



PREVALENCE OF GROUP B STREPTOCOCCAL INFECTION IN ANTENATAL WOMEN

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ABSTRACT

Group B streptococci (GBS) are found to colonize the vaginal skin colonisation and is a known risk factor for morbidity and mortality among newborns as well as mothers. The present study was undertaken to study the prevalence of vaginal colonization by GBS among pregnant women. This was a cross sectional study conducted in a tertiary care teaching hospital during January 2012 – February 2013. A total of 132 vaginal swabs were taken from pregnant women of third trimester. All samples were processed according to standard microbiological protocol. Antibiotic susceptibility testing was done. CAMP test and serotyping was done for confirmation of GBS. Out of 132 samples collected the culture positivity rate of GBS was 9.1%. Among the positives 54.5% were from asymptomatic cases. In conclusion, all the pregnant females should be subjected to speculum examination and screening for GBS by high vaginal swab culture.

KEYWORDS: Group B Streptococci, Vaginosis, Neonatal infection,



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INTRODUCTION

Reproductive tract infection is a common public health problem with 5% of annual incidence and 40 million new infections occurring every year.¹ This problem has gained so much importance that it became part of Reproductive and child Health (RCH) programme, which was introduced in October 1997². Infective vaginitis may be caused by bacteria, fungi, parasites and viruses. Bacteriological agents associated with vaginitis include a wide variety of bacteria that dominate by its overgrowth and cause deficiency of Lactobacilli which play an important role to maintain the balance of vaginal flora³. Many studies have been conducted to establish the etiological role of particular bacteria which causes bacterial vaginitis (BV)^{4,5,6} *Streptococcus agalactiae* (β -haemolytic group B Streptococci) a Gram positive cocci, continue to be major perinatal pathogens, in both mother and their infants, and are associated with significant morbidity and mortality^{7, 8}. In pregnancy GBS colonization causes asymptomatic bacteraemia or Urinary tract infection. It is well known cause of puerperal infections with amnionitis, endometritis and sepsis being the most commonly reported infections⁹. Women with GBS colonization are at increased risk of GBS colonization in subsequent pregnancy. Prior GBS colonization should be considered in the algorithm to treat unknown GBS status during term labour¹⁰. GBS known to cause various infections in adults, but clinical interest in these bacteria mainly relates to their ability to cause serious neonatal illness, especially meningitis and sepsis. The centres for Disease control (CDC) call for antibiotic prophylaxis for women with asymptomatic bacteriuria during first trimester because this is a 'marker for heavy genital tract colonization', thus insist on screening all pregnant women at 35-37 weeks for vaginal and rectal colonization¹¹. Infection due to GBS in newborn is within a week of birth and twelfth weeks of life. The more common early clinical manifestation include septicaemia, meningitis, or pneumonia, and is often fatal. Infection is acquired from the maternal vagina during delivery. In the late onset type, infection is more often acquired from the environment.

Other GBS infections in neonates include arthritis, osteomyelitis, conjunctivitis, respiratory infections, peritonitis and endocarditis. GBS may also cause puerperal sepsis and pneumonia in adults¹¹. This study was aimed to detect prevalence of Group B Streptococci vaginal colonisation among the pregnant women of third trimester

MATERIALS AND METHODS

This was a cross sectional study conducted on patients who attended Gynaecology department of a tertiary care teaching hospital, SRMMCH&RC, Potheri, during January 2012 – February 2013. Study population included antenatal women of third trimester who were both symptomatic and asymptomatic. The study population represented the suburban and rural population, as the hospital cater to the patients from villages in and around Kattankulathur.

Sample collection

High vaginal swabs were taken (with a Sterile, Hi-culture collecting Device from Hi-media) with the help of the Gynaecologist, after attaining informed consent from the patients. A detailed case history was taken which included Name, age, address, clinical diagnosis, etc. Whiff test was performed for all the samples, a drop of vaginal discharge was mixed with a drop of 10% potassium hydroxide (KOH). A fishy smell indicated a positive test. All samples are screened for the presence of Clue cells. The vaginal discharge was stained by Gram's staining method. Vaginal epithelial cells which were completely covered by gram variable coccobacilli, so that their edges which normally had a sharply defined cell border becomes indistinct or stippled were considered as clue cells. Positive whiff test and Clue cells suggests bacterial Vaginosis. Vaginal swab is inoculated into Todd-Hewitt broth supplemented with Gentamicin (8 μ g/mL) and Nalidixic acid (15 μ g/mL) and incubated at 35-37 $^{\circ}$ C in 5% CO₂. It was sub-cultured on to 5% sheep blood agar plate and incubate at 37 $^{\circ}$ C for 24 hours. Organism suggestive of

GBS (Narrow zone of β -hemolysis, gram positive cocci, catalase-negative) were processed. A positive CAMP reaction (Christie, Atkins and Munch-Peterson), were considered when accentuated zone of hemolysis was observed with the isolate perpendicular to a streak of *Staphylococcus aureus* grown on blood agar¹². GBS was confirmed by grouping with Streptex Kit (Hi-Media) after enzyme extraction method.

