
OBSTETRICS

The Prevalence of group B Streptococcal Colonization in Pregnancy at Lampang Regional Hospital

Prateung Liampongsabhuddhi MD,
Vitaya Kesarat MD,
Siriporn Thitisagulwong MD.

Department of Obstetrics and Gynecology, Lampang Regional Hospital, Lampang, Thailand

ABSTRACT

Objective To survey the prevalence of group B Streptococcal (GBS) colonization rate in pregnant women at the antenatal clinic of Lampang Regional Hospital. As a database to develop proper protocol of GBS diseases of newborn in Lampang Regional Hospital.

Design Cross-sectional descriptive study.

Setting Department of Obstetrics and Gynecology of Lampang Regional Hospital.

Subjects Four hundred and four pregnant women 36-39 weeks of gestation at the antenatal clinic, between March 1, 2001 and November 30, 2001, were enrolled and cervical swab cultures were collected.

Results The colonization rate of group B streptococcal organism in pregnancy women at Lampang Regional Hospital was 1.24% (95% CI = 0.46-3.03).

Conclusion Prevalence of group B Streptococcal in Lampang Regional Hospital was much less than in the study of Western country. Risk-based approach for prevention of early-onset neonatal group B streptococcal disease, may be appropriate with our status.

Key words: Group B streptococcus, pregnancy, cervical swab

Group B Streptococcal disease is the leading cause of neonatal sepsis and meningitis in the United States.^(1,2) In 1996, Center for Disease Control and Prevention(CDC), the American College of Obstetricians and Gynecologists was issued the consensus guidelines to prevent neonatal group B Streptococcal diseases.⁽³⁾ The epidemiology of group B Streptococcal colonization during pregnancy has been addressed in many investigations since the emergence importance of this organism as perinatal pathogen in the early 1970s.⁽⁴⁾

There is no study of prevalence of group B Streptococcal colonization in pregnancy in Lampang Regional Hospital before. As the need of data base, to develop protocols of perinatal group B Streptococcal diseases prevention, so this is the first survey of the microorganism. In most populations studied the colonization rate of GBS in pregnancy was approximately 5%-30%.^(2,4-6)

Materials and methods

The study of the prevalence of Group B

Streptococcal colonization in pregnancy in Lampang Regional Hospital was a cross-sectional descriptive study. All near term pregnant women were asked to enroll in this study, and consently signed at the antenatal clinic by nurses. The cultures were collected between 36-39 weeks of gestation. An endocervical culture obtained per sterile speculum by rotating cotton swab 360° in the cervical os.⁽⁴⁾ The result will be reported within 7 days to identify the group B Streptococcus. We had planned to treat group B Streptococcus colonized pregnancy with ampicillin 2 gm intravenously as initial dose when in labor and then 1 gm every 4 hours until delivery.

Results

During March 1, 2001 to November 30, 2001, a number of 404 cases, near term pregnant women at Lampang Regional Hospital, were enrolled in the prevalence study of GBS colonization in pregnancy between 36 and 39 weeks of gestation. We found 5 cases were positive for group B streptococcus cervical swab cultured. Only 2 cases were given the intrapartum chemoprophylaxis, the rest were not

because one delivered immediately after admitted to labour room, the other 2 cases knew the culture result after birth. The prevalence of colonization rate was 1.24% (95% CI=0.46-3.03).

We interviewed our subjects about, parity, their smoking and drinking habit, sexual intercourse history during pregnancy, and their background of education level. The average age of was 26.48 ± 6.08 years, gestational age was 36.93 ± 0.74 weeks (Table 1.), most of them 391 (96.78%) never smoke, 12 (2.97%) quit smoking more than 3 months and only one (0.25%) pregnant woman was a current smoker. Alcohol drinking history 299 never drink, 104 (25.74%) had ever drunk alcohol before pregnancy, and only one (0.25%) was still drinking. On the question about sexual intercourse during pregnancy, 154 (38.12%) had sexual intercourse less than 1 per week, 201 (49.75%) had sex 1-3 times per week, 34 (8.42%) were more than 3 times per week, and 15 cases did not answer the question of their sexual behavior. The number of group B Streptococcal carriers was too small to analyse the risk factors of GBS colonized group. As shown in the Table 2. and Table 3.

Table1. Characteristic of the population

Characteristic	N	Mean	S.D.	Min	Max
Age(years)	404	26.48	6.08	15	48
G.A.(weeks)	404	36.93	0.74	36	39

Table2. Characteristic of the population (continue)

Characteristic	N	%	Cum.(%)
<i>Parity</i>			
0	162	40.10	40.10
1	179	44.31	84.41
2	51	12.62	97.03
3	9	2.23	99.25
4+	3	0.75	100

Characteristic	N	%	Cum.(%)
<i>Smoking</i>			
Never	391	96.78	96.78
Quit>3mon.	12	2.97	99.75
Current smoker	1	0.25	100
<i>Drinking</i>			
Never	299	74.01	74.01
Any drinking before pregnancy	104	25.74	99.75
Current drinking	1	0.25	100
<i>Sexual intercourse during pregnancy</i>			
Less than 1 /week	154	38.12	38.12
1-3/week	201	49.75	87.87
>3/week	34	8.42	96.29
No answer	15	3.71	100
<i>Education level</i>			
< 6 yrs	222	54.95	54.95
7-12 yrs	159	39.36	94.31
>12 yrs	23	5.69	100

