown to cause disequilibrium in the vaginal microbiota or to induce inflammation through physical or chemical irritation which predisposes women to BV.[19] It was reported to be a significant factor for BV similar to a report from Canada.[20] In a study among women who presented with vaginal infections at a facility in Egypt, participating women viewed douching as a religious obligation (88.9%) or a form of personal cleanliness (80.6%), but women who douched were reported to be predisposed to reproductive health hazards including pelvic inflammatory diseases.[21] Another report among asymptomatic women in South Africa[17] showed that 52.9% of participants had vaginal discharge on examination similar to this study. This further raises a concern about the clinical approach to BV management in pregnancy which is based on reported symptoms by the parturient woman before laboratory testing. The clinical approach therefore has the potential to miss out asymptomatic women who are at risk of possible negative pregnancy outcome.

A randomized control trial showed the benefit of treatment with significantly fewer miscarriages and preterm deliveries among

Table 4: Comparison of posttreatment pregnancy outcome among participants with persistence or resolution of BV infection

Variable	BV persistence posttreatment (*n*=19), *n* (%)	BV resolution posttreatment (*n*=57), *n* (%)	OR (95% CI)	χ^2	*P*
GA (recruitment)					
Mean±SD	23.37±1.85	23.04±2.01		−0.632[t]	0.530
PROM					
Yes	11 (57.9)	4 (7.0)	18.219 (4.654-71.316)	20.184[Y]	0.001
No	8 (42.1)	53 (93.0)			
Preterm delivery					
Yes	12 (63.2)	6 (10.5)	14.571 (4.138-51.308)	21.839	0.001
No	7 (36.8)	51 (89.5)			
GA at delivery					
Mean±SD	37.56±2.02	37.23±1.42		0.581[t]	0.563
Birth weight (g)					
<2500	12 (63.2)	6 (10.5)	14.571 (4.138-51.308)	21.839	0.001
2500-4000	7 (36.8)	51 (89.5)			
Mean±SD	2923.00±500.09	3172.29±396.55		1.308[t]	0.195
1st min Apgar					
4-7	4 (21.1)	2 (3.5)	7.333 (1.223-43.960)	3.860[Y]	0.049
>7	15 (78.9)	55 (96.5)			
Active resuscitation					
Yes	3 (15.8)	3 (5.3)	3.375 (0.620-18.379)	0.965[Y]	0.326
No	16 (84.2)	54 (94.7)			

t: student *t*-test, Y: Yates GA: Gestational age, PROM: Premature rupture of membranes. BV: Bacterial vaginosis, CI: Confidence interval, OR: Odds ratio, SD: Standard deviation

women who received antibiotic treatment as against those that received placebos for BV.[22] However, the need to screen, the necessity of posttreatment evaluation, and management of posttreatment persistent BV remain without consensus. Oral or vaginal metronidazole or clindamycin has been recommended for treatment of BV,[23] but the CDC recommended them for only symptomatic women.[24] However, no emphasis was placed on posttreatment microbiology testing for persistent infection and its management. Metronidazole has been shown to be active *in vivo* with suggestions that BV-related organisms may be sensitive to the hydroxymetabolite of metronidazole or the drug may exert an indirect action through synergism by killing anaerobes that provide substrates to BV-related organisms such as *G. vaginalis* or *Atopobium vaginae*.[25] Metronidazole was used to treat smear positive participants in this study, but a posttreatment repeat smear showed a 25% persistence rate. The available data on posttreatment BV testing were among nonpregnant women, and it showed persistence rates of 23%, 43%, and 58% at 1, 3, and 12 months posttreatment, respectively.[25] While researchers have tried to address recurrent BV infection, the literature is sparse of studies on persistent BV infection. In a case series with women described as having refractory BV, a report showed that prebiotic lactoferrin therapy significantly improved the vaginal bacteria flora restoring *Lactobacillus* as the dominant bacteria at 1 month after treatment with subsequent term live births.[26] However, while experience with prebiotic lactoferrin in pregnancy is limited, this further heightens the need to address this category of patients as well as conduct further research aimed at formulating a management guideline.

BV in pregnancy is a risk to both term and preterm pregnancies and has been associated with adverse obstetric outcomes in many studies[5-11] similar to this study. This study corroborated previous significant reports of increased PROM[6,16] and preterm delivery[6,10,16] from BV. The mean gestational age at delivery in this study was not statistically significant unlike a similar study in Bangladesh which reported a statistical significant reduction in the mean gestational age at delivery following BV infection.[27] This may be due to difference in methodology as the Bangladeshi study comprised symptomatic women with complaints of abnormal vaginal discharge at recruitment. Low birth weight has been documented to be high among babies delivered by women with BV in pregnancy in previous[8,16] and index study. This may particularly be due to the higher preterm delivery rate among women with BV reported by all these studies.

