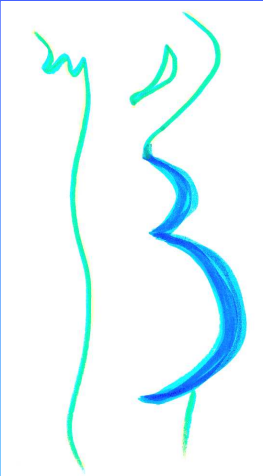


HOW MANY WOMEN CAN BENEFIT FROM A FULL INTRAPARTUM ANTIBIOTIC PROPHYLAXIS FOR PREVENTION OF PERINATAL GROUP B STREPTOCOCCAL DISEASE ?

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ABSTRACT

Background: In Belgium as in many Western countries, GBS are still the leading cause of severe perinatal infections. Current guidelines for prevention recommend intrapartum antimicrobial prophylaxis (IAP) administered promptly before delivery to pregnant women colonized with GBS. The risk of vertical GBS transmission to the newborn decreases as the duration of prophylaxis increases. The considered threshold for prophylaxis adequacy is the first dose administered at least 4 hours before delivery.

Objective: To evaluate the proportion of pregnant women who could benefit from an adequate IAP for the prevention of GBS perinatal infections.

Methods: Between June and October 2003, we recorded in two hospitals the elapse time between admission for labor and delivery. We assumed 5 hours represent a useful threshold to allow admission, revision of chart and administration of adequate IAP. The status of vaginal colonization with GBS was determined by CDC's recommended culture method with Granada agar added.

Results: Among 532 women, 27.3 % delivered within 5 hours after admission for labor. The colonization rate for GBS was 25.6 %. The distribution of elapse time between admission and delivery for GBS colonized pregnant women was not significantly different from non colonized women ($p < .1$).

Conclusions: 1) With the current prevention strategy, 27.3 % of these pregnant women would not have benefit from adequate prophylaxis 2) These results highlight the importance of an efficient organization to warranty prompt administration of IAP as soon as possible when mandatory. 3) If a rapid intrapartum screening test is used, no delay can be afforded "from ward to bench to bed".

BACKGROUND

In Belgium as in many Western countries, group B streptococci (GBS) continue to be a major cause of life-threatening infections, sepsis, pneumonia and meningitis in neonate. Current guidelines for prevention of GBS perinatal diseases recommend intrapartum antimicrobial prophylaxis (IAP) administered promptly before delivery to women with a positive prenatal culture-based screening at 35-37 weeks gestation for rectal and vaginal GBS colonization. The risk of vertical GBS transmission to the newborn decreases as the duration of prophylaxis increases. According to de Cueto, the rate of transmission is reduced of 50% to 90% respectively within two to four hours after the first dose of ampicillin. The considered threshold for optimum effectiveness of prophylaxis is the first dose administered at least 4 hours before delivery.

To improve the recommended strategy, use of a screening method for establishing the GBS carriage status performed closer to delivery would increase the correct identification of true GBS-positive women for more appropriate treatment. As raised in the 2002 CDC's guidelines, "a rapid test for detection of GBS colonization at the time of onset of labor or rupture of membranes might obviate the need for prenatal culture-based screening, if its sensitivity and specificity are comparable to culture in selective broth media and yield results rapidly enough to permit administration of adequate IAP to women detected as carriers."

OBJECTIVE

- To highlight the importance of starting IAP as soon as possible and
- To appreciate the affordable time for a rapid intrapartum screening for GBS colonization, this study was designed
 - To determine the distribution of elapsed time between admission to labor room and delivery, recorded for women who delivered in two different sites of the university department of obstetrics.
 - To look for any correlation that could exist between intrapartum GBS carriage and this elapsed time between admission to labor room and delivery.

MATERIAL & METHODS

Population

A total of 532 consecutive pregnant women admitted for delivery from end of June to October 2003: 400 to the main site (CHR) of the university department of obstetrics in Liège, Belgium and 132 to a smaller site (CHBA) of the same department.

A case report form was used for each patient enrolled in the study in order to record time of admission to labor room, time of delivery and laboratory information.

Clinical specimens and testing methods

Distal vaginal swabs were collected prior to initiation of any antibiotic treatment from each pregnant woman, using swab with liquid Stuart media (Copan).

Within 48 hours of collection, all specimens were sent to the reference laboratory for determining the status of GBS colonization

Each specimen was plated onto a Granada agar (Biomedics, Spain). Than as recommended by CDC's guidelines for the screening culture procedure, the swab was inoculated and incubated overnight in a selective enrichment Lim broth further sub-cultured on blood agar but also on Granada agar.

"Threshold" for appropriate IAP

To reach the goal of the prevention strategy, we assumed that a threshold of 5 hours to allow admission to the "labor room" (= hospitalization in the obstetrics department), revision of prenatal biological and clinical charts and time elapsed after administration of the first dose of IAP, can be realistic.

DISCUSSION AND CONCLUSION

- Within the studied population, **27.3% of the women delivered before reaching the threshold of 5 hours.** Among these women **the IAP could not have reached the expected and optimum prevention goal.**
- According to this handicap, **everything should be implemented to optimize in a timely manner, the management of pregnant women admitted for delivery** as an efficient organization to warranty prompt administration of IAP as soon as possible when mandatory.
- To remain cost-effective, **the time requested to perform a rapid intrapartum screening test** for colonization with GBS **should probably not exceed one hour "from ward to bench to bed".**
- Among the studied population the prevalence of vaginal colonization with GBS was 25.6%. **Overall the distribution of "admission-delivery" time was not dependant of the vaginal GBS carrier status at time of delivery.**

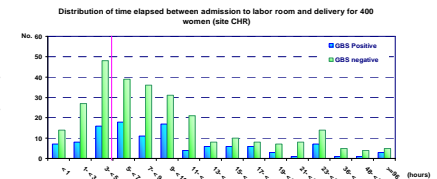
RESULTS

Rate of intrapartum colonization

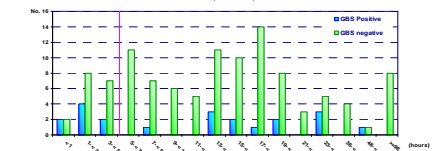
In this study, 136 of the 532 women (25.6%) hospitalized for delivery, were GBS carriers based on culture of vaginal samples collected at admission to labor room. The rates were of 28.7% for CHR and 15.9% for CHBA.

Time elapsed between admission to labor room and delivery

At the main site, CHR, the number of GBS carriers who delivered within 5 hours after their admission was not significantly different than for GBS-negative women: 27% versus 22.2%.



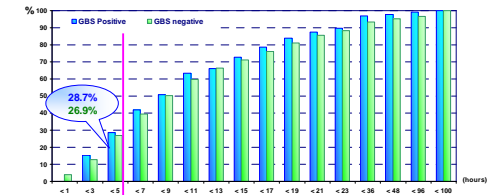
At site CHBA, the number of GBS carriers who delivered within 5 hours after their admission was significantly higher than GBS-negative women: 38% versus 15.3% ($p < 0.025$)



Overall there was no significant difference between the numbers of GBS carriers or GBS negative women who delivered within 5 hours after admission to "labor room".

Cumulative histogram of the time elapsed between hospitalization for delivery and delivery itself

Cumulative histogram (% of patients) of time elapsed between admission to labor room and delivery for 532 women (sites CHR & CHBA)



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- de Cueto et al. Timing of intrapartum ampicillin and prevention of vertical transmission of group B streptococcus. Obstet Gynecol 1998;91: 112-4