Table3. Group B Streptococcal carriage by demographic factors

Characteristic	N	% positive	P
<i>Age</i>			
15-20	74	1.35	
21-25	107	-	
26-30	123	-	
31-35	68	4.41	
36-40	29	3.45	
41-45	2	0	
45-50	1	0	0.046
<i>Parity</i>			
0	162	0.62	
1	179	1.12	
2	51	3.92	
3	9	0	
4+	3	0	0.319
<i>Smoking</i>			
Never	391	0.75	
Quit \geq 3 mon before date of interview	12	8.33	
Current smoker	1	0	0.152

Characteristic	N	% positive	P
<i>Drinking</i>			
Never	299	0.67	0.134
Any drinking before pregnancy	104	2.88	
Current drinking	1	0	
<i>Sexual intercourse during pregnancy</i>			
Less than 1-3/week	154	0.65	0.436
1-3/week	201	1.49	
>3/week	34	2.94	
No answer	15	0	
<i>Education level</i>			
≤ 6 yrs	222	0.9	0.742
7-12 yrs	159	1.87	
>12 yrs	23	0	

Discussion

The early-onset neonatal sepsis caused by group B Streptococcal organism is the leading cause of neonatal death in many countries. The prevention guideline, screening-based approach and risk-factor strategy, were developed by the Centers for Diseases Control. The near term pregnancy screening for GBS colonization did not cover the premature labour cases.^(2,7) The method of culture collection suggested by CDC were different to our study, but Regan et al (1991) study showed the excellent agreement of kappa values for group B Streptococcal isolation from the vagina and endocervix.⁽⁴⁾ Although prenatal screening cultures will not correctly identify all women with intrapartum GBS carriage. The later in pregnancy the cultures were performed, the closer correlation with intrapartum cultures results. If the routine cultures schedule were late in pregnancy, some women who deliver prematurely will not be screened for GBS.⁽²⁾ Women whose prenatal cultures were obtained ≤ 5 weeks before delivery, there was 100% concordance with intrapartum culture status.^(2,8) Implementation of new guidelines were associated with increase maternal intrapartum antibiotic use, particularly among women at high risk, and with decrease in laboratory

use for infants.⁽⁹⁾ With the limitation of budget and resources, further studies are needed to compare the colonization rate, and to identified the risk factors associated with GBS carriers.

However the routine screening for GBS in pregnancy, in Lampang Regional Hospital may not reason-able in cost-effectiveness. The current study of risk-based approach to intrapartum antibiotic prophylaxis showed effectiveness in preventing early-onset group B Streptococcal disease.⁽¹⁰⁾ But this guidelines implementation may result in drug resistance group B Streptococcal strains.⁽¹¹⁾

Acknowledgement

The authors wish to thank Dr. Suchint Wongchoosri, director of Lampang Regional Hospital, for supporting this study; Mrs. Aliya Phadungpong, Mrs. Kamonwan Tantichaiboriboon, Mrs. Siriwan Saengtong and Mrs. Julaporn Saengratanatornchai for patient interviewings, specimens and data collections; Mr. Sithichai Amnartsirisook for technical supporting.

References

1. Center for Disease Control and Prevention. Decreasing incidence of perinatal group B Streptococcal

- disease United States, 1993-1995. MMWR Morb Mortal Wkly Rep 1997;46:473-7.
2. Center for Disease Control and Prevention. Prevention of perinatal group B Streptococcal disease : a public health perspective. MMWR Morb Mortal Wkly Rep 1996;45(RR-7):1-24.
 3. Davis RL, Hasselquist MB, Cardenas V, Zerr DM, Kramer J, Zavitkovsky A, Shuchat A. Introduction of the new Centers for Disease Control and Prevention group B Streptococcal prevention guideline at a large West Coast health maintenance organization. Am J Obstet Gynecol 2001;184:603-10.
 4. Regan JA, Klebanoff MA, Nugent RP . The vaginal infections and Premature Study Group: the epidemiology of group B Streptococcal colonization in pregnancy. Obstet Gynecol 1991;77:604-10.
 5. Faro S. Group B streptococcus infection in pregnancy. In: Gilstrap LC, Faro S, editors. Infection in pregnancy, 2nd ed. New York: Wiley-Liss, 1997: 79-85.
 6. Haas MJ, Zingheim RW, Williams MA, Luthy DA. Performance of a group-B streptococcal (GBS) screening protocol in large community hospital. Am J Obstet Gynecol 1996;174:406.
 7. Towers C, Rumney P, Posner S, Asrat T, Nageotte M. Are the ACOG risk factors for GBS prophylaxis practice? Am J Obstet Gynecol 1996;174:406.
 8. Boyer KM, Gadzala CA, Kelly PD, Burd LI, Gotoff SP. Selective intrapartum chemoprophylaxis of neonatal group B Streptococcal early-onset disease . II. Predictive value of prenatal cultures. J Infect Dis 1983;148:802-9.
 9. Davis RL, Hasselquist MB, Cardenas V, Zerr DM, Kramer J, Zavitkovsky A, Schuchat A. Introduction of the new Centers for Disease Control and Prevention group B Streptococcal prevention guideline at large West Coast health maintenance organization. Am J Obstet Gynecol 2001;184:603-10.
 10. Lin FY, Brenner RA, Johnson YR, Azimi PH, Philips JB 3rd, Regan JA, et al. The effectiveness of risk-based intrapartum chemoprophylaxis for the prevention of early-onset neonatal group B Streptococcal disease. Am J Obstet Gynecol 2001;184:1204-10.
 11. Bland ML, Vermillion ST, Soper DE, Austin M. Antibiotics resistance pattern of group B streptococci in late third-trimester rectovaginal cultures. Am J Obstet Gynecol 2001;184:1125-6.