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A study on outcome of pregnancy among bacterial vaginosis positive cases attending to a tertiary care hospital, Andhra Pradesh

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Abstract
Objective: To study the out come of pregnancy among bacterial vaginosis positive antenatal women.
Design: Hospital based prospective observational study.
Setting: G.S.L. medical college, Rajahmundry. A.P.
Materials and methods: 500 antenatal women were Takenat Gsl medical college and examined 72 antenatal women were found to be positive.
Conclusion: Our study further lays credentials to the fact that BV is associated with adverse pregnancy outcome and should be looked for early in pregnancy. Routine screening of antenatal women, for Bacterial vaginosis will result in the decrease of adverse pregnancy outcome.

Keywords: Bacterial vaginosis, SES, urban & rural. Outcome of pregnancy

Introduction

Bacterial vaginosis (BV) is a condition in which the normal, lactobacillus-predominant vaginal flora is replaced with anaerobic bacteria. Gram-negative rods, G. vaginalis, and M. hominis were responsible for missed abortion, premature rupture of membranes, preterm delivery, intrauterine growth retardation, infection of the Chorion and amnion, histologic chorioamnionitis and infection of amniotic fluid. During pregnancy phospholipase A2 act on cervical mucus and non-specific proteases act on cervical and amniochorionic connective tissue and promotes the cervical ripening. It causes focal amniochorionic weakening. In addition phospholipases promotes the release of prostaglandin by activating arachidonic acid and leads to preterm birth.
The vaginal secretion in bacterial vaginosis is characterised by fishy odour. This is the basis for the Whiff test or KOH test.

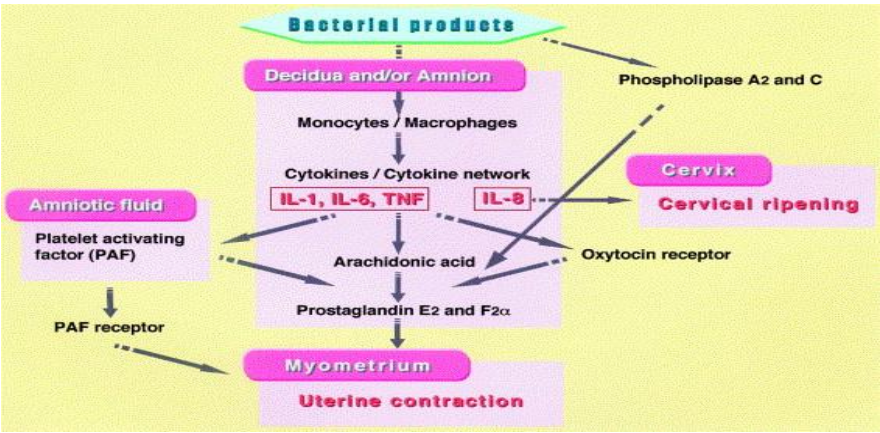

Fig 1: This picture depicts the mechanism of preterm labour due to infection [3]

BV has been linked to a number of obstetrical complications including spontaneous abortion, preterm labour, pPROM, chorioamnionitis and postpartum endometritis [1].

Eschenbach and gravett *et al.* [2] were the first to implicate BV as a risk factor for preterm labour and low birth weight. The presence of BV in the mid trimester with a mean gestation of 32.6 weeks has been associated with increased risk for preterm labour and preterm PROM. pPROM accounts for 30% of spontaneous preterm labour and is associated with increased risk of preterm labor, intrauterine infections, neonatal morbidity and mortality [3]. Cary J.C *et al.* [4] found that risk of preterm rupture of membranes, preterm labour and low birth weight was associated with T. vaginalis, M. hominis and Bacterial vaginosis.

Objectives

1. To study the socio-demographic profile of antenatal cases.
2. To study the association between socio demographic profile and outcome of pregnancy.

Materials and Methods

Type of Study: Hospital based epidemiological study

Study design: Hospital based prospective observational study at G.S.L. medical college, Rajahmundry, A.P.

Place of study: G.S.L Medical College and hospital, Rajahmundry, A.P.

Study population: All antenatal women attending op satisfying the inclusion criteria.

Duration of the study: 1ST December 2012 to 31st may 2014 (2yrs 6months).

Inclusion criteria: All antenatal women attending antenatal o.p.

Exclusion criteria

1. Women in active labour
2. History of leaking per vaginum
3. Bleeding per vaginum
4. Antibiotic therapy in last one month

Data collection procedure

After obtaining Clearance from the Institutional Ethical Committee, the Data was collected by using a predesigned & pretested schedule which includes, a detailed history was taken regarding age, parity, period of gestation in weeks, medical history, history of vaginal symptoms like vaginal discharge, malodour, obstetric history of previous preterm deliveries, abortions, history of leak PV in the present pregnancy. Gestation age was calculated from first day of the last menstrual period and was confirmed by ultrasound examination.

