

## COMPLICATIONS OF BACTERIAL VAGINOSIS IN PREGNANCY

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### ABSTRACT

**Objective:** Bacterial vaginosis is one of the common causes of vaginal discharge in women. It has been suggested that risks of preterm labour, abortion and premature rupture of membrane (PROM) are higher in pregnancies that are affected by bacterial vaginosis. This study was designed to determine the incidence of bacterial vaginosis and its relationship with abortion, preterm labor, intra uterine fetal death (IUFD) and premature rupture of membranes.

**Methodology:** This was a historical cohort study done in 2006. The exposure group involved 136 women who had bacterial vaginosis diagnosed before 20th week of gestation and 397 pregnant women without bacterial vaginosis as non exposure group. The relationship between preterm labor, abortion, intra uterine fetal death and premature rupture of membranes with bacterial vaginosis in pregnancy was determined. The data was analyzed using SPSS version 11 software. Chi-square test was applied for statistical comparisons and Fisher exact test and Yates correction were implemented whenever appropriate. Significance was assumed as  $P < 0.05$ .

**Results:** The incidence for abortion, intra uterine fetal death, preterm labor and premature rupture of membrane were 1.3%, 0.9%, 3.6%, 1.3% respectively. There was no statistical relationship between bacterial vaginosis and abortion but the relationship between bacterial vaginosis and intra uterine fetal death, preterm labor and premature rupture of membrane was significant ( $p < 0.001$ ).

**Conclusion:** Findings of the study indicate that rates of intra uterine fetal death, preterm labor and premature rupture of membrane were higher in women who had bacterial vaginosis compared with those who did not.

**KEY WORDS:** Bacterial vaginosis, Abortion, Preterm labor.

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## INTRODUCTION

Bacterial vaginosis is the most common cause of vaginal discharge in women.<sup>1</sup> Prevalence rates of 10% to 31% have been reported.<sup>2-8</sup> Bacterial vaginosis can lead to gestational complications such as abortion, preterm labor, PROM, and chorioamnionitis.<sup>1-9</sup> It has been shown that the risk of preterm births in pregnant women who had bacterial vaginosis before 16th week of gestation was 1.4 and 6.9 times more than who didn't have.<sup>4-8</sup> The theory saying that the problem has to be treated before 16th week is

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based on the mechanism of bacterial vaginosis in preterm delivery.<sup>10</sup>

Prevalence of bacterial vaginosis in pregnancy and its relationship with preterm labor varies among different populations<sup>11</sup> and depends on the clinical setting, socio-demographic factors, diagnostic criteria, gestational age, and other factors.<sup>12</sup>

There is a scarcity of data concerning effects of bacterial vaginosis over pregnancy in Sanandaj city. The results of this study will assist the health decision makers to design and implement screening and treatment strategies for bacterial vaginosis in pregnancy. It demonstrates the importance of this study.

### METHODOLOGY

This was a historical cohort study performed in 2006. The population of our study involved 777 pregnant women before 20th week of gestation, registered in health centers in Sanandaj city. The exposure group included 136 women who had bacterial vaginosis diagnosed before 20th week of gestation and 397 pregnant women without bacterial vaginosis participating as non exposure group.

The exclusion criteria for the study included pregnant women with a history of abortion, preterm labor, multifetal pregnancy, history of medical complications in pregnancy and also patients aged below 18 or over 40 years old. We also investigated outcomes of pregnancies in the

newborn unit of Be'sat hospital in Sanandaj. The data was analyzed using SPSS version 11 software. Chi-square test was applied for statistical comparisons and Fisher exact test or Yates correction was implemented whenever appropriate. Significance was assumed as  $P < 0.05$ .

### RESULTS

In our study the incidence of bacterial vaginosis in pregnant women was 17.5 percent. There was no significant difference between age group, occupation and birth order among exposure and non exposure groups (Table 1). The incidence rates of abortion, IUFD, preterm labor and PROM were 1.3%, 0.9%, 3.6%, 1.3% respectively.

There was no statistical relationship between bacterial vaginosis and abortion but the relationship between bacterial vaginosis and Intra Uterine Fetal Death (IUFD), preterm labor and premature rupture of membrane (Table 2) was significant ( $p < 0.001$ ). Relative risks of IUFD, preterm labor and PROM for B.V positive pregnancies were 11.68 ( $P < 0.0005$ ), 6.32 ( $P < 0.0001$ ) and 25.71 ( $P < 0.0001$ ) respectively.