RESULTS

A total of 132 high vaginal swabs were collected from antenatal women of mean age

of 24.84 (range: 18-38years).The gestational age at the time of sampling was between 35 to 37 weeks. 65.2% (86/132) of the patients were asymptomatic and 34.8% (46/132) were symptomatic for vaginosis. Among the symptomatic cases, most of them had either vaginal discharge 60.8% (28/46,) itching 23.9% (11/46) and burning in 15.2% (7/46). The nature of the discharge was either white mucoid (50%), watery (21.4%), blood stained (17.8%) or thick purulent discharge (10.7%). Of the 132 women, *Streptococcus agalactiae* was isolated from 12 patients. (9%).

Table 1
DISTRIBUTION OF GBS IN DIFFERENT AGE GROUPS

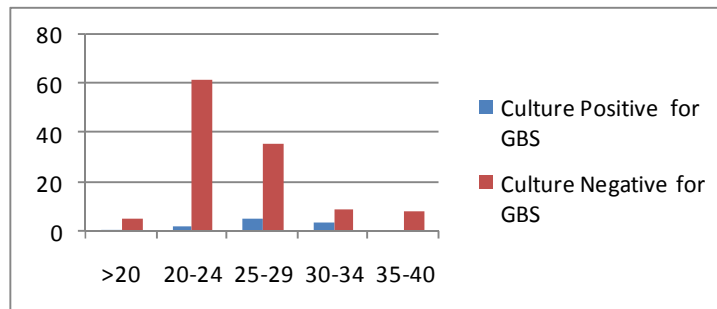
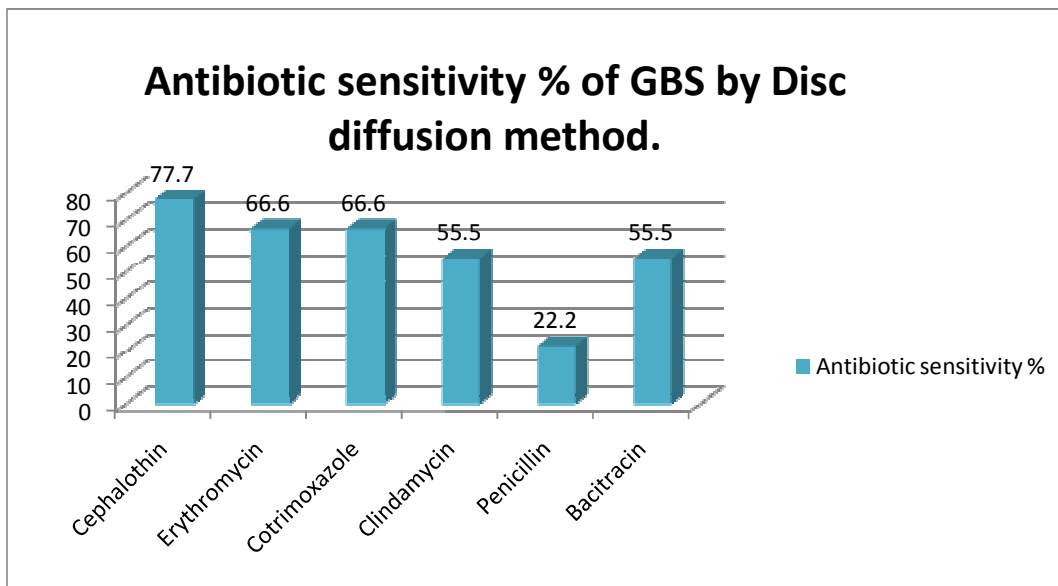


Figure 1
Positive CAMP test



Figure 2
Antibiogram plate of GBS



DISCUSSION

Many studies performed in developed countries suggests that GBS plays an important role in pregnancy complications^{13,14} Researchers from Poland who studied 563 women in their third trimester either in normal or high risk pregnancy suggested that GBS colonization was associated with high risk pregnancy is 20% and in normal pregnancy is 17.2%⁹. Mead(1993), in his review, proposed an approximation on the prevalence of GBS in pregnant women to be between 10-30% with up to 75% being asymptomatic. A survey from Israel on pre-term Israel and Arabic women revealed the colonisation rate of were 5.4%

and 1.6% respectively¹⁵. A similar study in Germany revealed an infection rate of 3.8% rate¹⁶. In three Italian hospitals, 7.55% of mothers and 4.9% of babies were found to be colonized¹⁷. Higher rates of colonization were reported in England (28%) [19] and in USA (20%)¹⁹. A study in India, Tsering Chomu Dechen (2010) showed a culture positivity of GBS as 4.77%²⁰. In the present study, the culture positivity was 9% which was less compared to most of the foreign studies, but higher compared to reports from India. Among the positives, a higher percentage of 54.5% were from asymptomatic cases

CONCLUSION

Indian report of GBS infection in pregnant women are very low. With 9.1% of colonisation observed among asymptomatic pregnant women in this study it highlights the need to include screening for vaginal carriage of GBS among prenatal women. Low cost and easy to carry out clinical test such as vaginal swab cultures for screening infection can be

used as routinely during prenatal check up e to avoid complication in neonates like neonatal sepsis.²¹

ACKNOWLEDGEMENT

I thank Dr. Abraham Febi of Gynaecology department for helping me to take samples from patients.

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