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SCREENING OF VULVOVAGINAL INFECTIONS IN PREGNANCY AND IT'S IMPLICATION ON MATERNAL AND FOETAL OUTCOMES

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ABSTRACT

This research focuses on birth mode and related health concerns while examining the association between bacterial vaginosis (BV) and different maternal and foetal outcomes. The analysis of 61 instances showed no discernible differences between BV-positive (BV+) and BV-negative (BV-) persons in terms of gestation age, baby weight, or mother age. The assessment of these parameters was done using statistical tests, such as t-tests for independent samples. Studies were also conducted to investigate correlations between antibiotic therapy, NICU hospitalisation, maternal and foetal outcomes, microbial species presence, and delivery method. The intricacy of the dynamics affecting maternal and foetal health is highlighted by the fact that some relationships were found to be statistically significant while others were not. The study emphasises how crucial it is to take delivery method into account when analysing maternal and foetal health outcomes and offers directions for future research with bigger sample sizes and more inclusive criteria that will produce more definitive findings. Overall, the results highlight the necessity for comprehensive approaches to maternal healthcare and advance our understanding of the relationship between BV and outcomes related to maternal and foetal health.

KEYWORDS: Bacterial vaginosis (BV), Fallopian tube, Gestation period, Embryo.

INTRODUCTION

Pregnancy is the term used to describe the period in which a foetus develops inside a woman's womb or uterus. Pregnancy usually lasts about forty weeks, or just over 9 months, as measured from the last menstrual period to delivery, it is a span known as the gestational age. Pregnancy may end in a live birth, a miscarriage, an induced abortion, or a still birth.[1] Pregnancy is the condition of events involving fertilization, implantation of fertilized ovum, development of embryo and foetus and finally ending with birth of the child. Gestation period, which is duration between fertilization and birth, in humans is around 38 weeks that is 9 months and divided into 3 trimesters each of 3 month duration. Pregnancy is divided into three trimesters of approximately three months each. The first trimester includes conception, which is when the sperm fertilizes the egg. The fertilized egg then travels down the Fallopian tube and attaches to the inside of the uterus, where it begins to form the embryo and placenta. During the first trimester, the possibility of miscarriage (natural death of embryo or foetus) is at its highest. Around the middle of the second trimester, movement of the foetus may be felt. At 28 weeks, more than 90% of babies can survive outside of the uterus if provided with high-quality medical care, though babies born at this time will likely experience serious health complications such as heart and respiratory problems and long-term intellectual and developmental disabilities.

MATERIALS AND METHODS

Six-month prospective observational research was carried out in the Obstetrics and Gynaecology ward of Ananta Institute of medical Sciences and Research Centre, a tertiary care teaching hospital. Women who were in their third trimester of pregnancy were included in the study. The patient's case records, reports, vaginal swab results, prescription, patient, and professional healthcare interviews yielded all pertinent and required information.

Inclusion criteria

Women who have been admitted to the IPD while pregnant, patients of all ages who have been recommended to have vaginal swab testing and investigations, and who have had vulvovaginal infections found.

Exclusion criteria

1. Patient who are admitted in emergency department.
2. OPD patients.
3. Patients with PV bleeding who are admitted.

4. Women who are not pregnant are the group of patients which will be excluded from the study.

RESULTS

Table 1: Impact of BV on Maternal and Foetal outcomes comparative analysis.

Characteristics	Total mean	BV+ (n=47)	BV- (n=14)	P values	Diff CI
Age (Yrs)	26.70±5.2	26.872±5.26	26.14±5.27	.675	-4.21,2.76
Baby weight (Kg)	2.65±.556	2.64±.571	2.66. ±520	.477	-.320,.363
Gestation age(Weeks)	37.66±2.77	37.38±2.93	38.57±1.94	.272	-.487,.263

The normality test revealed that the age, baby birth weight, gestation age in both BV+ and BV- groups followed a normal distribution. The mean age of all participants was 26.70 years (±5.2). In the BV+ group, the average age was 26.872 years (±5.26), while in the BV- group, it was 26.14 years (±5.27). A t-test for independent samples was then conducted, and it showed no significant difference in age between the two groups ($p = 0.675$), with a confidence interval (CI) ranging from -4.21 to 2.76. The overall mean baby weight was 2.65 kilograms (±0.556). For BV+ participants, the mean baby weight was 2.64 kilograms (±0.571), whereas for BV- participants, it was 2.66 kilograms (±0.520). A t-test for independent samples indicated no significant difference in baby weight between the two groups ($p = 0.477$), with a confidence interval (CI) ranging from -0.320 to 0.363. The average gestation age for all participants was 37.66 weeks (±2.77). In the BV+ group, the mean gestation age was 37.38 weeks (±2.93), while in the BV- group, it was 38.57 weeks (±1.94). A t-test for independent samples did not reveal a significant difference in gestation age between the two groups ($p = 0.272$), with a confidence interval (CI) ranging from -0.487 to 0.263.

