

Original Research

Bacterial vaginosis in pregnancy

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ABSTRACT:

Background: A frequent vaginal illness called bacterial vaginosis (BV) is caused by an imbalance in the normal bacterial flora of the vagina. The present study was conducted to assess bacterial vaginosis (BV) in pregnant women. **Materials & Methods:** 56 pregnant women with bacterial vaginosis (BV) were selected. The vaginal mucosa was examined for the presence of erythema, lesions, and discharge during a thorough obstetric and per speculum examination. **Results:** There were 6 cases of BV in first trimester, 32 in the second and 18 in third trimester. The difference was significant ($P < 0.05$). E. coli positive samples were seen in 20, klebsiella positive in 6, enterococcus positive in 8, group B Streptococci positive in 4, proteus vulgaris positive in 3, candida positive in 2 and staphylococcus aureus in 38. The difference was significant ($P < 0.05$). **Conclusion:** Proteus vulgaris, candida, E. coli, group B streptococci, staphylococcus aureus, and enterococcus were the most frequently occurring bacterial species in pregnant women with bacterial vaginosis.

Keywords: Bacterial vaginosis, enterococcus, pregnancy

Received: 24 November, 2020

Accepted: 29 December, 2020

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This article may be cited as: Sharma N, Rani M. Bacterial vaginosis in pregnancy. J Adv Med Dent Scie Res 2021;9(1):195-198.

INTRODUCTION

A frequent vaginal illness called bacterial vaginosis (BV) is caused by an imbalance in the normal bacterial flora of the vagina. It is typified by an overabundance of pathogenic bacteria, especially Gardnerella vaginalis, and a deficiency of lactobacilli, which are generally helpful in preserving a healthy vaginal environment.¹ While there are many symptoms associated with BV, some women may not have any symptoms at all. Common symptoms include discomfort and itching in the vaginal region, as well as a thin, grayish-white vaginal discharge with an unpleasant or "fishy" odor. Although the precise etiology of BV is unknown, an imbalance in the vaginal bacterial balance is thought to be the reason. A few things can raise your risk of BV, such as having several sexual partners, douching, and the use of certain antibiotics.²

Pregnant women who have vaginal microbial infections face significant challenges. Inflammation of the vagina is called vaginitis. An inflammation of the

vulva and vagina is called vulvovaginitis.³ Infections can cause pain, itching, and drainage. Infections with bacteria (bacterial vaginosis), yeast (vaginal candidiasis), or the protozoan that causes trichomoniasis are the three main causes of vaginitis. A lady may be infected with more than one thing at once. Women can ask their healthcare provider to check for an infection if they are experiencing discomfort in the vulvovaginal region.⁴

Preterm labor, amniotic fluid infection, early fetal membrane rupture, low birth weight of the newborn, and other obstetric problems are associated with microbiological infections during pregnancy, all of which raise the risk of perinatal death.⁵ On the other hand, early detection and intervention can lower the risk of preterm birth and its aftereffects. Early identification of risk factors and early treatment of these conditions may lessen the burden of disorders like low birth weight, premature delivery, and PROM in developing countries like India, where relatively little GDP is spent on healthcare facilities.⁶ The

present study was conducted to assess bacterial vaginosis (BV) in pregnant women.

MATERIALS & METHODS

The present study comprised 56 pregnant women with bacterial vaginosis (BV). All patients gave their written consent for the participation in the study.

Data such as name, age etc. was recorded. The vaginal mucosa was examined for the presence of erythema,

lesions, and discharge during a thorough obstetric and per speculum examination. Samples of vaginal and cervical swabs were collected, and the microbiology lab received them. Every sample underwent processing to identify and potentially isolate any harmful bacteria. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Patients distribution

Trimester	Number	P value
First trimester	6	0.05
Second trimester	32	
Third trimester	18	

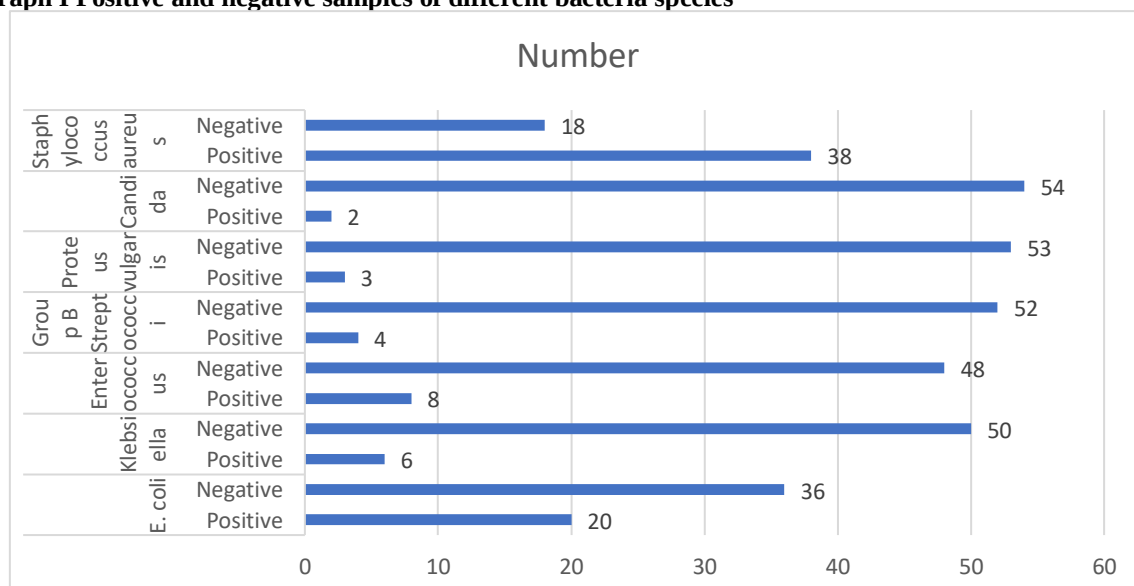
Table I shows that there were 6 cases of BV in first trimester, 32 in the second and 18 in third trimester. The difference was significant ($P < 0.05$).