### DISCUSSION

The prevalence of bacterial vaginosis ranges from 6.8% to 28% in studies in academic medical centers and public hospitals in U.S<sup>13</sup> and also in other studies<sup>2,11,14,16</sup> but it is not well studied and considered in our population.<sup>13</sup>

Table-I: Characteristics of the pregnant women according to bacterial vaginosis (B.V) status

	<i>B.V positive</i>	<i>B.V Negative</i>	<i>Significance</i>
Pregnancy			NS
First	93 (35.5)	169 (64.5)	
Second	36 (25.5)	105 (74.4)	
>3rd	34 (34.3)	65 (65.6)	
Age Group			NS
<30	124 (32.7)	255 (67.3)	
>30	39 (32)	83 (68)	
Education			NS
Primary	45 (30)	105 (70)	
Intermediate	98 (34.7)	184 (65.2)	
College	18 (27.7)	47 (72.3)	

B.V: Bacterial Vaginosis

Table-II: Outcome of pregnancy based on bacterial vaginosis status

	<i>B.V Positive</i>	<i>B.V Negative</i>	<i>Relative risk(95% CI)</i>	<i>Significance</i>
Abortion				NS
Yes	4 (2.9)	132 (97.1)	3.89 (0.88-17.17)	
No	3 (0.8)	394 (99.2)		
IUFD				<0.0005
Yes	4 (2.9)	132 (97.1)	11/68 (1.32-103.57)	
No	1 (0.3)	396 (99.7)		
Preterm labor				<0.0001
Yes	13 (9.6)	123 (90.4)	6.32(2.24-16.31)	
No	6 (1.5)	391 (98.5)		
PROM				<0.0001
Yes	6 (4.4)	130 (95.6)	25.71(3.29-20.07)	
No	1 (0.3)	396 (99.7)		

B.V: Bacterial Vaginosis    IUFD: Intra uterine fetal death    PROM: Premature rupture of membrane

The incidence of bacterial vaginosis, abortion, IUFD, preterm labor and PROM in our study were 17.5%, 1.3%, 0.9%, 3.6% and 1.3% respectively. Also there was no statistical relationship between bacterial vaginosis and abortion but higher rates of IUFD, preterm labor and PROM were found in women affected by bacterial vaginosis.

It has been suggested that the risk of preterm labour is higher in pregnancies complicated by bacterial vaginosis.<sup>17</sup> In a study by Kalinkaj et al, the rate of preterm labor was about 15.7 % compared with 9.1% among those people who didn't have bacterial vaginosis and it has been concluded that early diagnosis of bacterial vaginosis and its treatment could decrease preterm labor.<sup>2</sup> In a study performed in Paris, the preterm labor in women suffering bacterial vaginosis was about 25%, compared with 10.6 % in other women.<sup>11</sup> In Hiller study the preterm labor and low-birth-weight infants were more common in women having bacterial vaginosis.<sup>14</sup>

In Benedetto et al study, bacterial vaginosis was significantly associated with PROM and preterm delivery but not with intrauterine death.<sup>15</sup> Ralph et al too measured abortion risk in women with bacterial vaginosis as about 32.1% compared with 18.5 % in women without bacterial vaginosis.<sup>16</sup> According to another study, in women with bacterial vaginosis risk of preterm labor was high and also it has been suggested that antibacterial treatment could decrease risk of preterm labor.<sup>18</sup>

According to our study, treating bacterial vaginosis in some women might lead to a decrease in abortion, PROM, IUFD and preterm labor. Ugwumdau et al study showed that screening and treatment of asymptomatic bacterial vaginosis in first month of second trimester can decrease the rate of preterm labor in pregnant women<sup>19</sup> and some other studies illustrated similar outcomes<sup>20</sup> but Goffeng et al study did not find any relationship between bacterial vaginosis and preterm labor<sup>3</sup> and based on another study in Toronto, treatment of bacterial vaginosis didn't decrease the risk of preterm labor and did not have any efficacy on pregnancy outcomes.<sup>21</sup>

Oakeshott et al concluded that bacterial vaginosis is not a strong prognostication of miscarriage before 16th week of gestation.<sup>22</sup> Liversedge et al study has got no significant difference in abortions caused by bacterial vaginosis, but Ralph et al found the significant association in the first trimester.<sup>20,23</sup>

## CONCLUSION

According to the results IUFD, preterm labor and PROM rates were higher in pregnant women who had bacterial vaginosis compared with those that did not have bacterial vaginosis. The gynecologist and midwives have to screen of pregnant women before 20th week of gestation for B.V and treat it for decrease the risk of IUFD and PROM.

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