Out of the 61 cases studied, 91.8% (56 cases) involved caesarean section (LSCS), while 8.2% (5 cases) were normal vaginal deliveries (NVD). A statistically significant association was found between the mode of delivery and maternal and foetal outcomes, with a p-value of 0.022. Among the cases, 23.0% (14 cases) had no organism isolates, while 24.6% (15 cases each) were identified with microbial species (MSCNSS and MRCNSS). Other isolated organisms included Pseudomonas aeruginosa (1.6%), Enterococcus species (8.2%), E. coli (13.1%), and various others. The comparison between cases with and without microbial species showed a non-significant association, with a p-value of 0.115. Among the 61 cases, 70.5% (43 cases) had no specific mother-related outcomes. Some of the reported outcomes

included anaemia (6.6%), premature rupture of membranes (PROM) (9.8%), and intrauterine growth restriction (IUGR) (3.3%), among others. The analysis did not find a significant association between various maternal outcomes and maternal and foetal outcomes, with a p-value of 0.408. In the study, 50.8% (31 cases) of the infants were female, while 49.2% (30 cases) were male. The comparison of female and male infants did not yield a statistically significant association with maternal and foetal outcomes, with a p-value of 0.497. The majority of cases (83.6%) had no reported abnormalities, while 11.5% were identified as premature, and a few cases had other anomalies like foetal tachycardia and foetal cardiac anomaly. The analysis showed no significant association between the presence of abnormalities and maternal and foetal outcomes, with a p-value of 0.307. Among the 61 cases, 75.4% (46 cases) had no specific reported foetal outcomes. Some of the reported foetal outcomes included unilateral renal agenesis (1.6%), red papules on the face (1.6%), and acrocyanosis (6.6%), among others. The comparison of different foetal outcomes did not reveal a statistically significant association, with a pvalue of 0. 213. Among the cases, 63.9% (39 cases) required NICU admission, while 36.1% (22 cases) did not. The comparison between cases with and without NICU admission showed a borderline significant association, with a p-value of 0.082. Antibiotic treatment was given to 25 patients (51.0%), with augmentin (augmentin) in conjunction with metronidazole being the most usually prescribed regimen. Other antibiotics, such as ceftriaxone, amikacin, gentamicin, and azithromycin, were prescribed on a case-by-case basis (1-5 cases).

Table 2: Comparison of Maternal and Foetal outcomes by categories.

		Total	**BV +**	**BV -**	**P-value**
		(N = 61)	**(N = 61)**	**(N = 61)**	
Characteristics	**Categories**	**n(%)**	**n(%)**	**n(%)**	
Mode Delivery of	LSCS	56(91.8)	43(91.5)	13(92.9)	0.022
	NVD	5(8.2)	1(7.1)	4(8.5)	
Organism isolates	None	14(23)	0(0)	14(100)	0.115
	MSCNSS	15(24.6)	15(31.9)	0(0)	
	MRCNSS	15(24.6)	15(31.9)	0(0)	
	Pseudomonas aeruginosa	1(1.6)	1(2.1)	0(0)	
	Enterococus species	5(8.2)	5(10.6)	0(0)	
	Proteus species	1(1.6)	1(2.1)	0(0)	
	E. coli	8(13.1)	8(17)	0(0)	
	Gram positive cocci	1(1.6)	1(2.1)	0(0)	
	Klebsiella species	1(1.6)	1(2.1)	0(0)	
Mother outcomes	Nil	43(70.5)	32(68.1)	11(78.6)	0.408
	Anaemia	4(6.6)	4(8.5)	0(0)	