Baseline parameters like pulse, BP, temperature were recorded. Weight and height of the patient were recorded. Presence of pallor, and pedal edema was noted. Cardiovascular and respiratory systems were examined.

Abdominal examination was performed to see height of uterus, presentation, position, lie of fetus, liquor volume, and fetal heart sounds were recorded. Speculum examination was done and any discharge and leak were noted. Lengths, position, dilatation of cervix, presence or absence of membranes were noted.

The vaginal pH was measured using pH strips. Cotton swabs were used to obtain the vaginal discharge from posterior vaginal fornix and smear was done on a slide. Amine test was done to know the presence or absence of amine odour by addition of 10% KOH for the characteristic fishy smell, also known as Whiff test. Smear was Gram stained and scores for BV as proposed by Nugent *et al.* were assigned.

Sampling method: All antenatal women attending to gynaecology opd and fits in inclusion criteria will be considered.

Sample size: A total of 500 antenatal women attended the opd during study period of which 72 antenatal women were found to positive for bacterial vaginosis.

Sample size was 72 antenatal women.

Data analysis: Microsoft excels 2010 will be used for data entry, generating charts & diagrams, etc. Data analysis will be done by SPSS V 20 software. Data analysis will be done by applying Chi-square tests. P-value less than 0.05 will be considered as statistically significant. The results will be presented in the form of charts & tables and graphs.

Results

Table 1: Age wise Bacterial vaginosis (BV) Distribution

Age	BV Positive	%
17 - 20	22	30.5
21 - 24	39	54.3
25 - 28	9	12.6
29 - 32	1	1.3
33 above	1	1.3
Total	72	100%

Out of 72 females who were diagnosed with BV, most (39), of them were between age group of 21 – 24 years, followed by 17 – 20 years (22).

Table 2: Rural & Urban wise Bacterial vaginosis (BV) Distribution

Area	BV Positive	%
Rural	53	73.6
Urban	19	26.4
Total	72	100%

Out of 72 females, 73.6% (53) belonged to rural area and the rest 26.4% (19) of them belonged to urban area.

Table 3: Socio economic wise Bacterial vaginosis (BV) Distribution

SCE	BV Positive	%
Low	44	61.1
Middle	21	29.1
High	7	9.8
Total	72	100%

Most 61.1% (44) of them belonged to the low socio – economic status. Only 9.8% (7) of them belonged to high socio – economic status.

Table 4: Education wise Bacterial vaginosis (BV) Distribution

Education	BV Positive	%
EDUCATED	32	44.4
UNEDUCATED	40	55.6
Total	72	100%

Among BV positive females, most 55.6% (40) of them were uneducated, where as 44.4% (32) were educated.

Table 5: Gestational weeks Vs Bacterial vaginosis (BV) Distribution

Weeks	BV Positive	%
<25	7	9.7
25 – 32	10	13.8
33 – 38	40	55.7
>38	15	20.8
Total	72	100%

Table 6: Compilations Vs Bacterial vaginosis (BV) Distribution

Compilations	BV	%
NIL	37	51.3
FEVER FOR 1WEEK	2	2.7
FEVER FOR <7 DAYS	14	19.2
Foul smelling disch	13	18.5
WOUND SEPSIS	6	8.3
TOTAL	72	100%

Regarding complications, most (51.3%) 37 of them had no complications. But 14 (19.2%) females had fever for < 7 days, followed by foul smelling discharge (13). 8.3% of the females had wound sepsis.

Table 7: Birth weight Vs Bacterial vaginosis (BV) Distribution

Birth weight	B.V	%
<2.5 Kg	35	48.6
>2.5 Kg	37	51.4
TOTAL	72	100%

Regarding birth weight, 51.4% (37) of the babies were > 205 kgs, and then followed by 48.6% (35) of the babies were < 2.5 kgs.

Table 8: Mod of delivery Vs Bacterial vaginosis (BV) Distribution

Mod of delivery	B.V	%
NVD	41	56.9
Abortion	7	9.7
AVD	7	9.7
E.LSCS	11	15.5
R.LSCS	4	5.5
Vbac	2	2.7
TOTAL	72	100%

Table 9: Baby complications Vs Bacterial vaginosis (BV) Distribution

Baby complications	B.V	%
NIL	35	48.6
DIED	10	13.8
SEPSIS	9	12.8
Hypoglycaemia	1	1.3
Hypothermia	7	9.7
JAUNDICE	3	4.1
RESP.DIS	7	9.7
TOTAL	72	100%

Regarding baby complications, 48.6% (35) of the infants didn't had any complications. 13.8% (10) of the infants were dead, followed by 12.8% (9) who had neonatal sepsis.

