



Original Article

Frequency of Vitamin D Deficiency in Patients with Bacterial Vaginosis during First Trimester of Pregnancy

Shazia Baloach¹, Maria Arshad², Tahira Parveen³, Aisha Seher⁴, Farzana Sohail⁵, Asifa Malhan⁶ and Adnan Fazal⁷

¹Department of Gynecology and Obstetrics, Civil Hospital, Jacobabad, Pakistan

²Department of Gynecology and Obstetrics, Combined Military Hospital, Bannu, Pakistan

³Department of Gynecology and Obstetrics, Bachal Shah Miani Hospital, Sukkur, Pakistan

⁴Department of Gynecology and Obstetrics, National Medical Centre, Karachi, Pakistan

⁵Department of Gynecology and Obstetrics, Civil Hospital, Thatta, Pakistan

⁶Department of Gynecology and Obstetrics, Jinnah Postgraduate Medical Centre, Karachi, Pakistan

⁷Department of Cardiology, National Institute of Cardiovascular Diseases, Karachi, Pakistan

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***Corresponding Author:**

Adnan Fazal

Department of Cardiology, National Institute of Cardiovascular Diseases, Karachi, Pakistan
dr.adnanfazal@gmail.com

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ABSTRACT

Bacterial vaginosis (BV) is an infection mainly results due to overabundance of germs. Because it affects a variety of immune system functions, it is crucial for BV. In order to timely assess, rationalize prospectively, and manage patients to combat vitamin D deficiency in bacterial vaginosis, this study planned to conduct on patients with bacterial vaginosis in relation to vitamin D deficiency, evaluate the magnitude, and generate local data. **Objective:** To determine the frequency of vitamin D deficiency in patients with bacterial vaginosis during first trimester of pregnancy. **Methods:** This cross-sectional study was conducted at Gynecology and Obstetrics department of Shaikh Zaid Women Hospital, SMBBMU Larkana from 10-September-2018 to 10-march-2019. A total of 192 pregnant women of first trimester with bacterial vaginosis were selected for this study. All the pregnant ladies with bacterial vaginosis were recruited and entered in the study and was screened for vitamin D deficiency. The data were collected on prepared proforma. **Results:** The age range from 25 to 35 years with a mean of 29.8±6.5 years, with mean gestational age of 8.09±2.29 weeks. Frequency of vitamin D deficiency was 47.4% in women with bacterial vaginosis in their first trimester. **Conclusions:** Findings of our study suggest association between vitamin D insufficiencies with BV during first trimester of pregnancy.

INTRODUCTION

Bacterial vaginosis is brought on by an overabundance of germs and is one of the challenging scenario for mother and treating obstetrician as it may not be the important for causing early and premature delivery but also abortion and fetal demise [1]. Evidence suggests infections are a major factor in preterm labour and delivery in women, which is a substantial cause of infant morbidity and mortality. Although the role of infection in recurrent early miscarriages due to infection or viremia is still lacking strong evidence but the observation of association with

sporadic miscarriages is strong [2]. A hundred to a thousand folds increase in the overall number of bacteria present as well as an imbalance in the naturally occurring bacteria in the vagina are all symptoms of bacterial vaginosis [3]. The most strong pathway of infection is the ascending pathway, evidence supporting to this includes chorioamnionitis is more common and severe at site of rupture membrane and bacteria identified in cases of congenital infection are the same as of lower genital tract infection. This observation is consistent with the

microbiologic studies of amniotic fluid in twin gestation. The fetus is exposed to microorganism and respond by mounting the cellular and humoral response. The precise frequency of bacterial vaginosis varies greatly; according to international studies, it might range from 4-64% of studied populations depending on their ethnic, regional, and clinical factors. A study done in Pakistan found that 55.38% of pregnant women had BV, whereas a study done in India found that 9 to 23% of pregnant women had bacterial vaginosis [4, 5]. Vitamin D insufficiency is significantly more typical in women of all ages. Because it has an impact on several immune system functions, its deficiency may have an important role in development of BV. So due to the paucity of local data we have designed this study to make protocols and improve the maternal and fetal outcome.

METHODS

This cross-sectional study was done at Obstetrics and Gynecology department of Shaikh Zaid Women Hospital, SMBBMU Larkana from 10-September-2018 to 10-march-2019. By using WHO calculator with confidence level of 95% with error of margin 7% and anticipated Population around 57% sample size is 192. We have enrolled 192 patients by using Non probability consecutive meeting the inclusion criteria of age range 25 to 35 years, having 01-12 gestational week of pregnancy and primipara or multiparous having bacterial vaginosis for one week duration we excluded women with history of antibiotic intake during last 14 days, women with medical disorders like, hepatic dysfunction, renal failure, hyper/hypo parathyroidism and malabsorption syndrome and women not giving consent or already on calcium and vitamin D supplements. After the approval ethical committee of hospital, consent was taken from patients. All the pregnant ladies with bacterial vaginosis defined as positive when there is Thin, white, homogeneous discharge (assessed by gross examination), Presence of clue cells on microscopy of wet mount (by laboratory investigation) and the presence of a fishy odor on adding alkali [10% KOH] (by speculum examination) was recruited and entered in the study and was screened for vitamin D deficiency labelled when serum vitamin D level < 20ng/ml. With aseptic measures 2 CC blood sample withdrawn and send for analysis of vitamin D deficiency to laboratory. By using SPSS version 22.0 the collected data was analyzed. The frequency and percentage were computed for parity, residency (urban or rural), diabetes mellitus, hypertension, and vitamin D deficiency in bacterial vaginosis during first trimester. The mean was computed for duration of pregnancy and disease, BMI, maternal and gestational age. Chi-square test was applied and the p-value ≤ 0.05 was taken as statistically significant.

