

TO STUDY THE PREVALENCE AND EFFECTS OF GROUP B STREPTOCOCCAL INFECTION AT 35-37 WEEKS OF GESTATION IN NORMAL ASYMPTOMATIC PRIMIGRAVIDA

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Abstract:

Background: The importance of GBS emerged in 1937, when three maternal deaths occurred out of seven GBS (Group B Streptococcal) related puerperal sepsis cases, until then GBS is regarded just as commensal. Puerperal sepsis has been described for centuries. Ancient Indian texts in 1500 B.C have recorded that good hygiene leads to a reduction in the perinatal disease. Streptococcus is a causative organism for puerperal sepsis.

Materials and Methods: Primigravida women of 35-37 weeks of gestation attending the antenatal op and wards of Government maternity hospital, Tirupati, based on the inclusion and exclusion criteria.

Duration of study: July 2012- October 2013.

Results: The prevalence of group B streptococcal colonization in asymptomatic primigravida in the study population is 7%. The maternal colonization with group B streptococci is not related to age of the patients.

Keywords: Group B Streptococcal, Vaginal colonization, Primigravida, Kadapa

Introduction

Female genital tract is the main source from which neonate acquires GBS, and GIT (Gastro Intestinal Tract) in specific rectum, is the primary site from where vaginal colonization with GBS occurs.¹

GBS Vaginal colonization of pregnant women is not related to age, parity or socio economic status. There is marked differences between racial groups. Asians have low colonization rate and Negroes have high colonization rate.²

The colonization rate in pregnant women remained same in each trimester. Treatment of pregnant in 3rd trimester of pregnancy and their husbands with Penicillin G resulted in significant reduction in GBS colonization at delivery.³ Clinical trials demonstrated that administering antibiotics during labour to women at risk of transmitting the group B streptococcal infections to newborns could prevent invasive disease in the first week of life.⁴

GBS colonization is associated with significantly higher rate of preterm labour and premature rupture of membranes.⁵ Antenatal screening for GBS carrier

status prior to 32 weeks of gestation might not identify women at high risk of preterm labour or premature rupture of membranes.⁶

MATERIALS AND METHODS

Primigravida women of 35-37 weeks of gestation attending the antenatal op and wards of Government maternity hospital, Tirupati, based on the inclusion and exclusion criteria. The study was approved by the institutional ethical committee.

Study design: Prospective observational study

Place of study: Government maternity hospital, Tirupati.

Duration of study: July 2012- October 2013.

Inclusion Criteria:

1. Primigravida with singleton gestation at 35-37 weeks of gestation
2. Cephalic presentation
3. No history of sepsis or any other infection in the antenatal period
4. No other medical or surgical complications
5. Not on any long term therapy

Exclusion Criteria:

1. All multigravida
2. Primigravida with less than 35 weeks of gestation
3. Non cephalic presentation
4. Multiple pregnancy
5. All high risk pregnancies
6. Patients with uterine anomalies
7. Associated medical and surgical illness complicating pregnancy
8. Past history of sepsis in the antenatal period
9. Patients on any long term therapy

Sample size: - 270 antenatal mothers based on the inclusion and exclusion criteria. A detailed history was taken in all the women recruited for the study. The following basic investigations were done in all women.

- Height
- Weight
- Body mass index
- Blood pressure, pulse rate
- Cardiovascular and respiratory examination
- .Obstetric examination
- Urine albumin and sugar
- Blood sugar, urea
- HbsAg
- HIV after getting consent
- Swab for GBS after getting consent
- Ultrasound examination for gestational age, anomalies.

Method of Swab collection:

From each pregnant woman 2-low vaginal swabs were taken prior to the first pelvic examination and

antiseptic preparation of the perineum and vulva was carried out before swabbing. Sterile cotton tipped swabs were inserted 2 cm deep into the vagina and rubbed against the vaginal wall. The swabs were immediately transferred to the laboratory without delay for processing.

Laboratory Methods:

Out of the two vaginal swabs collected, one swab was used for Gram's stain and another swab was plated on 5% sheep blood agar. The plate was then incubated in a candle jar for 18 to 24 hours at 37°C and examined for the presence of β-hemolytic streptococci. Culture negative plates were further incubated for another 24 hours. The colony characters such as shape, size, colour, margin, consistency, elevation and zone of hemolysis, etc. were noted.

The presumptive diagnosis of GBS was based on the following:

1. Direct smear examination
2. Colony morphology on blood agar.
3. Hippurate hydrolysis test
4. CAMP test.

RESULTS:

The number of subjects screened were 270, out of which 19 patients were found positive for group B streptococcus and 251 patients were found negative for the culture of group B streptococcus. So, the prevalence of GBS is 7%.

Table-1: GBS prevalence

GBS prevalence	Number of patients	percentage
GBS Positive	19	7.03%
GBS Negative	251	92.96%
Total	270	100%

In our study the prevalence rate of GBS found as 7% in asymptomatic primigravida.

Table 2: Prevalence of GBS in different age groups of the patients

Age group	GBS Positive	GBS Negative
<21 yrs	2(10.52%)	25(9.96%)
21 – 30 Yrs	15(78.94%)	201(80.07%)
>30 Yrs	2(10.52%)	25(9.96%)
Total	19	251

The association between age and GBS colonization is not significant as p – value is 0.91.

