

Prevalence of Group B Streptococcal Infection in Patients with Preterm Premature Rapture of Membranes

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Streptococcal Infection with Preterm Premature Rupture of Membranes

ABSTRACT

Objective: To determine the frequency of Group B Streptococcal Infection in Patients with Preterm Premature Rapture of Membranes

Study Design: Descriptive case series study

Place and Duration of Study: This study was conducted at the Department of Obstetrics and Gynaecology, Fatima Memorial Hospital, Lahore from 13th April 2018 to 13th October 2018.

Materials and Methods: Data was collected through non-Probability consecutive sampling technique. Sample size of 150 cases with any parity presenting in the third trimester were included in the study after taking informed consent. Demographic data (Name, Age, Gestational age, parity and BMI) was recorded. Vaginal swab of all high-risk obstetrical patients fulfilling inclusion criteria was taken and sent for culture and sensitivity.

Results: The mean age of the patients was noted 26.2 ± 4.46 years and the mean gestational age was observed $34.34 + 1.58$ weeks. Out of these 150 pregnant women who presented with preterm or PPRM; GBS positivity was found in 32 (21.3%) patients. All these patients (100%) were treated with intrapartum antibiotic prophylaxis and were followed until delivery for neonatal outcome. Early onset of GBS disease in neonates was reported in 5 (15.6%) among the patients treated with antibiotic.

Conclusion: It is concluded that the positivity of group B streptococcus in Pakistani women is significantly higher, however our study findings indicated that intrapartum antibiotic prophylaxis can prevent GBS vertical transmission from colonized mothers to their infants.

Key Words: Group B Streptococcal (GBS), Preterm, Preterm prelabour rupture of membrane (PPROM), Intrapartum Antibiotic Prophylaxis (IAP), Early onset GBS

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INTRODUCTION

Group B streptococcus (GBS), or Streptococcus agalactiae, is one of the leading pathogens in neonatal infections occurring in full-term newborn infants during the first week of life i.e. severely early onset (<7 days of age). It is likewise the most successive reason for sepsis and meningitis in youthful babies after the primary seven day stretch of life.

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Bunch B streptococcal sickness has been related with crack of layers and preterm conveyance preceding 37 weeks of growth^[1]. Past investigations have demonstrated that this affiliation might be most grounded for patients with GBS bacteriuria. The rate of Beginning stage Gathering B Streptococcal Sickness (EOGBS) in UK without foundational screening or far and wide intrapartum antibiotic prophylaxis is 0.5/1000 births. The rate of culture affirmed beginning stage sickness in USA has fallen in relationship with the presentation of evaluating pregnant people for GBS^[2]. An exemplary forthcoming companion study was led and uncovered that pregnant ladies with GBS colonization were >25 times more probable than pregnant ladies with negative pre-birth societies to convey babies with beginning stage GBS sickness. Without intervention, an expected 1% - 2% of babies brought into the world to colonized moms foster beginning stage GBS contaminations^[3]. The ongoing US rules prompt that all ladies colonized with GBS at 35-37 weeks of development ought to be offered intrapartum antibiotic prophylaxis normally as high portion intravenous Benzyl Penicillin or Ampicillin. A review done by Konrad et al detailed three

methodologies for forestalling beginning stage neonatal GBS disease including general screening of all pregnant individuals for GBS colonization, with intrapartum antibiotics given to those with positive outcomes; widespread screening of every pregnant lady, with intrapartum antibiotics given exclusively to those with positive outcomes as well as other gamble factors for GBS transmission; and intrapartum antibiotics for all ladies with risk factors for GBS transmission without earlier screening^[4]. In this study they included 63 pregnant ladies with high gamble obstetric variables for neonatal GBS transmission (for example Intrapartum fever (temperature > 38°C, preterm work at under 37 weeks, or delayed break of membranes > 18 hours). On screening positive gathering B streptococcus (GBS) culture results among these high dangers pregnant was seen as in 21 (33.3%) of the patients. Every one of these, 33.3% cases got intrapartum prophylactic antibiotics and were followed for beginning stage of gathering B Streptococcal infection till 7 days after conveyance. Of these treated cases 1 (4.76%) had positive consequence of blood culture for beginning stage neonatal GBS illness^[5]. Intrapartum antibiotic prophylaxis for colonized moms has been demonstrated to be powerful in decreases the frequency of EOGBS sickness, it hasn't been displayed to diminish all reasons for mortality connected with Gathering B streptococcal disease. One more review was as of late finished to decide the GBS colonization pervasiveness among Iranian high gamble obstetric (for example PROM, preterm work) pregnant ladies which uncovered 3 positive GBS colonization cases out of 18 (for example 16.7%). Patients with positive GBS got IV antibiotic treatment during work (penicillin G 3 gram at first portion then 1.5-gram Q/4h until conveyance), yet no outcomes were recorded for EOGBS disease^[6].

