ORIGINAL ARTICLE

Frequency of Group B Streptococci in Pregnant Women in a Tertiary Care Hospital

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Abstract

Objective: To determine the frequency and risk factors of Group B Streptococci (GBS) in pregnant patients in third trimester in a tertiary care hospital in Lahore.

Study Design: Cross-sectional, prospective study.

Place and Duration of Study: Lady Willingdon Hospital, Lahore, from October 2014 to March 2015.

Methodology: Sterile lower vaginal swabs were taken from 200 women aged 20 years and over, in third trimester, with no history of vaginal bleeding, ruptured membrane, recent intake of antibiotics or chronic illness. These swabs were cultured for detection of GBS. The risk factors of GBS and its frequency were noted in the pregnant population. Quantitative and qualitative data was analyzed by SPSS version 20. Chi-square test was applied to see association between diagnosis of GBS and other categorical variables. P-value ≤ 0.05 was considered as statistically significant.

Results: In this study, the mean age of all the females was 26.36 ±4.32 years and mean duration of pregnancy was 35.54 ±2.65 weeks. Frequency of GBS in pregnant women was found as 14%. We observed significant association of GBS with parity and previous history of miscarriage (p-value = 0.033 and 0.010 respectively). Moreover, significant association between vaginal discharge and GBS was also found (p = 0.027).

Conclusion: GBS is present in a small but significant number of pregnant women in our setting and it has association with multiparity, vaginal discharge during pregnancy, and previous history of miscarriage.

Key Words: *Pregnant women. Group B streptococcal infection. Third trimester. Vaginal discharge.*

INTRODUCTION

Group B Streptococcus (GBS) is one of the many bacteria that can be present in the bodies of healthy, population.[1] In literature, the rate of colonization of GBS varies from 10 to 30% in all pregnant patients.[2,3] The opportunistic nature of GBS makes it a pathogen in obstetric population causing intra-amniotic infections, cystitis, endometritis and preterm labour. [4]

At the time of birth, many neonates come into contact with GBS and are colonized by it. Most remain unaffected but a small number can become infected.[5] Early Onset GBS Disease (EOGBSD) evident during first six days of life, is acquired by neonates through vertical transmission from colonized mothers either by ascending route or during passage through birth canal.[6] Primary manifestations are floppy baby, moaning, grunting, refusal to feed and irritability, and fast or slow heart rate. In some neonates, it can lead to serious complications like non-focal sepsis, pneumonia or meningitis which result in delayed milestones, cerebral palsy, deafness, and blindness. One in 2000 babies develop early onset GBS infection in UK.[7]

Late onset GBS infection develops seven or more days after birth and is, usually, not associated with delivery.[8]

According to World Health Organization (WHO) report, the prevalence of GBS colonization is 5 - 40% in different countries. The prevalence varies according to age, parity, race, Body Mass Index (BMI), previous miscarriages or stillbirths and health status in current pregnancy.[9]

The Center for Disease Control (CDC) advises to screen all pregnant women for GBS near to term. Those women who are GBS positive should receive intravenous antibiotic prophylaxis during labour. This guideline is adopted by American Congress of Obstetricians and Gynecologists, which has led to reduction in EOGBSD in new borns in America. The infection rate has dropped from 1.7/1000 to 0.25/1000 births in last 2 decades.[10] Unfortunately, antenatal screening of GBS is not a routine practice in Pakistan; so we have limited data on GBS prevalence in our country.

We decided to conduct this study to get the actual rate of GBS colonization in pregnant patients in our population which would help us in developing antenatal screening and antibiotic prophylaxis in labour protocols. We also studied the risk factors associated with GBS colonization to help us in identifying high-risk patients and to take proper measures in their antenatal and delivery periods to reduce early onset GBS infection in the neonates.

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METHODOLOGY

This cross-sectional study was conducted in Lady Willingdon Hospital, King Edward Medical University, Lahore, from October 2014 to March 2015. Sample size of 200 cases was calculated with 95% confidence level, 4% margin of error and taking expected percentage of GBS colonization 8.5% in antenatal population, from local literature. Women aged 20 years and over with any parity, in third trimester, with no history of vaginal bleeding, ruptured membrane, recent intake of antibiotics or chronic illness, were included in the study after taking verbal informed consent for using their data in research. Ethical Committee approval was taken. Before any vaginal examination of the patients, low vaginal swabs of all patients were taken with sterilized cotton swabs. These swabs were sent to the pathology laboratory, within 2 hours, for isolation of GBS. These swabs were inoculated on blood agar and incubated aerobically for 24 hours at 37°C. If no growth was found, incubation was extended to 48 hours. The colonies of GBS were identified by using colonial morphology (β hemolytic colonies), catalase test and gram staining (gram positive cocci). Demographic details and results of all patients were collected on a pre-designed proforma. All information was collected by a single observer and specimens were cultured in the same laboratory to rule out bias effects.

Data was analyzed by SPSS version 20. Qualitative data (such as previous obstetrical history, vaginal discharge) was presented in the form of frequency and percentage. Mean ± Standard Deviation (S.D) was used for quantitative data such as age. Chi-square test was applied to see association between diagnosis of GBS and other categorical variables. P-value ≤ 0.05 was considered as significant.

RESULTS

In this study, the mean age of all females was 26.36 ±4.32 years (ranging from 17 to 38 years). History of vaginal discharge was seen in 97 (48.5%) cases. Other risk factors found were history of previous stillbirth in 6 (3%), history of previous neonatal sepsis in 1 (0.5%) and recurrent miscarriage was seen in 3 (1.5%) females only. Frequency of GBS in pregnant women was diagnosed in 28 (14%) cases (Figure 1).

