



TO STUDY THE RELATIONSHIP BETWEEN VAGINAL FLORA IN PREGNANCY AND MATERNAL OUTCOME

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ABSTRACT **Background :** Vaginal microbiological composition changes when women become pregnant. Pregnancy is accompanied by a shift in the community vaginal bacteria to a composition that is typically dominated by lactobacillus. Abnormal vaginal colonization which replaces normal lactobacilli during pregnancy includes bacterial vaginosis or aerobic vaginitis.

Aims & Objectives : To study the relationship between vaginal flora in pregnancy and maternal outcome. To establish importance of screening of vaginal flora and treatment of pregnant women.

Materials & Methods : Prospective study of all the pregnant females coming to ANC OPD of a tertiary care centre.

Results : Out of 50 cases , 56% were multigravida and 44% were primigravida. Out of total 50 cases positive for vulvovaginal flora , 46% were candida and 32% were bacterial vaginosis. Trichomonas and mixed flora constitutes 14% and 8% cases respectively. 46% of cases with vulvovaginal flora underwent caesarean deliveries as compared to controls.

Conclusion : Pathogenic vaginitis is common during pregnancy and it is associated with adverse maternal outcome like PROM and preterm delivery. So it is necessary to check for abnormal vaginal discharge and early diagnosis and treatment can prevent the adverse maternal outcome due to vaginitis.

KEYWORDS : Vulvovaginal flora , vaginitis , abnormal vaginal flora.

INTRODUCTION

Vaginal microbiological composition changes when women become pregnant. Pregnancy is accompanied by a shift in the community vaginal bacteria to a composition that is typically dominated by Lactobacillus. This change is believed to inhibit pathogen growth through secretion of antibacterial bacteriocins, such as lactic acid that can maintain an acid pH. Disturbed vaginal environment is associated with complications of pregnancy. It has consistently been shown in many longitudinal population studies to be associated with preterm delivery, preterm premature rupture of membranes (PPROM), amniotic fluid infection, chorioamnionitis and postpartum endometritis. Abnormal vaginal colonization, which replaces normal lactobacilli during pregnancy, includes bacterial vaginosis or aerobic vaginitis. Whereas bacterial vaginosis is dominated by anaerobic overgrowth, aerobic vaginitis is characterized by microorganisms such as Escherichia coli, group B streptococci, and Enterococci.

Intrauterine infection may occur early in pregnancy or even before pregnancy and remain asymptomatic and undetected for months until preterm labour or premature rupture of membranes occur [14]. The entry of lower genital tract bacteria into the decidua is associated with the recruitment of leucocytes that is followed by cytokine production. Specific receptors are present on mononuclear phagocytes, decidua cells, and trophoblasts which have been called "toll like receptors" [15]. Under the influence of ligands such as bacterial lipopolysaccharides, these receptors increase the release of cytokines including interleukin (IL)-1, IL-6, IL-8, tumour necrosis factor, granulocyte-macrophage colony-stimulating factor, chemokines in the amnion, chorion, decidua, and myometrium [16]. Furthermore, cytokines, endotoxins, and exotoxins stimulate prostaglandin synthesis and release, which causes cervical dilatation, uterine contractions, membrane exposure, and greater entry of microbes into the uterine cavity. Cytokines have also been found to stimulate the production of matrix metalloproteinases responsible for cervical ripening and degradation of the fetal membranes. Lower genital tract bacteria may also act locally producing enzymes such as sialidase or mucinase which may weaken protective cervical mucus and promote bacterial invasion of the upper genital tract.

However, it has been established now that serious complications may ensue if pregnant women with abnormal vaginal flora are not identified and treated. Identification of the abnormal colonization of the genital tract by a culture-based approach has been recommended by the CDC 2000. This will definitely aid in the early recognition of mothers who need to be effectively treated which in turn will prevent new born infections [17].

The present work was thus conducted to study the pattern of maternal vaginal flora and to study its relationship with fetal and maternal outcome.

MATERIALS AND METHODS

This was 12 month prospective study carried out in OBGY department from May 2019 to May 2020 in B.J GMC and SGH Pune. All pregnant women attending Obstetric OPD irrespective of period of gestation were included in this study. The required details were obtained by history taking and follow up of patients till delivery after taking informed written consent of patients and ethics committee permission.

RESULTS AND OBSERVATION

Table 1. Group Distribution of study subjects

Group	N	%
Vaginal flora +ve	50	50.0%
Vaginal flora -ve	50	50.0%
Total	100	100.0%

Study included a total of 100 primi / multi-gravidae females coming to ANC- OPD of our hospital fulfilling eligibility criteria. We have 50 cases positive for vulvo-vaginal flora along with 50 controls i.e. females negative for vulvo-vaginal flora.

Table 2. Distribution of study cases as per type of isolated organisms

Isolates	N	%
Candida infection	23	46.0%
Bacterial vaginosis	16	32.0%
Trichomonas	7	14.0%
Mixed	4	8.0%
Total	50	100.0%

Out of the 50 cases positive for vulvo-vaginal flora, 46% were candida while 32% were bacterial vaginosis. Trichomonas and mixed flora constitutes 14% and 8% cases respectively.