MATERIALS AND METHODS

Data was collected through non-Probability consecutive sampling technique. Sample size of 150 females was calculated with 95% confidence level, 6% margin of error and taking expected percentage of GBS positivity i.e. 16.7% positivity in pregnant women with preterm labour, preterm prelabour rupture of membrane or prolonged rupture of membrane.

Inclusion Criteria:

1. Pregnant women with age 20-45 years and any parity presenting in third trimester.
2. Pregnant women with preterm labour (as per operational definition).
3. Pregnant women with preterm prelabour rupture of membranes (as per operational definition).
4. Pregnant women with prolonged rupture of membranes (as per operational definition).

Exclusion Criteria:

1. GBS carrier in previous pregnancy (assessed on history)

2. Elective lower segment caesarian section on GBS colonized women
3. GBS detected on vaginal swab in current pregnancy
4. Patients with recent intake of antibiotics (assessed on history).

Data Collection: 150 pregnant women fulfilling the inclusion criteria were included through the out-patient and labour room of Department of Obstetrics & Gynecology, Fatima Memorial Hospital, Lahore. An informed consent was obtained from each pregnant woman. Demographic data (Name, Age, Gestational age, parity and BMI) were recorded. Rectal and vaginal swab of all high risk obstetrical patients fulfilling inclusion criteria were taken and sent for culture and sensitivity. If culture was positive, then GBS infection had labeled positive (as per operational definition) and these patients were given 2 gms I/V Ampicillin followed by 1 gm every 4 hours, and babies were followed for early-onset of group B Streptococcal disease till 7 days after delivery. Neonates had labeled EOGBS positive if found sign & symptoms (as per operational definition). This data was collected on a special pre-designed proforma (attached).

Data Analysis: The data was entered and analyzed through SPSS version 21.0. Mean and SD was calculated for quantitative variables including age, gestational age, and BMI. Frequency was calculated for parity. Frequency and percentage was calculated for qualitative variables including GBS positivity and positive neonates of early-onset of group B streptococcal.

RESULTS

There were total 150 pregnant women who were enrolled in this study after taking an informed consent. The mean age of the women was 26.17 ± 4.45 years of which the minimum age was 19 year and maximum of 40 years. The mean gestational age was calculated to be $34.34 + 1.58$ weeks of which the minimum gestational age was 28 weeks and maximum was 36 weeks. The mean body mass index of these patients who presented in the third trimester was evaluated to $27.98 + 3.38$ with the lowest weight 20 and highest 44 kg/m^2 . The baseline condition of 150 pregnant was distributed as the most of the patients 78 (52.0%) were present with preterm labour followed by 55 (36.7%) with preterm premature rupture of membrane and 17 (11.3%) had the condition of preterm and PPRM simultaneously.

Table No.1: Distribution according to Baseline condition of the patients

	Frequency	Percent
Preterm	78	52.0
PPROM	55	36.7
Preterm +PPROM	17	11.3
Total	150	100.0

Most of the patients 60 (40.0%) were found primigravida followed by parity 1 in 43 (28.7%), parity 2 (22.7%), parity 3 (6.7%) and parity 4 was only for (2.0%) pregnant. All 150 high risk obstetrical patients were screened for group B streptococcus infection and among these 32 (21.3%) were positive on culture and 118 (78.8%) had negative diagnosis of GBS infection.

Table No. 2: Frequency distribution of GBS infection in pregnant women

	Frequency	Percent
Positive	32	21.3
Negative	118	78.7
Total	150	100.0

Intrapartum antibiotic prophylaxis treatment was given to all these 32 (100.0%) pregnant cases who were diagnosed with positive GBS infection and were followed up till delivery to assess the neonatal outcome. Early-onset of group B streptococcal disease in neonates was perceived positive in 5/32 (15.6%) of the cases and IAP was professed effective in 27 (84.4%) of the neonates.