It has been shown that despite antibiotic treatment, pregnancy outcome among BV-positive women remained worse compared to uninfected women. While the reason for the worse outcome has not been clarified, posttreatment persistence infection in pregnancy has remained unexplored. After laboratory diagnosis and appropriate antibiotic treatment for BV, this study conducted a repeat posttreatment microbiological testing which showed a 25% persistence infection. A subanalysis of the women treated with BV in this study into those with persistence (posttreatment smear positive) and resolution (posttreatment smear negative) of infection showed worse pregnancy outcome among women with persistent infection. Women with posttreatment persistent BV infection had significantly worse pregnancy outcomes

characterized by higher occurrence of PROM, preterm delivery, low birth weight, and low 1st min Apgar scores at birth compared to women with resolution of infection. This suggests that the adverse pregnancy outcomes of BV despite treatment are most likely a resultant effect of women with persistent posttreatment infection. This brings to the fore a suggestion for posttreatment screening for BV in pregnancy to identify persistent infections coupled with further research toward formulation of a treatment guideline for such women. This may need to explore the possible roles of repeat treatment or the use of other agents aimed at achieving resolution of the persistent infection. It may be reasonably expected that the eradication of the persistence infection may improve the pregnancy outcome among such women, thereby reducing the adverse effect of BV on pregnancy outcome.

Conclusion

This study concludes that the symptom-based approach to BV screening in pregnancy excludes asymptomatic women. Persistent posttreatment BV infection is not uncommon and appears to be a major contributor to the adverse pregnancy outcomes associated with BV infection. Based on the results of this study, routine BV screening in pregnancy, antimicrobial treatment of BV-positive women, posttreatment repeat testing and repeat treatment for persistent infections are recommended to improve pregnancy outcome. However, further research activities are recommended to obtain further evidence to enable the formulation of an evidence-based management guideline for the management of persistent posttreatment BV infection in pregnancy.

Strengths and limitations of the study

The recruitment of asymptomatic women, pre- and post-treatment laboratory testing for BV, and the comparative analysis of pregnancy outcome among women with resolution to those with persistent infection sought to provide additional information on the relationship of BV to adverse pregnancy outcome. The study was however limited by the sample size and restricted geographical coverage.

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Conflicts of interest

There are no conflicts of interest.

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ملخص المقال باللغة العربية

تأثير العلاج ومساهمة استمرار عدوى التهاب المهبل الجرثومي بعد المعالجة على نتائج الحمل بين النساء اللاتي لا تظهر عليهن الأعراض: دراسة جماعية

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الهدف: كان الهدف من هذه الدراسة هو تقييم تأثير العلاج بالمضادات الحيوية وعدوى التهاب المهبل الجرثومي المستمر بعد العلاج على نتائج الحمل بين النساء عديمات الأعراض.

المواد والطرق: أجريت دراسة سريرية مستقبلية بين نساء حوامل موافقين لا يشتكون من أي أعراض ولا يعانون من أي أمراض طبية. تم تجنيد جميع المشاركين في الثلث الثاني من الحمل وخضعوا لاختبار التهاب المهبل الجرثومي باستخدام مقياس نوجنت (Nugent). عولجت النساء المصابات بالتهاب المهبل الجرثومي بدورة 7 أيام من ميترونيدازول مع تكرار الاختبار المخبري بعد المعالجة بعد 4 أسابيع. كان المخرج الأول للدراسة هو نتيجة الحمل بالنسبة للنساء المصابات بالتهاب المهبل الجرثومي مقابل النساء غير المصابات. أما المخرج الثانوي للدراسة فكان نتيجة اختبار التهاب المهبل الجرثومي بعد المعالجة ونتائج الحمل بين النساء ذوات الشفاء مقابل العدوى المستمرة. تم إجراء تحليل البيانات باستخدام SPSS الإصدار 21.0.

النتائج: كان انتشار التهاب المهبل الجرثومي أثناء الحمل 24.1٪. كانت حكة الفرج والغسيل المهبلي أكثر شيوعًا بين النساء المصابات بالالتهاب (P<0.011 و P= 0.001)، على التوالي. نتائج الحمل السلبية مثل تمزق الأغشية قبل الأوان (نسبة الأرجحية [OR]: 8.185، P= 0.005)، الولادة المبكرة (OR: 24.517، P=0.001)، ووزن الولادة أقل 2500 جم (OR: 6.460، P = 0.005) كانت أكثر شيوعًا بين النساء المصابات بـ الالتهاب. أما بالنسبة للنساء ذوات العدوى غير المستجابة للمعالجة فكانت نتائج الحمل السلبية 25.0٪ هي تمزق الأغشية الباكر (OR: 18.21، P = 0.001) ، الولادة المبكرة (OR: 14.571، P = 0.001) ، الولادة الوزن أقل من 2500 جم (OR: 14.57، P = 0.001) ، والدرجات المنخفضة لقياس أبغار (Apgar score) بعد الدقيقة الأولى من الولادة (OR: 7.333، P = 0.049).

الخلاصة: النهج القائم على الأعراض لتشخيص المهبل الجرثومي في الحمل يستبعد العديد من النساء عديمات الأعراض. نوصي بموجبه بإجراء فحص روتيني. أيضًا، يجب أن تخضع النساء المصابات بالتهاب المهبل الجرثومي أثناء الحمل للاختبار المتكرر بعد العلاج، بينما ستستفيد النساء المصابات بالعدوى المستمرة من تكرار العلاج في انتظار أدلة إضافية لصياغة إرشادات علاجية مقبولة على نطاق واسع.

الكلمات المفتاحية: نتائج الحمل السلبية، التهاب المهبل الجرثومي، عدوى مستمرة.