Table 10: BV Status and pregnancy Outcome

Pregnancy Outcome	BV Positive(N=72)	BV Negative(N=428)	P-VALUE
LBW	35	35	*P*< 0.0000**
GA	32	21	*P*< 0.0000**
Compilations	59	25	*P*< 0.0000**
MOD	31	117	*P*< 0.0069*
BABY COMPLICATIONS	37	71	*P*< 0.0000**
NICU ADM	25	52	*P*< 0.0000**
Antenatal risk factors	33	4	*P*< 0.0000**
URINE EXAM	50	16	*P*< 0.0000**

In our study, the association between Bacterial vaginosis (BV) and the factors of pregnancy outcome i.e LBW, GA, baby complications, NICU admission etc. was found to be statistically significant (Table 10). Means in BV positive cases the pregnancy outcome risk factors were more when compared to the BV negative patients.

Discussion

BV has been linked to a number of obstetrical complications including spontaneous abortion, preterm labour, pPROM, chorioamnionitis and postpartum endometritis. In our study, out of 72 women who were diagnosed with BV, 9.7% (7) of the women developed spontaneous abortion. The incidence of spontaneous abortion around 13-19 weeks gestation has been demonstrated to be significantly higher in women who have BV than those who do not and is an independent risk factor.

Gravett *et al.* [5] in their study of 582 women in the second and third trimesters of pregnancy at university hospital, Seattle, first trimester spontaneous abortion was significantly higher among those women with Bacterial vaginosis. They also reported a significantly increase of preterm labour, preterm premature rupture of membranes, low birth weight and chorioamnionitis among bacterial vaginosis positive women (*P*< 0.01, *P*< 0.01, *P*< 0.05).

Bacterial vaginosis in early pregnancy was associated with a 2.6 fold risk (95%CI,I:3-49) for preterm labour, a 6.9 fold risk (95%CI2.5-18.8) for preterm birth and 7.3 fold risk for preterm premature rupture of membranes (95%CI 1.8-29.4).Since bacterial vaginosis was detected in 19-30% of women in early gestation, 19% in mid gestation and 14-18% in later gestation, they concluded that vaginal bacterial milieu as assessed in early pregnancy, represented that throughout pregnancy if no therapy or no interventions were done.

Purwar *et al.* [6] in a cohort study of 1006 asymptomatic pregnant women between 16-28 weeks of gestation using Nugent criteria, reported a significant increase in preterm birth (P=0.001) and preterm premature rupture of membranes(P=0.001). Shahgeibi *et al.* [7] did a cohort study in 2006 with 136 women who had BV, the incidence for abortion, IUD, preterm labour and PROM were 1.3%, 0.9%, 3.6% and 1.3% respectively. They did not find statistical relationship between BV and abortion but there was a significant relationship between BV and IUD, preterm labour and PROM.

A meta-analysis done by Letich *et al.* [8] in 2003 showed that BV increased the risk of preterm delivery more than two fold with an odds ratio 2.19. It also significantly increased the risk of spontaneous abortion and maternal infection with an odds ratio of 9.91 and 2.53 respectively. There were no significant results for outcome of neonatal infection or perinatal death. They concluded that BV early in pregnancy is a strong risk factor for preterm delivery and spontaneous abortion. Dhawane *et al.* [9] did a cross sectional study of 515 patients delivered in district general hospital Wardha. In their study the frequency of preterm labour was 10.2%, PROM was 13.2% and idiopathic preterm deliveries was 35.8%.The incidence of BV in cases of idiopathic preterm labour and PROM was 70.07%.

Svare *et al.* [10] studied the outcome of pregnancy of 3262 singleton pregnancy women included before 20 weeks of gestation. Univariate analysis showed that BV was marginally associated with preterm delivery but significantly associated with LBW and clinical chorioamnionitis.

Out of 72 females, 73.6% (53) belonged to rural area and the rest 26.4% (19) of them belonged to urban area. This was totally agreed with the study conducted by Aggarwal *et al.* [11] from Haryana, India, bacterial vaginosis was diagnosed in a high percentage (48.5%) of rural women.

In this study, bacterial vaginosis is more common in low socio-economic group (61.1%) compared to middle and upper class. This also was in agreement with the study conducted by Mariam

In our study, the association between Bacterial vaginosis (BV) and the factors of pregnancy outcome i.e LBW, GA, baby complications, NICU admission etc. was found to be statistically significant. In their study done by Gupta *et al.* [12], found that there was significant association between BV and preterm labour, PROM.

Kurki *et al.* [13] in, observed that BV was associated with 2- to 6-fold increased risk for preterm labor, a 6.9-fold increased risk for preterm birth and a 7.3 fold increased risk of preterm PROM. Sheehan *et al*, [14] 1996, observed in their study on BV that it was the most common cause of vaginal infection and concluded that occurrence of BV in early pregnancy led to 5-fold increased risk of late miscarriage or preterm delivery. Govender *et al*, [15] observed a significant difference in the outcome in women with BV (55 out of 88) compared to those who had infections other than BV (13 of 31) or no infection (5 of 9).

Conclusion

Our study further lays credentials to the fact that BV is associated with adverse pregnancy outcome and should be looked for early in pregnancy. Routine screening of antenatal women, for Bacterial vaginosis will result in the decrease of adverse pregnancy outcome.

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