Table 3: Association of preterm labour with GBS colonization

CULTURE FOR GBS	Total number of patients	Preterm	Percentage	P – value	Odds ratio
POSITIVE	19	5	26.31%	0.000	7.11(2.19 -23.01)
NEGATIVE	251	12	4.78%		

It was observed that 5(26.31%) cases out of 19 cases colonized with GBS went into preterm labour whereas 12(4.78%) cases out of 251 non colonized went into preterm labour. The association between preterm labour and GBS positivity is found statistically significant p value of <0.001. There is 7 times increased risk of preterm labour in GBS positive cases when compared to GBS negative women.

Table 4: Association of GBS colonization with premature rupture of membranes

CULTURE FOR GBS	Total Number of Cases	Premature rupture of membranes	Percentage	P value	Odds ratio
GBS Positive	19	3	15.78%	0.034	5.69(1.37 – 23.5)
GBS Negative	251	8	3.18%		

Out of 19 **GBS** positive women, 3 cases (15.78%) had **PROM** and out of 251 **GBS** negative women, 8 cases (3.18%) had **PROM**. The association of **PROM** with **GBS** colonization was found to be statistically significant. There is 5 times increased rate PROM in **GBS** positive cases.

Table 5: Association of GBS colonization with Preterm Premature rupture of membranes (PPROM)

Culture for GBS	Total number of cases	Preterm premature rupture of Membranes	Percentage	P – Value
Positive	19	1	5.26%	0.30
Negative	251	4	1.59%	

The number of patients, who developed preterm premature rupture of membranes, was found to be 1(5.26%) case and 4(1.59%) cases in group B streptococcal positive and negative women respectively. The association of preterm premature rupture of membranes with streptococcal colonization is found as statistically insignificant.

Table 6: Association of GBS colonization with Mode of onset of labour

CULTURE FOR GBS	Total number of cases	MODE OF ONSET OF LABOUR		
		Spontaneous	Induction	ELLSCS
POSITIVE	19	16(84.21%)	2(10.52%)	1(5.26%)
NEGATIVE	251	183(72.90%)	64(25.49%)	4(1.59%)

The mode of onset of labour is both group B streptococcal positive and negative women was compared.

- 16 patients (84.21%) out of 19 in the positive group and 183(72.90%) out of 251 in the negative group went into labour spontaneously.

- 1(5.23%) patient out of 19 in the positive group and 4(1.59%) out 251 in the negative group underwent ELLSCS.
- 2(10.52%) cases out of 19 in the positive group and 64(25.49%) cases out 251 in the negative group were induced electively.

The percentage of patients who went into labour spontaneously was slightly more in the positive group

than in the negative group. However this association was statistically insignificant.

DISCUSSION

Prevalence:

In our study out of 270 antenatal women of 35-37 weeks of gestational age, 19 women had GBS colonization. So, prevalence rate of GBS colonization is 7%, which is well correlating with the study done by Lewin, Amstey⁹ in which the prevalence rate of GBS is 7-8%. The prevalence in our study is within range of between 5-16%, 1 which is the prevalence rate in India

Table 7: GBS prevalence in various studies

Name of the study	GBS PREVALENCE
Alexander s et al., ²	17.9%
Lewin EB, Amtey MS ³	7.8%
Chaus, Arul Kumaran et al ⁶	14.10%
Garland SM Kelly N ⁷	12.9%
Patricia Ferroeri,P.P.Cleary,A.E.seeds ⁸	5.6%
Bibi Shahnaz et al. ⁹	5.2%
Upton allen et al. ¹⁰	9.5%
Michelle et al ¹¹	10.4%
Present study	7%

The prevalence of GBS colonization has wide variation of 10-35% throughout the world. The reason for wide variation may be due to ethnic, genetic factors, site of swab, and also culture techniques. In our study we did not use transport media, the lack of transport media may diminish the detection rates .It may be the reason for lower colonization rates in our study. But use of it may not be cost effective as we are screening low risk population in our study.

RELATIONSHIP BETWEEN AGE AND GBS COLONIZATION:

In our study the prevalence of group B streptococci in relation with the age groups (<21yr, 22-26yr,>27 years) were analyzed. It was found that there is no correlation, between the presence of GBS colonization and the age. A study done by Alexander et al.² "could not ascertain any correlation between

age, and GBS colonization. So our study is well correlated with the study done by Alexandar et al.,²

PRETERM LABOUR

In our study 26.31% in GBS positive group went in to preterm labour.

Table 8: Comparison of preterm labour

Name of the study	Percentage of preterm labour
Carol Elaine Adair al ⁵	24.4%
Upton Allen atal ¹⁰	21%
Present study	26.31%

The present study is in comparison with the study done by Carol Eline Adair et al¹¹ in which preterm labour was 24.4% in GBS colonized antenatal women.

PROM:

In Our study, 15.78% in GBS Positive cases have PROM

Table 9: Comparison of promo in various studies

Name of the study	Percentage of preterm labour
Alexander S.et al., ²	19.5%
Upton Allen atal ¹⁰	10%
Present study	15.78%

The present study is marginally correlating with study done by Alexander S et al.,⁸ and up to Allen et al¹⁰.

Conclusion:

The prevalence of group B streptococcal colonization in asymptomatic primigravida in the study population is 7%. The maternal colonization with group B streptococci is not related to age of the patients. There is an increased incidence of preterm labour (2631%) and premature rupture of membranes (15.78%) in patients colonized with group B streptococci, when compared to those who were not colonized.

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