Table No. 3: Frequency distribution of Intrapartum Antibiotic Prophylaxis and GBS infection

Intrapartum Antibiotic Prophylaxis	Frequency	Percent
Yes	32	21.3
No	118	78.7
Total	150	100.0
GBS infection	Frequency	Percent
Positive	5	15.6
Negative	27	84.4
Total	32	100.0

Sepsis was reported in 4 (80%) of the cases followed by pneumonia in 1 (20%) and none of the neonate was diagnosed with meningitis.

Table No. 4: Frequency distribution for the GBS Infection outcome in neonates

Outcome	Sepsis	Meningitis	Pneumonia	Total
	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
Yes	4 (80.0)	0 (0.0)	1 (20.0)	5 (100.0)

Data was stratified for the effect modifier like age between maternal and neonatal positive GBS infection and it was noticed that most of the colonized mothers 26 (81.2%) were belongs to age group (18-30) years and among these neonatal transmission of disease was observed in 3 (11.5%) of the cases. Similarly a total of 23 mothers were presented in the age group (31-45) years of which 6 (26.1%) were observed with positivity of GBS infection. Out of these 6 colonized mothers 2 (33.3%) neonates were found positive for GBS disease. On comparison between age groups and neonatal outcome statistically insignificant difference was found (2.4% vs 8.7%) with the P-value = 0.119.

Table No. 5: Stratification with respect to Age Groups

Age groups		GBS infection in neonates		Total
		Positive	Negative	
(18-30) years	Count	3	124	127
	% within Age groups	2.4%	97.6%	100.0%
(31-45) years	Count	2	21	23
	% within Age groups	8.7%	91.3%	100.0%
Total	Count	5	145	150
	% within Age groups	3.3%	96.7%	100.0%

P-value = 0.119

DISCUSSION

Group B streptococcal infection represents a very significant cause of neonatal morbidity and mortality. Indeed, even today, vertical transmission of GBS influences children as the most successive disease answerable for sepsis in creating and created countries^[7]. In spite of the fact that screening and prophylactic medicines have helped decline death rates to 5%, an unmistakable assessment of illness trouble in many non-industrial nations stays unnoticed^[8]. This cross-sectional review was directed on Pakistani pregnant ladies determined to examine the recurrence of positive GBS disease; treated them with intrapartum antibiotic prophylaxis and their beginning stage neonatal GBS colonization^[9]. The discoveries of the current review uncovered the mean age of the patients 26.17 + 4.45 years and the mean gestational age 34.34 + 1.58 weeks which is in accordance with the review done by Darabi et al, who remembered 186 pregnant people for the review.^[8] The mean time of members was 27.91±5.03 years, going from 17 to 41 years and the mean gestational age 35.81 + 2.78 weeks^[10-12]. Shirazi additionally revealed the pervasiveness of GBS disease and its resulting result in pregnant ladies among 980 cases with the age range (19-50) years and the mean gestational age (38.1 + 1.0) weeks. Comparably in another study, reported that of 544 pregnant ladies, 145 (26.7%) were colonized by GBS and the age of most of them were (93.8%) between 18 to 35-years^[13-16]. The gestational times of 30.7% of the impacted ladies were between 32 to 37 weeks. Another study archived the mean age was 26.70±5.05 years (least 16 and most extreme 42 years). No massive contrast was tracked down in age between GBS positive and negative gathering (p=0.469). Additionally, nineteen (1.8%) of the patients had past preterm work. However, no tremendous contrast was found between GBS positive colonization patients, neonatal result and standard state of the patient. Moreover, the historical backdrop of PROM (Untimely burst of layer) was seen as in 15 (1.4%) patients, which additionally had no massive distinction with energy of GBS in his review and the outcomes are lined up with our results^[17].

CONCLUSION

The present study are showing that the colonization pace of Group B Streptococcus in high gamble pregnant ladies living in emerging nations like us is high (21.3%) and this finding has significant ramifications for general wellbeing strategy. Consequently, in regards to the high gamble of neonatal diseases it is strongly prescribed to separate pregnant ladies the third trimester and utilize prophylactic treatment of GBS colonization in moms to forestall neonatal contamination. The fantasies that GBS is just a microbe in top level salary settings are at this point not valid. The related weight would be agreeable to anticipation by intrapartum antibiotic prophylaxis or maternal vaccination.

Author's Contribution:

Concept & Design of Study: Sana Navid
 Drafting: Arooj Butt, Amna Aslam
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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