	PROM	6(9.8)	5(10.6)	1(7.1)	
	Breech with low foetal movement	1(1.6)	1(2.1)	0(0)	
	IUGR	2(3.3)	2(4.3)	0(0)	
	Tachycardia	1(1.6)	1(2.1)	0(0)	
	High pulse rate	1(1.6)	1(2.1)	0(0)	
	Respiratory distress	1(1.6)	1(2.1)	0(0)	
	Pelvic side wall convergent	1(1.6)	0(0)	1(7.1)	
	CPD	1(1.6)	0(0)	1(7.1)	
Baby sex	Female	31(50.8)	25(53.2)	6(42.9)	0.497
	Male	30(49.2)	22(46.8)	8(57.1)	
Abnormality	None	51(83.6)	38(80.9)	13(92.9)	0.307
	Premature	7(11.5)	6(12.8)	1(7.1)	
	Foetal tachycardia	1(1.6)	1(2.1)	0(0)	
	Foetal cardiac anomaly	1(1.6)	1(2.1)	0(0)	
	Tachyapnea	1(1.6)	1(2.1)	0(0)	
Foetal outcomes	Nil	46(75.4)	35(74.5)	11(78.6)	0.213
	Unilateral renal agenesis	1(1.6)	1(2.1)	0(0)	
	Red papules on face	1(1.6)	1(2.1)	0(0)	
	Acrocynosis	4(6.6)	2(4.3)	2(14.3)	
	Eye discharge	1(1.6)	1(2.1)	0(0)	
	Asymptomatic hypoglycemia	1(1.6)	1(2.1)	0(0)	
	Jaundice	3(4.9)	3(6.4)	0(0)	
	Acynotic congenital heart disease	1(1.6)	1(2.1)	0(0)	
	Hyperbilirubinemia	1(1.6)	1(2.1)	0(0)	
	Foetal distress	2(3.3)	1(2.1)	1(7.1)	
NICU	No	22(36.1)	16(34)	6(42.9)	0.082
	Yes	39(63.9)	31(66)	8(57.1)	

This study sheds light on the connection between birth mode and maternal and foetal outcomes, highlighting the significance of giving delivery mode due thought. Despite the fact that some connections were determined to be statistically insignificant, the findings are nevertheless important for understanding maternal and foetal health. Future studies with larger sample sizes and more extensive factors may produce more conclusive results. The results of this study suggest that there were no significant differences in age, baby weight, or gestation age between individuals with bacterial vaginosis (BV+) and those without BV (BV). These findings indicate that maternal age, baby weight, and gestation age may not be directly associated with the presence of BV in the study population.

Table 3: Antibiotic Usage and Percentage distribution for vulvovaginal infections.

Antibiotics Used	Count	Percentage
Amoxycillin + Clavulanic Acid	41	93.18%
Metronidazole	35	79.55%
Amoxycillin + Clavulanic Acid + Metronidazole	25	56.82%
Amoxycillin + Clavulanic Acid + Metronidazole + Amikacin	10	22.73%
Piperacillin + Tazobactam + Metronidazole	7	15.91%
Piperacillin + Tazobactam + Metronidazole + Gentamicin sulphate	4	9.09%
Piperacillin + Tazobactam + Metronidazole + Amikacin + Azithromycin	1	2.27%
Cefixime	1	2.27%
Amoxycillin + Clavulanic Acid + Metronidazole + Gentamicin sulphate	1	2.27%

DISCUSSION

This study's objective was to examine the possible connections between bacterial vaginosis (BV) and maternal and foetal outcomes, taking into account a number of variables including age, baby weight, gestational age, delivery method, organism isolates, maternal outcomes, baby sex, abnormalities, foetal outcomes, and NICU admission. The findings showed that there were no differences between the BV+ and BV- groups in terms of age, baby weight, or gestational age. The study participants' average age was 26.70 years (±5.2). In particular, the BV+ group's mean age was 26.872 years (±5.26), whereas the BV- group's was 26.14 years (±5.27). These results imply that gestational age, maternal age, and baby weight may not be directly related to the occurrence of BV in the research population. Similar investigations by[2],[3],[4],[5],[6] likewise presented clinically insignificant results for these parameters. However, the study did find a statistically significant correlation between the technique of delivery and the outcomes for the mother and the foetus. 91.8% (56 cases) of the 61 cases involved caesarean sections (LSCS), compared to 8.2% (5 cases) of normal vaginal births (NVD). Despite the fact that this parameter was not recorded in the other research, this finding emphasises the need of taking the delivery technique into account when evaluating mother and foetal health.

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