Original Article

DOI: 10.29054/APMC/19.796

Frequency of Group B Streptococcal Infection in Pregnancy with Preterm Pre-Labour Rupture of Membrane

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ABSTRACT

Objective: To determine the frequency of group B streptococcal infection in pregnancy with preterm pre-labour rupture of membranes. **Study Design:** Cross sectional study. **Settings:** Department of Obstetrics and Gynecology, Lahore General Hospital, Lahore Pakistan. **Duration:** 6 months from Jan 2017 to June 2017. **Methodology:** Then amniotic fluid sample was taken during vaginal examination and was sent to the laboratory of the hospital for assessment of presence or absence of GBS. All the information was collected on a specially designed performa. All the collected data was entered and analyzed through SPSS version 20. **Results:** Mean age of women was 30.04±6.75 years**.** Mean gestational age of women was 34.51±1.75 weeks. Among 150 women GBS infection was diagnosed in 24(16%) patients. Occurrence of GBS infection was significantly associated. **Conclusion:** Results of this study showed low frequency of GBS infection in females presenting with PPROM. The rate and risk factors of maternal and neonatal GBS colonization may vary in different communities.

Keywords: Group B streptococcal, Infection, Preterm Pre-labour Rupture of membranes.

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Submitted for Publication: 05-07-2018 *Accepted for Publication: 31-01-2019*

Citation: Shaheen S, Chaudhry F, Ali S, Shaheen R, Naeem S, Malik AJ, Tufail A. Frequency of Group B Streptococcal Infection in Pregnancy with Preterm Pre-Labour Rupture of Membrane. APMC 2019;13(4):300-3.

INTRODUCTION

Preterm premature rupture of membranes (PPROM) refers to rupture of the membranes before the onset of labour in women with a pregnancy <37 weeks of gestation. It complicates 1–3% of all pregnancies and is responsible for approximately 30% of preterm births. GBS infection among pregnant women was significantly correlated with the gestational age, PROM and preterm labor. In pregnancy, GBS colonization causes asymptomatic bacteriuria or UTI. It is a well-known cause of puerperal infections with endometritis and sepsis.[1] Maternal colonization with GBS in the genitourinary and gastrointestinal tracts are the primary risk factor for disease.[2] GBS was present in 25% females that presenting with PPROM.[3] Another study showed that the frequency of GBS among females presenting with PPROM was 10% to 19.5%.[4,5]

Rationale of this study is to assess the frequency of GBS infection in females with preterm pre-labour rupture of membranes. International studies have been conducted. Literature has showed controversial results and reported varied frequency of GBS infection in pregnant females with PPROM. But there is no local study found in literature which showed the extent of problem in local population. So, this study was conducted to find the prevalence of GBS infections in pregnant females as this infection may transfer to neonate and cause hazardous consequences. So, this study will help us to attain local magnitude as well as will help to improve our practice and guidelines to plan screening, preventive and management protocols in such females to have better obstetrical outcome.

GBS colonize the vaginal and gastrointestinal tracts in healthy women, with the organism vertically in utero or during delivery from the maternal genital tract. Although the transmission rate from mothers colonized with S. agalactiae to neonates delivered vaginally is approximately 50%, only 1-2% of colonized neonates go on to develop invasive GBS disease. GBS is more common in prematurity and prolonged rupture of the membranes. GBS neonatal sepsis occurs in 1.8-3.2 per 1000 live births. In 2005, early GBS neonatal sepsis was observed in 0.35 per 1000 births, while late sepsis was observed in 0.33 per 1000 births.

METHODOLOGY

Study Design: Cross sectional study.
Settings: Department of Obstetrics and Gynecology, Lahore General Hospital, Lahore Pakistan.
Duration: 6 months from Jan 2017 to June 2017.
Sample Size: 150 Cases
Inclusion Criteria: Total of 150 cases were calculated with 95% confidence level, 5% margin of error and taking expected percentage of GBS i.e. 10.8% in females presenting with PPROM. Pregnant females of age 18-40 years with PPROM, Gestational age<37weeks, duration of rupture of membranes ≤13hours were included in the study.
Exclusion Criteria: All pregnant patients with chronic systemic diseases were excluded.
Methods: Demographic data (including name, age, gestational age, and parity) was recorded. Then amniotic fluid sample was

taken during vaginal examination and was sent to the laboratory for GBS presence or absence. All the information was collected on a specially designed proforma. All the collected data was entered and analyzed through SPSS version 20. Quantitative data like age, BMI, parity and gestational age was presented as mean and standard deviation. Qualitative data like parity and GBS infection was presented as frequency and percentage. Data was stratified for age, gestational age, parity, BMI status to deal with effect modifier. Post stratification, Chi-square test was applied taking p-value < 0.05 as significant.

RESULTS

Mean age of women was 30.04±6.75 years. Minimum and maximum age of women was 34.51±1.75 weeks. Minimum and maximum gestational age of women was 32 and 37 weeks respectively. Mean BMI of women was 25.14±2.77. Minimum and maximum BMI of women was 20 and 30.07. Among 150 women 27(18%) were nulliparous and 46(30.7%) were primary parous and the remaining of women was 18 and 40 years. Mean gestational 77(51.33%) were multiparous. Among 150 women GBS infection was diagnosed in 24(16%) patients. (Table-1)

Table 1: Frequency of GBS infection

	Frequency	Percent
Yes	24	16
No	126	84
Total	**150**	**100.0**

Frequency of GBS infection was highest in women who were 34-40 years of age followed by women who were 26-33 years of age and the lowest frequency of GBS infection was seen in women who were in the age group 18-25 years of age. Frequency of GBS infection was significant higher in women in higher age group. i.e. p-value=0.033 (Table-2)

