Carriage of Group – B Streptococci in Pregnant Women attending Antenatal Clinic at Teaching Hospital at Gulbarga,Karnataka State.

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Abstract

Group –B Streptococci (GBS) organism is one of those pathogens responsible for neonatal septicemia and neonatal meningitis. Objective of this study is to find out the prevalence rate of Group-B Streptococci in pregnant women. This study was carried out at Basaveshwar Teaching Hospital ,Gulbarga from 1st Jan. 2007 to 30th June 2008. Two hundred, 3rd pregnant women attending ANC Clinic are included in the study. Two vaginal swabs were collected during ANC check-up in third trimester.Smear from one swab was subjected to direct gram stain and the other was inoculated in sheep blood agar plate. Results of this study show that the prevalence rate for GBS colonization is 7.5% .Pregnant women less than 20 years of age and primigravida were predominantly present amongst those 7.5%.As the age advances & gravida increases the prevalence of GBS colonization among third trimester pregnant women declines.Hence screening for GBS as routine component of antenatal care can be suggested for teen age pregnancy & primigravida.

Key words: *Group-B streptococci, colonization, ANC*

Introduction

Children are the future pillars of nation.Child health is closely related to maternal health . Certain diseases, infections and conditions of women during pregnancy are likely to have their adverse effect on foetus, contributing to increased infant mortality rate & perinatal mortality rate . Policy of The Govt. of India is to reduce infant mortality rate & perinatal mortality rate, which are the main health indicators of the nation. GBS is an important pathogen which causes neonatal sepsis within few hours of birth and neonatal meningitis within few weeks of birth.[1,2]The main source of GBS infection in such cases is the maternal genital tract & anorectal flora. GBS is present in lower genital tract of 15% to 20% pregnant women.[3] Vaginal colonization by GBS during pregnancy is associated with premature rupture of membrane, still birth & low birth weight babies.[4] It is the most frequent cause of purulent meningitis in new borns & neonatal sepsis.[5,6] GBS infection is commonly acquired by babies during passage through mother's birth canal.[7] Detection of GBS in vagina of pregnant women, particularly amongst those who had low birth weight babies, premature delivery, premature rupture of membrane, prolonged labour, is important for prompt & adequate treatment of neonatal meningitis and septicemia in new borns. This in turn depends on rapid presumptive identification of GBS. Conventional methods used to identify GBS require two days for identification & three days for serological grouping & typing. The prevalence of GBS colonization in vaginal flora of pregnant women varies from 0.47% to 23.7% as reported by various studies.

Hence this study was conducted to know the magnitude of GBS vaginal colonization among 3rd trimester Pregnant Women attending ANC Clinic at Basaveshwar Teaching Hospital, Gulbarga.

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Table-I Age wise distribution of study Population in relation to Group-B Streptococci infection

Age (Years)	No of mothers	Group-B Streptococci infection			
		Present		Absent	
		No.	%	No.	%
=20	76	8	10.5	68	89.5
21-25	88	6	6.8	82	93.2
26-30	29	1	3.4	28	96.6
>30	7	0	0.0	7	10.0
Total	**200**	**15**	**7.5**	**185**	**82.5**

X^2 $p > 0.05$ insignificant.

Table-II Distribution of Pregnant women according to gravida and Group-B Streptococci infection

Gravida	No of mothers	Group-B Streptococci infection			
		Present		Absent	
		No.	%	No.	%
Primi	72	7	9.7	65	90.3
Second	57	5	8.7	52	91.3
Third	24	2	8.3	22	91.7
Multi	47	1	2.12	46	97.88
Total	**200**	**15**	**7.5**	**185**	**82.5**

X^2 $p > 0.05$ insignificant

Aims and Objectives

1) To know the prevalence of vaginal carriage of GBS infection during 3rd trimester of pregnancy .
2) To suggest preventive measures for vertical transmission of infection.
3) Clinical situations which lead to high index of suspicion for GBS infection among specific categories of delivery

Materials and Methods

This study was carried out at Basaveshwar Teaching & General Hospital , Gulbarga th from 1st Jan.2007 to 30th June 2008. Two hundred pregnant women who were in 3rd trimester of pregnancy (29th to 40th wk) attending ANC clinic were included in this study. Detailed history and information regarding age and gravida was taken. Two swabs were collected per vaginally.