Table 3. Age distribution of study groups

Age group (yrs)	Flora +ve	Flora -ve	Total
<= 20	1	3	4
21 - 25	19	18	37
26 - 30	24	22	46
31 - 35	5	6	11
>35	1	1	2
Total	50	50	100

Most of the females in both cases and controls were between the age group of 21-30 years (86% vs 80%) with no significant difference between them regarding age distribution.

Table 4. Distribution of study groups as per Gravidity

Gravity	Vaginal flora		Total
	Positive	Negative	
Primi	22	24	46
	44.0%	48.0%	46.0%
Multi	28	26	54
	56.0%	52.0%	54.0%
Total	50	50	100
	100%	100%	100%

Out of the total 50 cases, 56% were multigravida while 44% were primis. Similarly, 52% controls were multi-gravida and 48% were primis. No significant difference was observed between study groups regarding gravidity.

Table 5. Distribution of study groups as per Mode of Delivery

Mode of delivery	Vaginal flora		Total
	Positive	Negative	
Caesarean	23	11	34
	46.0%	22.0%	34.0%
Vaginal	27	39	66
	54.0%	78.0%	66.0%
Total	50	50	100
	100.0%	100.0%	100.0%

A significantly higher number of cases with positive vulvo-vaginal flora underwent cesarean deliveries as compared to controls (46% vs 22%).

Table 6. Distribution of study groups as per Maternal Complications

Maternal complications	Vaginal flora		Total
	Positive	Negative	
Preterm delivery	18	7	25
	36.0%	14.0%	25.0%
PROM	11	3	14
	22.0%	6.0%	14.0%
Chorioamnionitis	2	0	2
	4.0%	0.0%	2.0%
Oligohydramnios	3	0	3
	6.0%	0.0%	3.0%
Puerperal sepsis	3	0	3
	6.0%	0.0%	3.0%

Among maternal complications, vulvo-vaginal flora positivity was observed to be significantly associated with pre-term deliveries (36% vs 14%) and premature rupture of membrane (22% vs 6%).

DISCUSSION

In present study, we aimed to find the pattern of maternal vaginal flora and to study its relationship with fetal and maternal outcome. Study included a total of 100 primi / multi-gravidae females coming to ANC-OPD of our hospital fulfilling eligibility criteria. We have 50 cases positive for vulvo-vaginal flora along with 50 controls i.e. females negative for vulvo-vaginal flora. Cases were followed till termination of pregnancy and subsequent discharge of mother and the baby.

Most of the females in both cases and controls were between the age group of 21-30 years (86% vs 80%). Out of the total 50 cases, 56% were multigravida while 44% were primis. Similarly, 52% controls were multi-gravida and 48% were primis. No significant difference was observed between study groups regarding age and gravidity.

Out of the 50 cases positive for vulvo-vaginal flora, 46% were candida while 32% were bacterial vaginosis. Trichomonas and mixed flora constitutes 14% and 8% cases respectively. (Table no. 1 and 2).

Rathod S et al. [1] in their study observed 47.5% were of candida among positive bacterial isolates, while 32.5% were bacterial vaginosis. Trichomonas and mixed flora constitutes 8% and 7.5% cases respectively.

Lata I et al. [2] in their study observed incidence of bacterial vaginosis (76%) more than candida infections (18%).

Abdelaziz ZA et al. [3] in their study reported BV in 49.8%, followed by Chlamydia trachomatis in 31.3% and Candida albicans in 16.6%.

Gondo DC et al. [4] in their study observed that out of the 143 positive isolates, 23.7% were of candida and 41.9% were of bacterial vaginosis.

Son et al. [5] in a similar study reported results in accordance with present study, with highest prevalence of candida infections (58.9%).

Maternal Complications

These studies have consistently shown a twofold increased risk of preterm delivery and PROM among women diagnosed with BV, particularly BV diagnosed in the early second trimester.

In present study, vulvo-vaginal flora positivity was observed to be significantly associated with pre-term deliveries (36% vs 14%) and premature rupture of membrane (22% vs 6%).(Table no. 6).

In a similar study, Rathod S et al. [1] also observed that vulvo-vaginal flora positivity was significantly associated with pre-term deliveries (27.5% vs 6.9%) and premature rupture of membrane (43.7% vs 9%).

Son et al. [5] in their study observed that rate of preterm delivery in the bacterial colonization group was significantly higher than the rate in the no bacteria colonization group (12% vs 0%).

Lata I et al. [2] in their study also reported that adverse outcomes such as preterm labor and PROM were more in pregnant women who had bacterial vaginosis as compared to those without bacterial vaginosis.

CONCLUSION

Though vaginal discharge is physiologic during pregnancy, pathologic vaginitis is also common during pregnancy and it is associated with adverse perinatal outcome like PROM and preterm delivery as seen from our study. So it is necessary to check for abnormal vaginal discharge and early diagnoses and treatment can prevent the adverse perinatal outcome due to vaginitis.

We also recommend further large scale prospective studies to find association of adverse maternal and fetal outcomes in cases with specific type of organisms.

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