Table 2: Frequency of GBS infection in relation to age of patients

Age	GBS		Total
	Yes	No	
18-25	3(12.5%)	43(34.1%)	**46**
26-33	8(33.3%)	46(36.5%)	**54**
34-40	13(54.2%)	37(29.4%)	**50**
Total	**24**	**126**	**150**

Chi-Square Test= 6.851**p-value=** 0.033

Gestational age of women was not significantly associated with frequency of GBS infection. i.e. p-value=0.412. (Table-3)

Table 3: Frequency of GBS infection in relation to gestational age of patients

Gestational Age	GBS		Total
	Yes	No	
32-34	14(58.3%)	62(49.2%)	**76**
35-37	10(41.7%)	64(50.8%)	**74**
Total	**24**	**126**	**150**

Chi-Square Test= 0.672 **p-value=** 0.412

Parity was significantly associated with incidence of GBS infection. The highest frequency of GBS infection was seen in women with parity 1-2 followed by the women whose parity was 3-4 and women who were nulliparous. i.e. Parit-0: 4.2%, Parity:1-2: 50% & Parity-3-4:45.8% respectively. (p-value=0.023) (Table-4)

Table 4: Frequency of GBS infection in relation to parity status of women

Parity	GBS		Total
	Yes	No	
0	1(4.2%)	26(20.6%)	**27**
1-2	12(50%)	72(57.1%)	**84**
3-4	11(45.8%)	28(22.2%)	**39**
Total	**24**	**126**	**150**

Chi-Square Test= 7.54**p-value=** 0.023

BMI of women did not show any statistically significant association for incidence of GBS infection. i.e. p-value=0.221 (Table-5)

Table 5: Frequency of GBS infection in relation to BMI status of women

BMI	GBS		Total
	Yes	No	
Normal	3(12.5%)	35(27.8%)	**38**
Over Weight	21(87.5%)	89(70.6%)	**110**
Obese	0(0%)	2(1.6%)	**2**
Total	**24**	**126**	**150**

Chi-Square Test= 3.020**p-value=** 0.221

DISCUSSION

Bacterial infection causing neonatal sepsis is most commonly due to the GBS.[6] The primary source of GBS infection is vertical

transmission of maternal genitourinary or gastrointestinal GBS colonization, which generally occurs after rupture of membranes or onset of labour.[7,8]

The time between rupture of membranes and delivery is a known risk factor for increased risk of neonatal GBS sepsis and women who undergo expectant management strategy have a longer time to delivery compared with women in whom labour is induced immediately.[9]Feikin *et al* (2001) study also indicated an association between GBS colonization at delivery and preterm birth.[10] On the contrary, other investigators reported no association between preterm labor and cervicovaginal GBS colonization.[11,12] The prevalence of maternal colonization varies in countries owing to socioeconomic and ethnic differences. Mean age of women was 30.04±6.75 years**.** Mean gestational age of women was 34.51±1.75 weeks. Among 150 women GBS infection was diagnosed in 24(16%) patients. Occurrence of GBS infection was significantly associated with age and parity status of women. However, it was not significantly associated with gestational age and BMI of women.

One study has showed that GBS was present in 25% females presenting with PPROM.[7] Another study showed that the frequency of GBS among females presenting with PPROM was 19.5%.[8,9] A recent study also showed that the frequency of GBS among females presenting with PPROM was 14% only.[10] While an earlier study reported its frequency to be low i.e. 10.8% only.[11]

Bibi Shahnaz Aali and his team members from Iran in their study reported that Colonization was detected in 9.2% of all mothers. Although GBS colonization was found more frequently in preterm than term patients (12 v/s 7 cases), the difference was not statistically significant. Furthermore, they reported that older women were more at risk of preterm labor.[12] In this study it was also seen that women in higher age group showed high frequency of GBS infection as compared to lower groups. This can be due to more frequent conditions for contamination these women experience over time. Bibi Shahnaz Aali also showed that gravidity and parity showed no significant association with preterm labor[12] while Tsolia *et al* (1998) indicated that multiparity was associated with a lower colonization rate. The differences in colonization rates depend on the particular population and especially on the laboratory methods used to identify GBS. The additional tests performed in our study may account for the lower frequency of colonization in our population in comparison to other developing countries.

CONCLUSION

Results of this study showed low frequency of GBS infection in females presenting with PPROM. The rate and risk factors of maternal and neonatal GBS colonization may vary in different communities. These rates, as well as the incidence of neonatal disease, need to be thoroughly evaluated to develop appropriate strategies for prevention.

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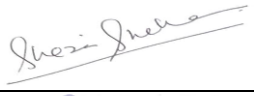
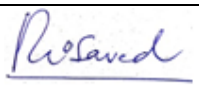
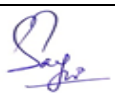
Dr. Shazia Shaheen Assistant Professor, Gynecology & Obstetrics Lahore General Hospital, Lahore Pakistan	Manuscript writing, Data Collection	
Dr. Fatima Chaudhry House Officer, Gynecology & Obstetrics Lahore General Hospital, Lahore Pakistan	Literature Review & Assembly of data	
Dr. Saiqa Ali Women Medical Officer, Surgery Lahore General Hospital, Lahore Pakistan	Statistical analysis, Results and Data Analysis	
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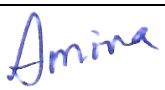
Dr. Amina Javed Malik Ex-House Officer, University Medical Complex & Research Centre University of Sargodha, Sargodha Pakistan	Data Collection & Interpretation	
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