RESULTS

In this study 192 pregnant women were enrolled in their first trimester having bacterial vaginosis with age range from 25 to 35 years with a mean of 29.8 ± 6.5 years. Mean gestational age, BMI and parity in Table 1.

Table 1: Descriptive Statistics of Demographic Characteristics

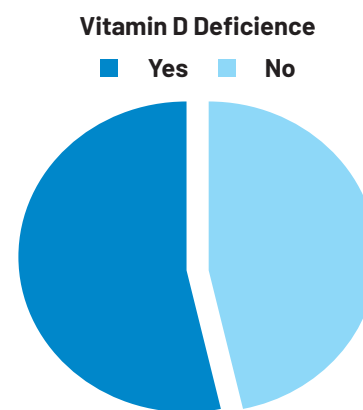
Variables	Range	Mean
Age (Years)	25 - 35	29.8±6.5
Gestational Age (Weeks)	7.77 - 8.42	8.09 ±2.29
BMI (kg/m ²)	26.95-29.74	27.74±1.4

Out of 192 cases, 88(45.83%) urban and 104(54.17%) rural while there were 86(44.79%) women multiparous and 106(55.21%) had primiparous. Out of 192 cases diabetic mellitus was found in 21.9%, hypertension 36.5%, anemia 19.85 and hypocalcaemia was observed in 12.5% cases (Table 2).

Table 2: Descriptive Statistics Of variables

Variables	Frequency (%)
Gravida	
Primi-gravida	106 (55.21)
Multigravida	86 (44.79)
Residence	
Urban	88 (45.83)
Rural	104 (54.17)
DM	42 (21.9)
Hypertension	70 (36.5)
Hypocalcemia	24 (12.5)

Frequency of vitamin d deficiency in patients with bacterial vaginosis during first trimester of pregnancy was observed in 47.4%(91/192) as presented in Figure 1.



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Figure 1: Frequency of Vitamin D Deficiency N=192

DISCUSSION

A change in the local flora with different species and colonized with variable species of bacteria, particularly facultative anaerobes, is a clinical feature of bacterial vaginosis. An increase in the pH of vagina and presentation ranging from none to extremely uncomfortable are brought

on by the changed flora. Preterm delivery and higher susceptibility to other sexually transmitted infections are only a couple of the long-term health effects of BV. In this study we have enrolled 192 cases with ages from 25 to 35 years with an average age 29.8 ± 6.5 years it was in agreement with the observation of Saleem N., et al where the mean age was 32.8 ± 6.5 years [6]. In this study majority belong to rural as compared to urban (54.17% vs 45.83%). Similar pattern was observed in a study by Garba et al., who reported higher number of BV (52.6%) in rural population in Nigeria [7]. There were 51.55% obese women in our study which is not consistent with an earlier study where BV was similar in undernourished and obese women, this may be the sampling area difference [8]. In this study more numbers of primiparous around 55.21%, similar observation was made by Cristiano et al, where incidence of BV was more seen in primipara [9]. These finding were also consistent with other studies where primipara were 54.3% and 56.1% [10,11]. Since many infectious disorders involve glucose metabolism, sepsis and other dangerous bacterial invasion aftereffects are more likely to occur in diabetes people. We found diabetic mellitus in 21.9% of our patients, similarly many studies found DM as important risk factor [12-14]. We found hypertension 36.5% patients with BV and it was consistent with findings of some earlier studies where it was 35.2% and 37.1% [15, 16]. In our study the frequency of vitamin d deficiency in patients with bacterial vaginosis during first trimester of pregnancy was observed is 47.4% (91/192) this is also in agreement with the study by Bodnar et al., who observed 46% women with BV were vitamin D-deficient from the USA [17]. Similarly in another US study significantly lower concentrations of vitamin D were observed in patients with bacterial vaginosis [18]. However, study by Kazemi et al., reported very high around 86% of vitamin D deficiency in women with BV in Iran this may be due to sample size and dietary habits of area [19]. While the finding by Hensel et al., also gives his observation that vitamin D deficiency was more seen in patients suffering with BV [20].

CONCLUSIONS

This study concludes positive relationship of BV with vitamin D deficiency especially during early stage of pregnancy. BV is not rare vaginal infection of childbearing age. As vitamin D plays important role in boosting immunity, so its deficiency impacts in developing different infection in our body. Our data indicate that 47.4% of all enrolled women with BV had 25(OH)D levels indicative of vitamin D insufficiency. In summary, these findings suggest that vitamin D insufficiency is associated with BV during first trimester of pregnancy.

Authors Contribution

Conceptualization: SB

Methodology: SB, MA

Formal analysis: AF

Writing-review and editing: TP, AS, FS, AM

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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