Table II Positive and negative samples of different bacteria species

Bacterial vaginosis	Variables	Number	P value
E. coli	Positive	20	0.93
	Negative	36	
Klebsiella	Positive	6	0.02
	Negative	50	
Enterococcus	Positive	8	0.04
	Negative	48	
Group B Streptococci	Positive	4	0.01
	Negative	52	
Proteus vulgaris	Positive	3	0.03
	Negative	53	
Candida	Positive	2	0.01
	Negative	54	
Staphylococcus aureus	Positive	38	0.81
	Negative	18	

Table II, graph I shows that E. coli positive samples were seen in 20, klebsiella positive in 6, enterococcus positive in 8, group B Streptococci positive in 4, proteus vulgaris positive in 3, candida positive in 2 and staphylococcus aureus in 38. The difference was significant ($P < 0.05$).

Graph I Positive and negative samples of different bacteria species



DISCUSSION

Reproductive tract infection (ReTI) is an important public health problem worldwide, especially in developing countries.⁷ Globally, the World Health Organization (WHO) reports an estimated 357 million new cases of curable reproductive tract infection (ReTI) or sexually transmitted infections (STIs) (syphilis, gonorrhea, chlamydia infection, and trichomoniasis) which occur annually in adults. These infections can be symptomatic or asymptomatic.⁸ The most common vaginal infection is called bacterial vaginosis (BV), which is defined by the overgrowth of a variety of microorganisms, including *Gardnerella vaginalis*, *Bacteroides* species, genital mycoplasma, and fastidious anaerobic bacteria, in place of *Lactobacillus* species of the normal vaginal flora. A woman may experience burning or itching in her vagina and see a discharge. The discharge could have unusual colors or excessive quantity.^{9,10} The present study was conducted to assess bacterial vaginosis (BV) in pregnant women.

We found that there were 6 cases of BV in first trimester, 32 in the second and 18 in third trimester. The overall amount of gram-positive bacteria was found to be substantially larger than that of gram-negative bacteria by Ghiasi M et al.¹¹ The percentage of infertile women having bacterial vaginosis was 70.34%. The most common vaginal pathogen was *Staphylococcus aureus* (57.33%), followed by *E. coli* (25.33%). The highest susceptibility of *S. aureus* was seen in penicillin and gentamicin.

We found that *E. coli* positive samples was seen in 20, *klebsiella* positive in 6, *enterococcus* positive in 8, group B *Streptococci* positive in 4, *proteus vulgaris* positive in 3, *candida* positive in 2 and *staphylococcus aureus* in 38. 460 pregnant women suspected of having both symptomatic and asymptomatic vaginal infections were investigated by Mishra et al.¹² Each participant provided vaginal and cervical swabs, which were analyzed right away to potentially isolate and identify any harmful germs. 328 (71.3%) of the 460 individuals tested positive for vaginal infections. 17–25 years old accounted for 12% of cases, 26–34 years for 65%, 35–42 years for 18%, and over 42 years for 5% of cases. *Chlamydia trachomatis* (22%), *Candida albicans* (27%), *Mycoplasma hominis* (12%), *Gardnerella vaginalis* (10%), *Staphylococcus aureus* (6%), *Trichomonas vaginalis* (5%), *Neisseria gonorrhea* (3%), *E. coli* (2%) and *vibrio Mobiluncus* (3%), were the most frequently occurring microorganisms. In conclusion, pregnant women frequently experience vaginal infections.

Leitich et al.¹³ in their study 14 new studies with results for 10,286 patients were included. BV more than doubled the risk of preterm delivery in asymptomatic patients (OR: 2.16, 95% CI: 1.56-3.00) and in patients with symptoms of preterm labor (OR: 2.38, 95% CI: 1.02-5.58). BV also significantly increased the risk of late miscarriages (OR: 6.32, 95% CI: 3.65-10.94) and maternal infection (OR: 2.53, 95% CI 1.26-5.08) in

asymptomatic patients. No significant results were calculated for the outcomes of neonatal infection or perinatal mortality. Also, intermediate vaginal flora was not significantly associated with any outcome included. The results of this meta-analysis confirm that BV is a risk factor for preterm delivery and maternal infectious morbidity and a strong risk factor for late miscarriage. Jespers et al.¹⁴ found that at the screening visit 38% of women had BV defined as a Nugent score of 7-10, and 64% had more than one RTI (*N. gonorrhoea*, *C. trachomatis*, *T. vaginalis*, syphilis) and/or *Candida*. At screening the likelihood of BV was lower in women using progestin-only contraception and higher in women with more than one RTI. At enrolment, BV scores were significantly associated with the presence of prostate specific antigen (PSA) in the vaginal fluid and with being a self-acknowledged sex worker.

The limitation of the study is the small sample size.

CONCLUSION

Authors found that *Proteus vulgaris*, *candida*, *E. coli*, group B streptococci, *staphylococcus aureus*, and *enterococcus* were the most frequently occurring bacterial species in pregnant women with bacterial vaginosis.

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