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ORIGINAL ARTICLE

Prevalence of Group B Streptococcus Colonization in Pregnant Women

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ABSTRACT

Objective: To find out the prevalence of group B streptococcus (GBS) colonization in women in 3rd trimester of pregnancy.
Study Design: A cross-sectional study.
Place and Duration of the Study: This study was done at The Department of Obstetrics & Gynecology, The Combined Military Hospital (CMH), Risalpur, Pakistan from 1st July 2021 to 31st December 2021.
Material and Methods: We included a total of 261 pregnant women in 3rd trimester aged between 18 to 40 years irrespective of parity or gravidity status. Age, area of residence, parity status and gestational age were noted. During the vaginal examination of the pregnant women, vaginal swabs using sterilized cotton swabs were acquired from all study participants. All acquired vaginal swabs were sent to institutional pathological laboratory. Prevalence of GBS colonization was noted.
Results: In a total of 261 pregnant women, mean age was 28.4±6.2 years while 178 (68.2%) women were aged between 20 to 30 years. Area of residence was rural in 162 (62.1%) women. There were 146 (55.9%) women with gestational age between 30 to 35 weeks. Majority of the women, 195 (74.7%) were multiparous. Vaginal discharge was reported in 112 (42.9%) pregnant women. Prevalence of GBS colonization was noted in 48 (18.4%) pregnant ladies. Vaginal discharges was observed to have statistically significant association with the presence of GBS colonization (p=0.0388).
Conclusion: Prevalence of GBS colonization was high in pregnant ladies visiting a tertiary care hospital during 3rd trimester of pregnancy. Pregnant women with vaginal discharges were observed to have statistically significant association with the presence of GBS colonization.
Keywords: Group B streptococcus, 3rd trimester, vaginal discharge, vaginal swab.

INTRODUCTION

The burden of Group B streptococcus (GBS) has been rising in the last couple of decades globally.[1] The World Health Organization estimates around 0.5 million preterm births and about 100,000 newborn deaths due to GBS globally.[2] The GBS is considered to be a major etiological agent of many perinatal infections like endometritis, bacteremia, chorioamnionitis, septic abortions, urinary tract infections, etc.[3,4] At the time of birth, colonization of GBS in the vaginal tract is also an important cause of vertical transmission to the newborns.

The GBS is transferred from the mother to the newborn shortly prior to or during the delivery.[5] All newborns are at risk of GBS infection[6-8] Variation in colonization of GBS have been reported globally. Data from USA, India, Nigeria and Egypt have reported overall colonization rates of GBS as 21%, 2.5%, 9.0% and 17.9% respectively.[6-9] A local study from South Punjab, Pakistan reported 21.6% of pregnant women to have GBS colonization.[10]

In the recent years, not much data is seen from Pakistan calculating prevalence of GBS among pregnant ladies. Our aim was to find out the prevalence of GBS colonization in pregnant women visiting a tertiary care hospital. Our results were thought to provide us the estimation about the pregnant women who are at risk of transmitting GBS infection to their newborns.

METHODOLOGY

This cross-sectional study was done at "The Outpatient Department of Obstetrics & Gynecologyh, The Combined Military Hospital (CMH), Risalpur, Pakistan" from 1st July 2021 to 31st December 2021. Approval from "Institutional Ethical Committee" was taken. Informed and written consents were sought.

The sample size was calculated to be 261 women considering 95% confidence level, 21.6%[10] frequency of GBS colonization in pregnant women and 5% margin of error. We included a total of 261 pregnant women in 3rd trimester aged between 18 to 40 years irrespective of parity or gravidity status. Women with history of vaginal bleeding, ruptured membrane, diabetes mellitus, chronic ailments or recent use of antibiotics were not included. During the vaginal examination of the pregnant women, vaginal swabs using sterilized cotton swabs were acquired from all study participants. All acquired vaginal swabs were sent to institutional pathological laboratory for within 2 hours for the isolation of GBS as per standard protocols. Prevalence of GBS colonization was noted.

For statistical analysis, SPSS version 26.0 was adopted. Qualitative variables were shown as frequency and percentages. Quantitative data was represented as mean and standard deviation. Study variables were stratified to see their effect on outcome (prevalence of GBS colonization). Chi square test was employed taking p-value≤0.05 as significant.

RESULTS

In a total of 261 pregnant women, mean age was 28.4±6.2 years while 178 (68.2%) women were aged between 20 to 30 years. Area of residence was rural in 162 (62.1%) women. Overall, mean gestational age was 36.4±2.4 weeks while 146 (55.9%) had gestational age between 30 to 35 weeks. Majority of the women, 195 (74.7%) were multiparous. Vaginal discharge was reported in 112 (42.9%) pregnant women. Prevalence of GBS colonization was noted in 48 (18.4%) pregnant ladies.