Specimen collection

Antiseptic preparation of the perineum and vulva was done. During the first pelvic examination of pregnant women two low vaginal swabs were taken. Two sterile cotton tipped swabs were inserted simultaneously 2cm 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 staining 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 degree celcius and examined for the presence of beta-hemolytic streptococci. Culture negative plates were further incubated for another 24 hours. The colony characters such as shape, size, color, margin, consistency, elevation, zone of hemolysis etc were noted. The diagnosis was confirmed by direct smear examination, Gram stain, culture on 5% sheep blood agar, colony characters hemolysis, CAMP test and Hippurate hydrolysis test.Data were analysed using X^2 test.

Results

Two hundred pregnant women in 3rd trimester of pregnancy were examined and screened for GBS infection. Present study shows that the prevalence rate of GBS infection is 7.5 %. Table no I shows that GBS colonization rate is higher among the pregnant women who are less than 20 years of age (10.5%), followed by age group 21 to 25 years (6.8%). Table no II shows that GBS colonization rate is higher among primigravida 7(9.7%) followed by second gravida 5 (8.7%).The relationship between GBS colonization with age & gravida is not statistically significant. This study shows that, as age and gravida increases the infection rate of GBS decreases.

Discussion

Group – B streptococci causes infection in adults. It also has potentials for causing serious diseases like septicemia and meningitis in neonates. This has given an alarm in recent years. During the early onset of this infection, lung is the major and initial site of involvement. The inflammatory response is minimal or absent in those infants whose death occurred within few hours of birth. Early GBS colonization of the neonate occurs during its passage through birth canal. GBS infection is life threatening in neonates. Most of the clinicians are not aware about prevalence of GBS in their area. So an attempt was made to find out the prevalence of GBS in pregnant women.This helped the clinician to have high index of suspicion in cases of neonatal septicemia and neonatal meningitis.

This study was carried out at Basaveshwar Teaching & General Hospital, Gulbarga Karnataka State. Two hundred, third trimester pregnant women were screened to find out the prevalence of GBS infection.This study suggests preventive measure for vertical transmission of infection & to have high index of suspicion for GBS infection in specific categories of delivery.

The findings reveal that 15 (7.5%) out of 200 study subjects were infected with GBS infection. All of them were less than 30 years (100%), 7 (9.7%) were primigravida, 5 (8.7%) were second gravida, 2 (8.3%) were 3rd gravida and only one (2.12%) was multi gravida. GBS colonization rate was relatively higher i.e. 8 (10.5%) among 3rd trimester pregnant women, less than 20 years of age followed by primigravida 7(9.7%).

An epidemiological study done by Stall et all [8] in 1998 showed that the prevalence of infection was 12% in India and Pakistan. Study done by Grimwood.K et al[9] in 2002 and Arijaan.W et al[10] in 2006 showed that the colonization rate in late pregnancy was 22% and 21% respectively. Regarding the relationship between colonization of GBS and Gravida similar finding were observed by Anthony et al[11] in 1978 and Yow et al[12] in 1980.The genital colonization was less frequent in third trimester pregnant women who were multi gravida.

Conclusion & Recommendation

According to this study there is relatively higher GBS colonization rate among teen age pregnant women and primigravida when compared to multigravida who attended antenatal clinic regularly. Hence screening for

GBS as routine component of antenatal care for high risk teenage pregnant women & primigravida irrespective of age is important. Genital colonization of parturient women is the most significant factor of GBS colonization in neonate.

Chemoprophylaxis of pregnant women harboring GBS in genital tract is an oftenly suggested approach to prevent vertical transmission to neonates.Chemoprophylaxis helps in prevention of serious neonatal infection caused by GBS. First approach is to give appropriate antibiotic to pregnant women colonized with GBS prior to delivery. Second approach is to treat all neonates born to GBS positive mother, shortly after birth with appropriate prophylactic antibiotics.This reduces neonatal sepsis & neonatal meningitis. Most of the available information on epidemiology of GBS in pregnancy is based on single observation of patient andLongitudinal data are limited.These results may provide an impetus for further studies on GBS carriage, risk factor & their association with neonatal infection.

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