Significant association was found between GBS and multiparity (p = 0.033); and was between GBS and previous history of miscarriage (p = 0.010, Table I). Moreover, significant association was also found between vaginal discharge and GBS (p = 0.027, Table II).

DISCUSSION

In this study, GBS colonization rate was 14% among pregnant women in third trimester; while in a recent study of 405 pregnant women at term in Karachi,[11] GBS was isolated in 17%. The higher frequency in the later study may be due to collection of specimens both from vagina and rectum, while we collected specimens only from vagina. A single swab from distal vagina without speculum or two swabs from vagina and rectum are said to be equally effective for GBS screening.[12] The

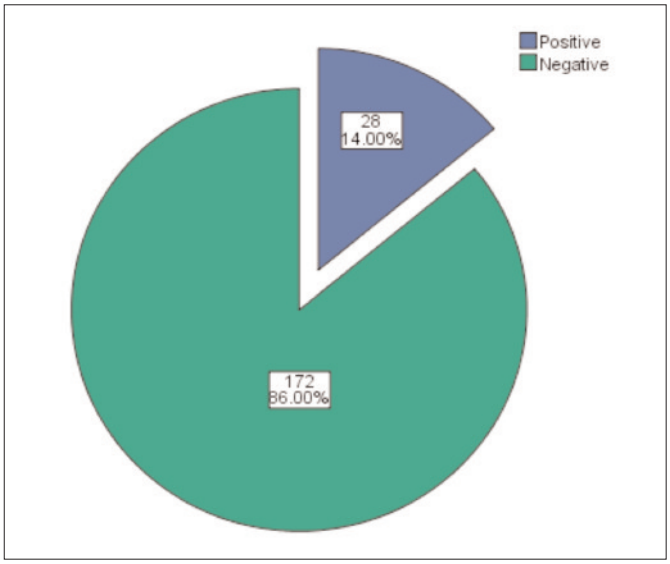

Figure 1: Frequency distribution of group B streptococcal isolation.

Table I: Comparison of demographic characteristics, gestational history and previous obstetric history among pregnant women with and without Group B Streptococcus colonization.

	GBS +ve N = 28	GBS -ve N = 172	P-value
Age (years)			
<20	2 (7.1%)	4 (2.3%)	0.346
20 - 30	20 (71.4%)	122 (70.9%)	
31 - 40	6 (21.4%)	46 (26.7%)	
Parity			
0	13 (46.4%)	68 (39.5%)	0.033
1	10 (35.7%)	38 (22.1%)	
2	1 (3.6%)	36 (20.9%)	
3	1 (3.6%)	16 (9.3%)	
4	3 (10.7%)	5 (2.9%)	
5 or more	0 (%)	9 (5.2%)	
Gestation			
30 - 35 weeks	11 (39.3%)	77 (44.8%)	0.777
36 - 39 weeks	15 (53.6%)	87 (50.6%)	
40 weeks or more	2 (7.1%)	8 (4.7%)	
Previous obstetrical history			
Miscarriage	3 (10.7%)	3 (1.7%)	0.010
Intra uterine fetal death	0	6 (3.5%)	0.316

GBS = Group B streptococci

Table II: Association of vaginal discharge with Group B Streptococcal colonization.

Result	GBS positive	GBS negative	p-value
Vaginal discharge	19 (67.9%)	78 (45.3%)	0.027
No history of vaginal discharge	9 (32.1%)	94 (54.7%)	

difference in result may also be due to different laboratory methods used to detect GBS.

Another study conducted at Rawalpindi[13] showed GBS carriage rate of 8.5%, which is lower than our study result. This study screened patients at the time of delivery only and used Islam medium to detect GBS, which could have influenced the GBS detection rate.

A study in India showed GBS frequency to be 16%,[14] which is nearer to our result. However, different studies in Iran and Saudi Arabia showed prevalence rate of 9.1% and 27.6%, respectively.[15,16] These differences in GBS colonization rate may be due to geographical, cultural or ethnic variations.

The prevalence of GBS in African countries is the highest ranging from 23 to 31%,[17] which may be due to racial, geographical or Human Immunodeficiency Virus (HIV) status differences.

There was no significant association of GBS with age, marital status or socio-economic class of the patients in this study, in contradiction to some of the other studies.[18,19] It may indicate that these are not risk factors in our population. We did find higher GBS colonization in women with high parity showing that GBS colonization increases with increasing number of deliveries. This result is consistent with the result of a study conducted in Tanzania.[20]

We found significant association of GBS with history of previous miscarriages. This association was also seen in another study,[21] a case report series, in which a common factor in all patients, having repeated first trimester losses, was GBS infection. Most of the other studies have not been concentrated on previous miscarriages to be a risk factor of GBS colonization.

This study reported significant association of vaginal discharge in current pregnancy with GBS colonization.[22] Vaginal discharge due to bacterial vaginosis has been proven to be associated with preterm premature rupture of membrane and preterm labour.[23] Risk of neonatal sepsis increases if GBS is present in the vaginal discharge and vertically transmits to premature baby during delivery.[24]

Strength of this study was adequate sample size and good recruitment with no dropout. A weakness of the study was that we could not collect data of some risk factors like history of GBS in previous pregnancy or neonatal sepsis due to GBS in previous baby, as no records were available. These have been documented in literature to be risk factors of GBS colonization.[25]

CONCLUSION

GBS is prevalent in our pregnant women and it has significant association with multiparity, previous history of miscarriage, and vaginal discharge.

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