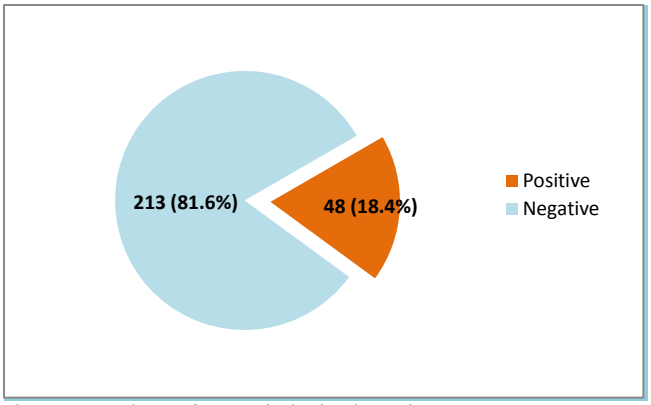

Figure 1: Prevalence of GBS colonization (n=261)

Vaginal discharges was observed to have statistically significant association with the presence of GBS colonization (56.3% vs. 39.9%, p=0.0388). Table-2 is showing stratification of study variables with respect to GBS colonization.

Table-1: Stratification of Study Variables with respect to Group B Streptococcal Colonization (N=261)

Study Variables		GBS Colonization		P-Value
		Positive(n=48)	Negative(n=213)	
Age in years	<20	4 (8.3%)	26 (12.2%)	0.2160
	20-30	30 (62.5%)	148 (69.5%)	
	31-40	14 (29.2%)	39 (18.3%)	
Area of Residence	Rural	28 (58.3%)	134 (62.9%)	0.5549
	Urban	20 (41.7%)	79 (37.1%)	
Gestational Age in weeks	30-35	25 (52.1%)	121 (56.8%)	0.7722
	36-38	22 (45.8%)	86 (40.4%)	
	≥39	1 (2.1%)	6 (2.8%)	
Parity Status	Nulliparous	11 (22.9%)	55 (25.8%)	0.6757
	Multiparous	37 (77.1%)	158 (74.2%)	
Vaginal Discharge	Yes	27 (56.3%)	85 (39.9%)	0.0388

DISCUSSION

In the present study, it was revealed that nearly 1 in 5 pregnant women in the 3rd trimester had GBS colonization which represented a substantial burden of GBS colonization. High proportion of GBS colonization means that these women are at risk of adverse maternal and fetal outcomes. The prevalence of GBS colonization in this research as 18.4% is just about what overall global data shows (18%) but South Asian (10%) and East Asian (9.1%) data have previously shown lesser proportion of pregnant women to have GBS colonization.[11] Data from Egypt showed estimates of GBS colonization to be ranging between 11.3% to 25.3%,[12-15] Iran 3.3% to 30.7%,[16-18] Kuwait 14.6% to 20.7%,[19-20] Saudi Arabia 13.4% to 31.6%[21-23] and Turkey between 8.0% to 32.0%.[24-26] A study from Lahore showed frequency of GBS in pregnant ladies as 14%.[27]

In this study, we found a significant association of GBS colonization with the vaginal discharge. Vaginal discharge has been known be linked with premature rupture of membranes and preterm labour.[28] Researchers in the past have also shown that chances of neonatal sepsis escalate if GBS exists in the vaginal discharge and is transmitted vertically to newborns during the delivery.[29]

A study in 2017 from Jordan evaluating neonates with sepsis revealed 10% of the cases to have GBS isolates.[30] These findings coupled with ours emphasize the importance of routine GBS screening among pregnant ladies especially during the 3rd trimester so that postnatal complications like neonatal sepsis could be prevented potentially. Early-onset GBS infection can potentially be avoided administering intrapartum antibiotic prophylaxis during the labour among women who have GBS colonization while potential efficacy of that prophylaxis treatment has been recorded to be 80%.[31,32] Experts endorse 2 methods of GBS screening; i) risk based screening ii) universal culture based screening between 35th to 37th weeks of gestation. “Centers for Disease Control and Prevention” in the early 2000s endorsed culture based universal screening approach that helped common utilization of prenatal surveillance and intrapartum antibiotic prophylaxis.[33] Due to these measures, a decrease of 80% in the global incidence of GBS has been observed in the last couple of decades.[33] The incidence of GBS was recorded to be 1.8/1,000 live-births in 1990s that came down to 0.3/1000 live births in the 2010s while in USA alone, it was estimated that around 70000 cases of early-onset GBS disease were avoided.[33]

As this was a single center study, our findings cannot be generalized. Being a cross-sectional study, we were unable to find out the maternal and fetal outcome and possible association of existence of GBS colonization.

CONCLUSION

Prevalence of GBS colonization was high in pregnant ladies visiting a tertiary care hospital during 3rd trimester of pregnancy. Pregnant women with vaginal discharges were observed to have statistically significant association with the presence of GBS colonization.

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